40th Annual International Conference of the IEEE Engineering in Medicine and Biology Society

July 17-21 2018
Hawaii Convention Center
Honolulu, Hawaii

Conference Chairs
James Weiland
Michelle Khine

Program Chairs
Greg Suaning
Olaf Doessel

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It is my great pleasure and honor to welcome you to the 40th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBS) Conference. Our Flagship Annual Conference (known as EMBC) is a premier international event in biomedical engineering and has been strategically held in different locations around the world, including Jeju Island, Orlando, Milan, Chicago, Osaka, San Diego, Boston, Buenos Aires, Minneapolis, Vancouver over the last 10 years. Looking forward, our next events will be held in places such as Berlin, Montreal, Glasgow and Sydney.

This year’s meeting is being held in Honolulu on the beautiful islands of Hawaii with the theme ‘Learning from the Past, Looking to the Future’. Under the strong and dedicated leadership of Conference Chairs (Drs Jim Weiland, Michelle Khine) and Program Chairs (Drs Gregg Suaning, Olaf Doessel), the organizing committee has developed an exciting inter-disciplinary program. Multiple preconference workshops, special sessions and minisymposia discussing important biomedical engineering issues with academic researchers, clinicians, and research and development engineers are combined with traditional oral sessions and ignite poster sessions as platforms for presentation of over 2500 papers. In addition, there are lunchtime sessions to further promote, educate and expose students to the diverse field of biomedical engineering. The organizers have also successfully recruited an all-star roster of five keynote speakers and more than a dozen theme keynote speakers, who are leaders and pioneers within their respective fields from around the world.

All the submitted contributed papers were subject to peer review by the EMBS Conference Editorial Board (CEB), consisting of an international panel of experts, covering all areas of biomedical engineering. This resulted in a 25% rejection rate. Special thanks go to, Dr Jim Patton, Editor-in-Chief of the CEB, the associate editors and reviewers of the CEB, and all the staff of the EMBS Executive Office (Laura Wolf and Janice Sandler) for their outstanding service and contributions toward making this meeting possible.

EMBS continues to strive to provide a unique, effective platform for biomedical engineers to publish, present their research, network with industry, and to advance their professional careers. A major focus of EMBC18 will be the engagement with the dozen eleven technical committees (TCs) that are the specialist expertise groups with which individual members can interact with aspects of the Society. We would welcome anyone who is interested to make themselves known to the TC Chairs that will be attending the conference and will present TC activities during the TC workshops. TCs have leading roles within EMBS, being strategically involved in EMBC and Special Topics Conferences, award nominations, editorial boards of EMBS journals and launching of new initiatives. Of special note is our Women in Engineering Luncheon, promoting diversity and inclusivity within EMBS – a major tenant of my presidency.

Again, welcome to EMBC18. On behalf of EMBS we appreciate your participation and trust you will find this meeting intellectually stimulating, socially rewarding and culturally revealing. As always if you have comments or would like to be more involved in our society, please contact myself or the Executive Office.
Welcome Message
from Organizing Committee

Welcome to EMBC 2018. We are glad that you chose to travel to this beautiful setting and participate in EMBC this year. The organizing committee began preparation for this meeting over three years ago and has spent countless hours working with the professional staff of EMBS and Smith-Bucklin, to create what we feel is an outstanding conference. In addition to the keynotes addresses from leaders in our field and a broad array of scientific sessions, additional events such as the Women in Engineering Luncheon, EMBS Young Professional Reception and Lunch with Leaders provide unparalleled opportunities for international networking and collaboration with an international group of biomedical engineers.

Our conference theme is “Learning from the Past, Looking to the Future”. As we reflect on 40 years of the EMBC, we have accomplished much but many challenges remain. We have created better imaging tools as well as novel diagnostic and therapeutic devices. We have developed sophisticated models that can predict the pharmacokinetic responses to novel drugs. Robotic systems assist with surgery and rehabilitation. Advanced and connected health care monitoring devices allows people to stay in their homes longer, reducing health care costs and improving quality of life. Health informatics is applying the power of big data and artificial intelligence to enable precision medicine. We have reasons to be proud. These achievements do not satisfy us, but instead serve as a model and inspire us to work hard every day to serve humanity through the creation of engineering solutions for better medicine.

We hope that the backdrop of Honolulu sets the tone for the 40th anniversary of EMBC. Hawaiian culture, while distinctly Polynesian, has been influenced by many other Eastern and Western traditions. Similarly, biomedical engineering is at its core an engineering discipline, but has seen significant contributions from basic scientists and clinicians, a diversity of approaches, training, and experience that strengthens our field. Hawaii lives by the Spirit of Aloha, which emphasizes welcoming gestures, friendship, and a common bond. Likewise, EMBC is a collegial environment that welcomes professional dialogue in a constructive way, knowing that we are all motivated by the higher calling of improving health care around the world.

In closing, we welcome you, our friends and colleagues in Biomedical Engineering, to this beautiful island for 5 days of scientific exchange that we are sure will leave you invigorated and inspired to continue the important work of our field.

Aloha,

James Weiland, Michelle Khine, Thomas Penzel
Conference Chairs

Gregg Suaning, Olaf Dossel
Program Chairs
General Conference Information

Registration
Registration is located in the foyer outside Exhibit Hall 2 on Level 1 of the Hawaii Convention Center and will be open Monday, July 16th through Saturday, July 21st. Staff will be able to assist you during the following time schedule.

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
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<tbody>
<tr>
<td>Monday</td>
<td>15:00 - 17:00</td>
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<td>Friday</td>
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<td>Saturday</td>
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Conference Badges
- Badges should be worn by all conference participants while in the conference areas. Badges validate your registration and may be utilized to validate registration for sessions and workshops.
- Badges can be printed at any registration area during the published open hours of the conference.
- Name you provided for registration will be the name that appears on the badge.
- $20 Fee applies for reprint or replacement of a badge.

Exhibits
Exhibits will be located in Exhibit Hall 2 on Level 1 of the Hawaii Convention Center.

Exhibition Hours will run Wednesday, July 18th– Friday, July 20th
- Wednesday, July 18: 09:30 – 18:50
- Thursday, July 19: 09:30 – 19:00
- Friday, July 20: 09:30 – 19:00

Exhibitor Set-Up
Tuesday, July 17th: 07:00 – 20:00

Exhibitor Tear-Down
Friday, July 20th: 19:00 – 24:00

Welcome Reception
The welcome reception will be held on Wednesday, July 18th at 19:00 on the Rooftop Terrace.

Mothers’ Room
Nursing mothers may visit the registration desk for access to a private nursing room at the Hawaii Convention Center. Please find a member of the EMBC Registration Staff Team and we will be happy to assist you.

Mobile App
Download 40th International Conference of the IEEE Engineering in Medicine and Biology Society Mobile App. Navigate the event like a pro with the EMBC 18 mobile app, powered by Core-apps. With the EMBC 18 mobile app, you can:
- Stay organized with up-to-the-minute Exhibitor, Speaker, and Event information
- Sync the app across all of your devices with Multi-Device Sync
- Receive important real-time communications from IEEE
- Build a personalized schedule and bookmark exhibitors
- Take notes and download event handouts and presentations
- Locate sessions and exhibitors on the maps
- Find attendees and connect with your colleagues through Friends
- In-the-know and join in on social media with #IEEEembs
• Stay
• And much, much more

Downloading the App is Easy!

SCAN: Use your device’s QR code scanner to quickly find the EMBC Mobile app.

SEARCH: The App Store or Google Play for “EMBC Mobile”

FOR ALL OTHER DEVICE TYPES: (Including BlackBerry, Windows, and Other Web Browser-Enabled Devices): Point your mobile browser to www.core-apps.com/dl/embc18 to be directed to the proper download version for your device.

Once you have downloaded and opened the app, choose EMBC 18 and tap Download. Then, enter your Username and Password (IEEME2EC8) to gain access to the app.

Platform Compatibility: Android v4x+ and iOS v7x+

Should you have any questions, please contact support@core-apps.com

Poster Sessions
Poster Session I  Wednesday, July 18  17:15 – 19:00
Poster Session II  Thursday, July 19  17:15 – 19:00
Poster session III  Friday, July 20  17:15 – 19:00

Poster Sessions will take place in Exhibit Hall 2. Please make sure to hang your poster two hours prior to your scheduled presentation time. Upon conclusion of your poster session, please remove your poster. If your poster is left behind, it will be discarded. Daily poster session handouts will be provided at the registration desk so you know which poster board number you have been assigned. Velcro or push pins will be provided to attach your posters to your assigned poster board.

Oral Presentations
A video projector will be available in each room and will be connected to a computer supporting resolution up to 1920x1080. Please upload your presentation to the centralized system in the speaker ready room at least two hours prior to your talk. It is the responsibility of the presenting author to load the presentation ahead of time and test it to ensure the presentation will be viewed properly.

Author No Show Policy
EMBS enforces a “No Show” policy. Any accepted paper included in the final program is expected to have at least one author attend and present the paper at the conference. Authors of the accepted papers included in the final program who do not attend the Conference will be subscribed to a “No Show List”, compiled by the Society. The “No-Show” papers will be removed from the proceedings and noted as “Author unavailable for presentation” prior to submitting to IEEE for inclusion in Xplore. The “No Show List” will be available to all EMBS conference organizers, who can reject submissions from these authors in the following two years, based on their past negative impact on an EMBS conference.
### Exhibitor Floor Plan

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<thead>
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<td>BIOPAC Systems, Inc.</td>
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<td>BRAIN PRODUCTS</td>
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<tr>
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## Publications

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<tr>
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<tbody>
<tr>
<td>18:30 - 20:30</td>
<td>EMB Publications Meeting</td>
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## Student, WIE, and EMB Society Events

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<tr>
<td>09:45 - 11:00</td>
<td>Student Paper Competition II</td>
<td>305AB</td>
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<tr>
<td>11:15 - 12:30</td>
<td>Student Paper Competition III</td>
<td>305AB</td>
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<tr>
<td>12:30 - 13:30</td>
<td>Lunch With Leaders</td>
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<tr>
<th>Time</th>
<th>July 19, 2018 (Thursday)</th>
<th>Room</th>
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<tbody>
<tr>
<td>08:00 - 20:00</td>
<td>Student Activities</td>
<td>305AB</td>
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<tr>
<td>12:30 - 13:30</td>
<td>Lunch with Leaders</td>
<td>306AB</td>
</tr>
<tr>
<td>15:30 - 17:15</td>
<td>IEEE PULSE on Stage brought to you by Intel &amp; IEEE Standards</td>
<td>325B</td>
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<tr>
<td>15:30 - 17:15</td>
<td>EMB Meet the Editors</td>
<td>302A</td>
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<tr>
<td>17:30 - 18:30</td>
<td>EMB AE Forum</td>
<td>325B</td>
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<tr>
<td>17:30 - 19:00</td>
<td>Women in Engineering Reception</td>
<td>327 &amp; Balcony</td>
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<tr>
<td>19:00 - 20:00</td>
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<td>08:00 - 20:00</td>
<td>Student Activities</td>
<td>305AB</td>
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<tr>
<td>12:30 - 14:00</td>
<td>Women in Engineering Lunch</td>
<td>304AB</td>
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<tr>
<td>12:30 - 13:30</td>
<td>Student Panel Discussion</td>
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<tr>
<td>12:30 - 15:30</td>
<td>2018/2019 EMBC Meeting (closed meeting)</td>
<td>302A</td>
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<tr>
<td>19:00 - 21:00</td>
<td>Student Reception</td>
<td>Rooftop Terrace</td>
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# Technical Committees

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<tr>
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<td>Joint Dinner for Technical Committee Chairs, ExCom &amp; PubCom</td>
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<td>18:00 - 21:00</td>
<td>EMBS Technical Committee Chairs’ Meeting</td>
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<td>Time</td>
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<tr>
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<td>Biomedical Signal Processing (BSP)</td>
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<td>07:50 - 08:00</td>
<td>Wearable Biomedical Sensors and Systems (WBSS)</td>
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<tr>
<td>12:50 - 13:00</td>
<td>Cardio Pulmonary Systems (CPS)</td>
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<tr>
<td>13:00 - 13:10</td>
<td>Biomedical Imaging and Image Processing (BIIP)</td>
<td>328</td>
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<tr>
<td>13:10 - 13:20</td>
<td>BioRobotics (BR)</td>
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<td>13:20 - 13:30</td>
<td>Bionanotechnology &amp; BioMEMS (BNBM)</td>
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<tr>
<td>17:15 - 17:25</td>
<td>Biomedical and Health Informatics (BHI)</td>
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<td>17:25 - 17:35</td>
<td>Translational Engineering &amp; Healthcare Innovations (TEHI)</td>
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<td>17:35 - 17:45</td>
<td>Therapeutic Systems and Technologies (TST)</td>
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<td>17:45 - 17:55</td>
<td>Standards</td>
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<td>Time</td>
<td>July 19, 2018 Technical Committee Meetings (Thursday)</td>
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<tr>
<td>12:30 - 13:30</td>
<td>Committee Meeting Neuroengineering (NE)</td>
<td>316C</td>
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<tr>
<td>12:30 - 13:30</td>
<td>Committee Meeting Cardio Pulmonary Systems (CPS)</td>
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<td>Committee Meeting Biomedical and Health Informatics (BHI)</td>
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<tr>
<td>12:30 - 13:30</td>
<td>Committee Meeting Biomedical Signal Processing (BSP)</td>
<td>324</td>
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Stay connected with the IEEE Engineering in Medicine & Biology Society throughout the year.

#EMBC18
Organizing Committee

Conference Chair: James Weiland
Conference Co-Chair: Michelle Khine
Program Committee Chair: Greg Suaning
Program Committee Co-Chair: Olaf Doessel
Finance Chair: Thomas Penzel
Workshop/Tutorial/Mini-Symposia/Invited Session/Special Session Chair: Atam Dhawan
Conference Editorial Board Chair: Jim Patton
Student/Young Professional/Membership Activity Chair: Steve Wright
Student Paper Competition Chair: Yingchun Zhang
Local Organizing Committee Chair: Aaron Ohta
Women in Engineering Co-Chairs: Lisa Lazareck-Asunta, Jennifer H. Shin
Exhibit and Sponsor Chair: Jack Judy
Webmaster: Hans van Oostrom

EMBS Executive Office Team:
Laura Wolf
Adrian Plummer
Janice Sandler
Michael Markowycz
Scott Woodhouse
International Program Committee

Dominique Durand, Case University, Cleveland, USA
Zhongze Gu, Southeast University, China
Bin He, University of Minnesota, Minneapolis, USA
Ellis Meng, University of Southern California, USA
Konstantina S. Nikita, National Technical University of Athens, Greece
Christian Roux, Institute Mines-Telecom, France
Mohamad Sawan, Ecole Polytechnique de Montreal, Canada
Thomas Stieglitz, University of Freiberg, Germany
Kenji Sunagawa, Kyushu University, Japan
Nitish Thakor, Johns Hopkins University (Baltimore, USA)/National University of Singapore
Ewaryst Tkacz, Silesian University of Technology, Poland
Bruce Wheeler, University of California, San Diego USA
Eung Je Woo, Kyung Hee University, South Korea
Program Themes and Chairs

Theme 1. Biomedical Signal Processing  
*Chair:* Laura Astolfi, *Sapienza University, Italy*  
*Co-Chair:* Luca Faes, *University of Palermo, Italy*

Theme 2. Biomedical Imaging & Image Processing  
*Chair:* Marius Linguraru, *George Washington University, USA*  
*Co-Chairs:* Julia Schnabel, *Kings College, U.K.*  
Chulhong Kim, *POSTECH, Korea*  
Miguel Angel Gonzalez Ballester, *ICREA/Pompeu Fabra University of Spain*

Theme 3. Micro- & Nano-Bioengineering; Cellular & Tissue Engineering  
*Chair:* Esmaiel Jabbari, *University of South Carolina, USA*

Theme 4. Computational Systems & Synthetic Biology; Multiscale Modeling  
*Chair:* Socrates Dokos, *University of New South Wales, Australia*  
*Co-Chair:* Jie Liang, *University of Illinois, Chicago, USA*

Theme 5. Cardiovascular & Respiratory Systems Engineering  
*Chair:* Thomas Heldt, *MIT, USA*  
*Co-Chairs:* Rama Mukkamala, *Michigan State University, USA*  
Philip de Chazal, *University of Sydney, Australia*

Theme 6. Neural Engineering, Neuromuscular Systems & Rehabilitation Engineering  
*Chair:* Silvestro Micera, *Ecole Politechnique Federale de Lausanne, France*  
*Co-Chair:* Michela Chiappalone, *Italian Institute of Technology (ITT), Italy*

Theme 7. Wearable Biomedical Sensors & Systems  
*Chair:* Stephen Redmond, *University of New South Wales, Australia*  
*Co-Chairs:* Alan Bourke, *Norwegian University of Science & Technology, Norway*  
Brian Caulfield, *University College Dublin, Ireland*

Theme 8. Bio-Robotics, Surgical Planning & Biomechanics  
*Chair:* Alicia Casals, *Technical University of Catalonia, Spain*  
*Co-Chairs:* Leonardo Ricotti, *Scuola Superiore Sant’Anna, Italy*  
Jorge Dias, *Khalifa University of Science, Technology and Research, Abu Dhabi*

Theme 9. Therapeutic & Diagnostic Systems, Devices & Technologies, Clinical Engineering  
*Chair:* Punit Prakash, *Kansas State University, USA*  
*Co-Chairs:* Jie Chen, *University of Alberta, Canada*  
Dieter Haemmerich, *Medical University of South Carolina, USA*

Theme 10. Biomedical & Health Informatics  
*Chair:* May Wang, *Georgia Tech, USA*  
*Co-Chair:* Konstantina S. Nikita, *National Technical University of Athens, Greece*

Theme 11. Biomedical Engineering Education & Society  
*Chair:* Metin Akay, *University of Houston, USA*
Theme 12. Translational Engineering for Healthcare Innovation & Commercialization

Chair: Atam Dhawan, NJIT, USA
Co-Chair: Steve Schacheter, Harvard Medical School, USA

Theme 13. Pharmaceutical Engineering

Chair: Kyungsoo Park, Yonsei University, Korea
Co-Chairs: Andrew Hooker, Uppsala University, Sweden
Jong Mo Seo, Seoul National University, South Korea
Program at a Glance

Monday, July 16, 2018
15:00 – 17:00  Registration Open

Tuesday, July 17, 2018
08:00 – 17:00  Registration Open
08:00 – 12:30  Workshops (pre-registration required)
13:30 – 17:30  Workshops (pre-registration required)

Wednesday, July 18, 2018
07:00 – 19:00  Registration Open
08:00 – 09:30  Minisymposium, Oral Sessions, Invited Sessions, Special Session
09:30 – 10:00  Coffee Break
10:00 – 11:30  Opening Ceremony & Keynote Session: John Webster
11:30 – 12:30  Keynote – Martha Morrell
12:30 – 13:30  Lunch Break on own, Exhibits Open, Poster Viewing
13:30 – 15:00  Minisymposium, Oral Sessions, Invited Sessions
15:00 – 15:30  Coffee Break, Exhibits Open, Poster Viewing
15:30 – 16:30  Theme Keynotes
16:30 – 17:15  Ignite Oral Presentation Sessions
17:15 – 19:00  Poster Session
19:00 – 20:30  Welcome Reception

Thursday, July 19, 2018
07:30 – 18:00  Registration Open
08:00 – 09:30  Minisymposium, Oral Sessions, Invited Sessions, Special Session
09:30 – 10:00  Coffee Break
10:00 – 11:30  Minisymposium, Oral Sessions, Invited Sessions
11:30 – 12:30  Keynote: Francine Kaufman
12:30 – 13:30  Lunch Break on own, Exhibits Open, Poster Viewing
13:30 – 15:00  Minisymposium, Oral Sessions, Invited Sessions
15:00 – 15:30  Coffee Break, Exhibits Open, Poster Viewing
15:30 – 16:30  Theme Keynotes
Friday, July 20, 2018

07:30 – 18:00 Registration Open
08:00 – 09:30 Minisymposium, Oral Sessions, Invited Sessions, Special Session
09:30 – 10:00 Coffee Break
10:00 – 11:30 Minisymposium, Oral Sessions, Invited Sessions
11:30 – 12:30 Keynote: Brian Otis
12:30 – 13:30 Lunch Break on own, Exhibits Open, Poster Viewing
12:30 – 13:30 Lunch with Leaders (pre-registration required)
12:30 – 14:00 Women in Engineering Luncheon with Elizabeth Iorns
13:30 – 15:00 Minisymposium, Oral Sessions, Invited Sessions
15:00 – 15:30 Coffee Break, Exhibits Open, Poster Viewing
15:30 – 16:30 Keynote – Joe Kiani
16:30 – 17:15 Ignite Oral Presentation Sessions
17:15 – 19:00 Poster Session
19:30 – 21:00 Student/Young Professional Reception

Saturday, July 21, 2018

07:30 – 12:00 Registration Open
08:00 – 09:30 Minisymposium, Oral Sessions, Invited Sessions
09:30 – 10:00 Coffee Break
10:00 – 11:30 Minisymposium, Oral Sessions, Invited Sessions
11:30 – 13:30 Lunch Break on own
13:30 – 15:00 Oral Sessions
15:00 – 16:30 Oral Sessions
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<td>Using Lasers and Polarization-Sensitive Technology in Retinal Scanning/Imaging</td>
<td>Gramatikov, Boris; Irsch, Kristina; Kang, Jin U.</td>
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<td>Fully Implantable Biomechatronic Organs</td>
<td>Ricotti, Leonardo; Menciassi, Arianna; Dario, Paolo</td>
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<td>Subcellular Neural Interfaces</td>
<td>Otto, Kevin; Chestek, Cynthia</td>
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<td>Deep Learning in Medical Imaging</td>
<td>Lee, Jae Sung; Seong, Joon-Kyung</td>
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<td>Pulse Wave Analysis and Pulse Simulator in the TCM Perspective</td>
<td>Kim, Jaeuk U</td>
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<td>Inan, Omer; Hahn, Jin-Oh</td>
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<td>Sensor-Based Behavioral Informatics: Advances in Understanding of Human Behavior</td>
<td>Sazonov, Edward; Jovanov, Emil</td>
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<td>Radiation Induced Acoustic Imaging</td>
<td>Min, Jung-Joon; Lee, Changho; Kim, Chulhong</td>
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<td>Advances in Technologies for Obesity Phenotyping and Weight Loss Intervention</td>
<td>Shen, Wei; Poon, Carmen C. Y.; Wang, May D.</td>
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<td>Digital Psychiatry: Smartphones, Sensors, and Signal Processing for Improving Detection and Outcomes in Serious Mental Illness</td>
<td>Torous, John; Larsen, Mark Erik; Lovell, Nigel H.</td>
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<td>Making Medical Devices Wireless in the Digital Health Age: Issues, Risks, and Practical Advice</td>
<td>Witters, Donald</td>
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<td>Technologies to Bypass Nervous System Injuries – The Path from Clinic to In-Home Use</td>
<td>Sharma, Gaurav</td>
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<td>Invasive and Non-Invasive Brain-Computer Interfaces for Medical Applications</td>
<td>Guger, Christoph; Kamada, Kyousuke; Ince, Nuri Firat</td>
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<td>Advanced Photoacoustic Imaging</td>
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<td>Artificial Intelligence in Magnetic Resonance Imaging</td>
<td>Du, Yiping; Liang, Zhi-Pei</td>
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<td>Pharmacometrics Approaches and Novel Drug Delivery Systems in Pharmaceutical Engineering</td>
<td>Park, Kyungsoo</td>
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<td>Using Engineering Approaches for Basic Discovery in Neuroscience</td>
<td>White, John; Durand, Dominique</td>
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<td>Microphysiological System for Drug Screening and Disease Modeling</td>
<td>Leong, Kam</td>
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<td>Time-Varying Estimation of Human Neuromechanics: Modern Approaches and Their Applications</td>
<td>Ludvig, Daniel; Perreault, Eric; Schouten, Alfred; Mugge, Winfred</td>
<td>Wednesday, July 18, 2018, 13:30-15:00, Meeting Room 319A</td>
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<td>How to Teach Robots How to Move: Lessons From Biological Motor Control</td>
<td>Forner-Cordero, Arturo; Dario, Paolo; Dias, Jorge</td>
<td>Wednesday, July 18, 2018, 13:30-15:00, Meeting Room 318B</td>
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<td>How Neurophysiology Informs Rehabilitation Engineering</td>
<td>Milosevic, Matija; Popovic, Milos R.</td>
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<td>Biomedical Imaging and Image Processing for Radiotherapy Application</td>
<td>Gu, Xuejun; Ji, Jim Xiuquan</td>
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<td>Mapping the Peripheral Nervous System with State-of-the-Art Nerve Interfaces</td>
<td>Seymour, John P.; Ludwig, Kip</td>
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<td>Khoo, Michael; Penzel, Thomas</td>
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<td>Challenges in Bioelectric Medicine</td>
<td>Butera, Robert; Bouton, Chad</td>
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<td>Classifying Neuro-Pathological Movement Patterns</td>
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<td>Challenges and Clinical Unmet Needs in Cardiac MRI: From Signal Processing to Artificial Intelligence</td>
<td>Kheradvar, Arash; Jafarkhani, Hamid</td>
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<td>Brain Computer Interface and Neurostimulation Technologies for Paralysis and Limb</td>
<td>Bouton, Chad; Gaunt, Robert; Coulter, Stewart;</td>
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<td>Chiappalone, Michela; Semprini, Marianna</td>
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<td>Cuffless Unobtrusive Blood Pressure Measurement: From Sensing, Mechanism,</td>
<td>Ding, Xiao-Rong; Carey, Carole C.</td>
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<td>Fujita, Hiroshi; Lee, Gobert</td>
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<td>Non-Contact and Remote Measurement of Blood Pressure and Perfusion based on Video</td>
<td>Yoshizawa, Makoto; Tanaka, Akira</td>
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<td>Robotic Neurorehabilitation: The State-of-Science</td>
<td>Patton, James</td>
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<td>Recent Innovations and New Health-Related Applications of Electrical Bioimpedance</td>
<td>Halter, Ryan; Inan, Omer; Woo, Eung Je; Freeborn,Todd; Sanchez, Benjamin; Rutkove, Seward</td>
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<td>Choi, Bernard</td>
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<td>Kim, Jason; Sanchez-Reillo, Raul; Caras, John;</td>
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<td>Kang, Sejin; Kim, Jeehoon</td>
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Special Sessions

Wednesday, July 18, 08:00 – 09:30 Meeting Room 304AB

Developing Open Standards Facilitates Technology Commercialization

Organizers:
Carole C. Carey, Former U.S. Food and Drug Administration
Esteben J Pino, Universidad de Concepcion

Rapid changes in medical technology and innovation in medical devices require a general guidance to ensure their usefulness to benefit public health as well as improved quality of life. This is what standards are for. Standards provide a general framework on what is expected, a common language to describe these new technologies and minimal performance requirements, to ensure repeatable and reliable results. The need for standardization is evident in order to produce quality, safe, reliable products as well as low costs. IEEE Standards Association participants drive the development of IEEE international standards in an open environment. IEEE-SA brings together experts from academia, government and companies to find consensus and promote the development of new solutions in diverse areas. The purpose of this special session is to present the work of current initiatives and engage people to collaborate or propose new areas where standards are needed.

Thursday, July 19, 08:00 – 09:30 Meeting Room 328

Early-Career Researcher Mentoring: Transitioning from Graduate Studentship to a Professional Career

Organizers:
Nitish Thakor, John Hopkins University
Aishwarya Bandla, National University of Singapore

This session is specially designed for Early-Career Researchers to make them industry-ready and a career springboard to launch as a young PI, scientist in industry or entrepreneur. We target the burning topics which intrigue young scientists and fresh graduates while they transition from studentship to postdoc to a permanent position. The session will be fashioned to hold 5 talks by eminent personalities in Biomedical Engineering and followed by a panel discussion format to answer Q&A from the floor. The workshop will conclude with a networking session. Join us at the IEEE EMBC Conference 2018, for this exciting Early-Career Researcher Series workshop and networking session.
The last four decades have witnessed great strides in fusing engineering and medicine to improve healthcare. With the rapid development and availability of new engineering tools such as data mining, nanotechnology, novel biomaterials, lab-on-a-chip system design, etc., biomedical engineering is reaching the cusp of a new era of innovation. Thanks to the large talent pool and interdisciplinary environment, universities and research institutions have always been at the forefront of technological innovation in biomedical engineering. However, despite the tremendous potentials, challenges remain on how to rapidly, efficiently integrate and translate these new technologies into novel and effective diagnostic or therapeutic applications. Many hurdles exist between academic research and commercialization, including organizational barriers, financial barriers, and regulatory barriers. For example, academic researchers often lack sufficient business training and mentoring, have unstable resources in terms of workforce and funding, and have limited experience in navigating complex legal and regulatory environment. To overcome such hurdles, a number of initiatives have been developed, such as the university-based incubators, entrepreneur-in-residence programs, public-private research partnerships, etc. In this Special Session, we organize a panel of experts representing different sectors in the field of biomedical engineering to discuss the best practices in translational research. The topics will cover university start-ups and social entrepreneurship, public and private funding sources, intellectual property management, and regulatory risk management. Attendees are encouraged to interact with the expert panel to identify problems and brainstorm solutions. The goal is to provide attendees a broader perspective and better understanding of translational research and innovation management, and foster transforming the fruits of academic research into successful commercialization.
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<td>High-Frequency Simulations and Measurements</td>
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<td>Multi-Technologies-Platforms: Advanced Sensors and Actuators for Life Science Applications</td>
<td>Miled, Amine; Ghafar-Zadeh, Ebrahim; Boukadoum, Mounir; Izquierdo, Ricardo; Chen, Jie; Magierowski, Sebastian</td>
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<td>Next Steps in Real-Life Brain Monitoring: Technologies for Wearable EEG</td>
<td>Casson, Alexander J.; Hairston, W. David; De Vos, Maarten; Kidmose, Preben</td>
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<td>Time-Series Modelling of Physiology: Inference, Implementation, and Interpretability</td>
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<td>Faes, Luca; Porta, Alberto</td>
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<td>Ludvig, Daniel; Rouse, Elliott</td>
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<td>Simulation of Neurological Disorders and Their Treatment With Neuromodulation</td>
<td>Dokos, Socrates; Shils, Jay</td>
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<td>Blackford, Ethan Brian; McDuff, Daniel J.; Estepp, Justin Ronald</td>
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<td>Fostering Healthcare Transformation through Wearable Sensors and Big Data at Work: Preventive, Pervasive and Personalized Care</td>
<td>Seoane, Fernando; Lindecrantz, Kaj</td>
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<td>Kuzum, Duygu; Chamanzar, Maysamreza</td>
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<td>Recent Advances in System, Algorithm and Applications of Diagnostic Ultrasound Imaging Modality</td>
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<td>Khandoker, Ahsan H; Kimura, Yoshitaka</td>
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<td>Sensors and Actuators for 3D Constructs of Living Cells</td>
<td>Wiest, Joachim; Alexander, Frank</td>
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<td>New Trends in Perinatal and Pediatric Imaging</td>
<td>Lepore, Natasha; Linguraru, Marius G.; Wang, Yalin; Grisan, Enrico</td>
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<td>Wearable EEG for Real-Life Brain Monitoring</td>
<td>De Vos, Maarten; Kidmose, Preben; Casson, Alexander J.; Hairston, W. David</td>
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<td>Artificial Vision: Latest Progress and Challenges Ahead</td>
<td>Fried, Shelley; Chan, Leanne LH</td>
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<td>Machine Learning / Deep Learning for Medical Image Analysis</td>
<td>Gonzalez Ballester, Miguel Angel; Schnabel, Julia</td>
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<td>Computational Human Models (V) Tumor Treating Fields</td>
<td>Makarov, Sergey; Horner, Marc; Noetscher, Gregory</td>
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<td>Computational Human Models (VI) Emerging Modeling and Measurement Techniques</td>
<td>Makarov, Sergey; Horner, Marc; Noetscher, Gregory</td>
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I would like to sincerely thank the following members of the Conference Editorial Board. There were 3529 submissions overall. Of these, 1508 were full contributed manuscripts that were part of our rigorous peer-review process. These papers were reviewed with on average three reviewers per paper, but a minimum of two. Theme editors also made initial “accept/reject” decisions and created a draft scientific program for each theme.

There were also 29 Invited Session proposals resulting in 143 1-page papers and 44 Minisymposia proposals, resulting in 185 1-page papers. These were also carefully reviewed by a separate review panel selected by the program committee.

Finally, there were also 834 Research Poster submissions this year. These were reviewed by a special team of associate editors, handpicked by the local organizers and the EMB technical Committees. I thank all these individuals for their time as we rapidly reviewed them.

Each year we maintain the highest quality of papers being submitted, each with ratings and feedback given to authors from reviewers. The continued dedication and commitment of Editors, Associate Editors and Reviewers, makes this Annual Conference an active and vibrant community of science. I also warmly thank the members of the Editorial Board, listed below, who made my work a real pleasure. It’s been an honour and privilege to be part of such a fine community.

James Patton, Editor in Chief for Conference Editorial Board

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  Editor: Atam P Dhawan

Theme 13. Pharmaceutical Engineering and Drug Delivery Systems
  Editor: Kyungsoo Park

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Theme 02. Biomedical Imaging and Image Processing
Amini, Amir
Anastasio, Mark
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Ding, Lei
Fatemi, Mostafa
Fenster, Aaron
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Kimura, Yuichi
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Liao, Hongen
Linguraru, Marius George
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Sidky, Emil
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Staib, Lawrence H.
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Vinegoni, Claudio
Watabe, Hirosi
Wu, Ed X.
Ying, Leslie
Du, Yiping

Fei, Baiwei
Toschi, Nicola

Theme 03. Micro/Nano-bioengineering; Cellular/Tissue Engineering and Biomaterials
Capadona, Jeffrey
Docheva, Denitsa
Morss Clynne, Alisa
Jabbari, Esmail
Lee, Hyunjoo Jenny
Almasri, Mahmoud
Peixoto, Nathalia
Lord, Megan
Siu, Vince

Theme 04. Computational Systems and Synthetic Biology: Multiscale Modeling
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Dokos, Socrates
Gardiner, Bruce
Grayden, David B.
Liang, Jie
Nielsen, Poul
May, Elebeoba

Theme 05. Cardiovascular and Respiratory Systems Engineering
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Chbat, Nicolas W.
Di Rienzo, Marco
Heldt, Thomas
Li, John K-J.
Sugimachi, Masaru
Tawhai, Merryn
Terrill, Philip
Mukkamala, Ramakrishna
Penzel, Thomas
Jané, Raimon

Theme 06. Neural and Rehabilitation Engineering
Abbas, James
Astolfi, Laura
Azevedo-Cost, Christine
Babiloni, Fabio
Botela, Robert
DiGiovanna, Jack
Guiraud, David
James, Christopher
Jones, Richard D.
Micera, Silvetro
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Perreault, Eric

Suaning, Gregg
Zouridakis, George
Lee, Hyunjoo Jenny
Weiland, James
Al-Jumaily, Adel
Carrozza, Maria Chiara
Cvetkovic, Dean
Tong, Shanbao
Ellis, Michael
Petroff, Neil
Esmailbeigi, Hananeh

Theme 07. Biomedical Sensors and Wearable Systems
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Bonato, Paolo
Boric-Lubecke, Olga
Choi, Jin-Woo
Demarchi, Danilo
Di Rienzo, Marco
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Peixoto, Nathalia
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Tamura, Toshiyo
Troyk, Philip
Wac, Katarzyna
Warren, Steve
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Lee, Sang Woo
Youn, Inchan
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Kim, Jae Hun
Lim, Hyung-Gyu
Choy, Youngbin
Caulfield, Brian

Theme 08. Biorobotics and Biomechanics
Abolhassani, Niki
Begg, Rezaul
BuSha, Brett
Theme 09. Therapeutic and Diagnostic Systems and Technologies

Chbat, Nicolas W.
Haemmerich, Dieter
Linte, Cristian A.
Panescu, Dorin
Prakash, Punit
Soda, Paolo
Yoshizawa, Makoto
Zderic, Vesna

Theme 10. Biomedical and Health Informatics

Barro, Senen
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Pham, Tuan D.
Redmond, Stephen James
Tyrer, Harry
Larsen, Mark
Wang, May D.
Pavel, Misha
Nikita, Konstantina (Nantia)
Jimison, Holly

Theme 11. Biomedical Engineering Education and Society

Kant Kumar, Dinesh
Magiarevic, Ratko
Monzon, Jorge E.
Sandham, William
Vilelhauaman, Luis
Zequera Diaz, Martha Lucia
van Oostrom, Johannes

Theme 12. Empowering Individual Healthcare Decisions through Technology

Dhawan, Atam
Principe, Jose
Carmena, Jose M.
Wheeler, Bruce

Theme 13. Pharmaceutical Engineering and Drug Delivery Systems

Kang, Dongwoo
Cai, Lintao
Park, Kyungsoo
Hyungil Jung, Ph.D.
Andrew Hooker, Ph.D.

Special Associate Editors for Minisymposia and Invited Sessions

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Tsai, Yu-Tung
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Tse, K. C.
Editor's Notes

The 40th Annual International Conference of the IEEE Engineering in Medicine and Biology Society hosted an electronic paper submission. It was the responsibility of the submitting Author to ensure the document was viewable and absent of errors. Said errors or viewing restrictions would prevent the Conference from including the paper in Digital Proceedings.

All conference papers were peer-reviewed by experts chosen by the Conference Editorial Board.

Full papers by theme, presented at EMBC 2018, Honolulu:
Keynote & Plenary Speakers

John Webster, Ph.D.
University of Wisconsin-Madison

Developing New Medical Devices
Wednesday, July 18, 2018, 10:00-11:30, Ballroom ABC

Biography:
John G. Webster received the B.E.E. degree from Cornell University, Ithaca, NY, USA in 1953, and the M.S.E.E. and Ph.D. degrees from the University of Rochester, Rochester, NY, USA in 1965 and 1967, respectively.

He is Professor Emeritus of Biomedical Engineering at the University of Wisconsin-Madison, USA. In the field of medical instrumentation, he does research on an implantable intracranial pressure sensor and a comfortable sleep apnea device that has no added pressure.


Dr. Webster is a fellow of the Institute of Electrical and Electronics Engineers, Instrument Society of America, American Institute of Medical and Biological Engineering, and Institute of Physics. He has been a member of the IEEE-EMBS Administrative Committee and the NIH Surgery and Bioengineering Study Section. He is the recipient of the 2001 IEEE-EMBS Career Achievement Award.
Martha Morrell, M.D.
Neuropace

Merging Brain Science with Data Science:
Transforming Treatment with a Window to the Brain”

Wednesday, July 18, 2018, 11:30-12:30, Ballroom ABC

Biography:
Dr. Morrell has been Chief Medical Officer of NeuroPace, Inc. and a Clinical Professor of Neurology at Stanford University since July 2004. Before joining NeuroPace, she was the Caitlin Tynan Doyle Professor of Clinical Neurology at Columbia University and Director of the Columbia Comprehensive Epilepsy Center at New York Presbyterian Hospital in New York City. Previously she was on the faculty of the Stanford University School of Medicine where she served as Director of the Stanford Comprehensive Epilepsy Center. A graduate of Stanford Medical School, she completed residency training in Neurology at the University of Pennsylvania, as well as fellowship training in EEG and epilepsy.

Dr. Morrell has been actively involved in helping to bring new therapies to patients. Her responsibilities at NeuroPace include all clinical and pre-clinical research for a novel responsive neurostimulator for the treatment of medically uncontrolled epilepsy. She has been actively involved in investigational trials of new epilepsy therapies as an academic investigator, and has authored or coauthored more than 150 publications.

Service to professional societies includes member of the Board of Directors of the American Epilepsy Society, member and Chair of the Board of the Epilepsy Foundation, member of the Council of the American Neurological Association and Chair of the Epilepsy Section of the American Academy of Neurology. She is an elected Ambassador for Epilepsy of the International League Against Epilepsy and received the American Epilepsy Society’s 2007 Service Award for outstanding leadership and service. She is the current Chair of the American Society for Experimental Neurotherapeutics.
Fran Kaufman, MD
Medtronic

The Journey to the Artificial Pancreas and My Role as a Pediatric Endocrinologist
Thursday, July 19, 2018, 11:30-12:30, Ballroom ABC

Biography:
Dr. Francine Kaufman was named Chief Medical Officer and Vice President of Global Medical, Clinical and Health Affairs in April 2009. In this role, Dr. Kaufman is the key architect of the company’s global diabetes strategy, as well as a leading voice for multi-disciplinary medical strategy across Medtronic. Prior to joining Medtronic in 2009, Dr. Kaufman served as Director of the Comprehensive Childhood Diabetes Center, and head of the Center for Endocrinology, Diabetes and Metabolism at Children’s Hospital Los Angeles.

Dr. Kaufman is a Distinguished Professor Emerita of Pediatrics and Communications at the Keck School of Medicine and the Annenberg School of Communications at the University of Southern California, and an attending physician at Children’s Hospital of Los Angeles. Dr. Kaufman was national president of the American Diabetes Association from 2002-2003. She was President of Shaping America’s Health, Chair of the National Diabetes Education Program, and she served as Chair of the Youth Consultative Section of the International Diabetes Federation. In 2007, she was Co-Chair of the Diabetes Work Group for the Department of Health Services of the State of California to recommend diabetes treatment and prevention strategies for the Medicaid population. In 2005, she was elected membership in the Institute of Medicine. In 2009, she was elected to membership in the Advisory Council of the Diabetes Branch of the National Institute of Health (NIH). Dr. Kaufman graduated from Northwestern University in 1972 and received her medical degree from Chicago Medical School in 1976. She completed her residency in pediatrics and fellowship in pediatric endocrinology at Children’s Hospital of Los Angeles.

Brian Otis, Ph.D.
Verily Life Sciences

From Circuits to Sensors: Building Connected Ecosystems for Health
Friday, July 20, 2018, 11:30-12:30, Ballroom ABC

Biography:
Dr. Brian Otis is a CTO at Verily Life Sciences and a Research Associate Professor at the University of Washington, Seattle. He received a B.S. in electrical engineering from the University of Washington, Seattle, and a M.S. and Ph.D. degree in electrical engineering from the University of California, Berkeley. He joined the faculty of the University of Washington in 2005 where he founded a chip design research lab that develops tiny, low power wireless chips for a variety of applications (neural recording, implantable devices, wearable on body wireless sensors, environmental monitoring, etc). He has previously held positions at Intel Corporation and Agilent Technologies and joined Google Inc in 2012. He was a founder of Google [x]'s smart contact lens project and leads the medical device efforts at Verily Life Sciences. He has served as a member of the Technical Program Committee of the International Solid State Circuits Conference (ISSCC) and Associate Editor of the Journal of Solid State Circuits (JSSC). His research interests include low power SoC design, exploring limitations of power and size of wireless systems, and the realization of novel biomedical devices.
Joe Kiani
Masimo Corporation

A Story of Innovation
Friday, July 20, 2018, 15:30-16:30, Meeting Room 316A

Biography:
As founder, Chairman and CEO of Masimo, Joe Kiani runs one of the most admired medical technology companies in the world. He co-invented – SET® Measure-through Motion and Low Perfusion pulse oximetry. Studies have shown that this revolutionary technology can reduce false alarms in pulse oximetry by 95%, can help detect life-threatening events, can help reduce blindness in premature babies and can help identify the existence of congenital heart conditions in newborns. In 2012, Kiani founded the non-profit, Patient Safety Movement Foundation (PSMF) with a commitment to eliminate preventable patient deaths in US hospitals and significantly reduce medical errors worldwide by the year 2020 (#0x2020). Over 4,500 hospitals have made a formal and public commitment to zero preventable deaths and over 100 healthcare technology companies have made a public pledge to share their data so that researchers can develop predictive algorithms that notify clinicians of dangerous trends. This worldwide collaboration is hoping to foster a “patient data superhighway” that will catch errors before they cause harm. In February 2018, the hospitals that had joined Patient Safety Movement reported 81,533 lives saved annually.

Sponsored by University of California Irvine
Mark S. Humayun, M.D., Ph.D.
USC

Abiotic-Biotic Retinal Interfaces
Wednesday, July 18, 2018, 15:30-16:30 Meeting Room 311

Biography:
Mark S. Humayun, MD, PhD, is the Cornelius J. Pings Chair in Biomedical Sciences, Professor of Ophthalmology, Biomedical Engineering, and Integrative Anatomical Sciences, Director of the USC Institute for Biomedical Therapeutics, and Co-Director of the USC Roski Eye Institute. Dr. Humayun is an internationally recognized pioneer in vision restoration. He has dedicated 30 years to the development of a bioelectronic artificial retina to restore sight to the blind. His perseverance and ability to lead multi-disciplinary teams culminated in this artificial retina (Argus II) to be approved by the FDA for restoring sight; the first and only implant to have such approval. This artificial retina is also approved in Europe, Canada, Middle East, and Asia Pacific. This bioelectronic retina has enabled patients who are totally blind for decades to see large objects and letters and navigate (e.g., avoid obstacles and find doors). Dr. Humayun continues to develop the technology towards providing color vision and reading smaller font.

He has an H factor of 52 with three of his papers alone referenced more than 2,800 times by subsequent researchers. He has 114 issued patents. For his extraordinary contribution to medicine, engineering, and humanity, he was awarded United States' highest technological achievement award, the National Medal of Technology and Innovation by President Obama. He is a member of the US National Academies of Medicine, Engineering and Inventors. Dr. Humayun is an IEEE Fellow and will receive the IEEE Biomedical Engineering Award in July 2018.
Ali Khademhosseini, Ph.D.
UCLA
Nano- and Microfabricated Hydrogels for Regenerative Engineering
Wednesday, July 18, 2018, 15:30-16:30, Meeting Room 312

Biography:
Ali Khademhosseini is Professor of Bioengineering, Chemical Engineering and Radiology at the University of California-Los Angeles (UCLA). He is the Founding Director of the Center for Minimally Invasive Therapeutics at UCLA as well as an Associate Director of the California NanoSystems Institute. He joined UCLA in Nov. 2017 from Harvard University where he was Professor of Medicine at Harvard Medical School (HMS) where he directed the Biomaterials Innovation Research Center (BIRC). He is recognized as a leader in combining micro- and nano-engineering approaches with advanced biomaterials for regenerative medicine applications. In particular, his laboratory has pioneered numerous technologies and materials for controlling the architecture and function of engineered vascularized tissues. He has authored ~550 journal papers (H-index >100 & >39,000 citations) and 60 books/chapters. In addition, he has delivered 300+ invited/keynote lectures.

Dr. Khademhosseini’s interdisciplinary research has been recognized by over 40 major national and international awards. In 2016, he received the Sr. Scientist Award of Tissue Engineering and Regenerative Medicine Society - Americas Chapter (TERMIS-AM) and in 2017 he received the Clemson Award of the Society for Biomaterials. He is also a fellow of AIMBE, Materials Research Society (MRS), Biomedical Engineering Society (BMES), Royal Society of Chemistry (RSC), Fellow of the Biomaterials Sciences and Engineering (FBSE) and American Association for the Advancement of Science (AAAS). Currently he serves on the editorial board of numerous leading journals as well as an Associate Editor for ACS Nano (IF: 13.3). He received his Ph.D. in bioengineering from MIT (2005), and MASc (2001) and BASc (1999) degrees from University of Toronto both in chemical engineering. Read more at: http://www.tissueeng.net/lab
Kamiar Aminian
Ecole Polytechnique Federale de Lausanne

Real World Movement Analysis in Health, Ageing and Disease using Body Worn Sensors: From Step Counting to 3D Motion Tracking

Wednesday, July 18, 2018, 15:30-16:30, Meeting Room 314

Biography:
Kamiar Aminian is currently a Professor with the Institute of Bioengineering and the Director of the Laboratory of Movement Analysis and Measurement at EPFL. His research focuses on methodologies for human movement monitoring and analysis in real world conditions mainly based on wearable technologies, with an emphasis on gait, physical activity, and sport. His research aims to perform outcome evaluation in orthopaedics, to improve motor function and intervention programs in aging and patients with movement disorders and pain, and to identify metrics of performance in sport science. He is teaching in the areas of physiology and instrumentation, medical devices, biomechanics, and sports. He has authored or co-authored over 500 scientific papers published in reviewed journals, and presented at the international conferences and holds 11 patents related to medical devices.
Sergio Cerutti, Ph.D.
Politecnico Di Milano

Advances in Biomedical Signal Processing: towards new Paradigms between Information Integration and Big Data in Health
Wednesday, July 18, 2018, 15:30 – 16:30 Meeting Room 315

Biography:
He is Professor in Biomedical Engineering at the Department of Electronics, Information and Bioengineering at the Politecnico in Milano (since 1994), where he is also Chairman of the B-cube Laboratory (Biosignals, Bioimaging and Bioinformatics) in the same Department. From 1990 to 1994 he has been Professor of Biomedical Engineering at the Department of Computer and System Sciences of the University of Rome “La Sapienza”. He has been Chairman of the Bachelor Track (Diploma Universitario) in Biomedical Engineering of the Politecnico in the period 1996-2000.

In the period 2000-2006 he has been Director of the Department of Bioengineering of the same Politecnico. In the period 2010-2012 he has been Chairman of the Programs of Biomedical Engineering (1st and 2nd level Degrees) at Politecnico. His research activity is mainly dedicated to various aspects of biomedical signal and data processing and modelling related to the cardiovascular system and in the field of neurosciences. He is the Author of more than 600 indexed international scientific contributions (about 300 on indexed scientific journals), according to ISI. His h-Index is 50 (ISI) or 63 (Google Scholar). He has coordinated various research projects at national and international levels in various topics of Biomedical Engineering and Bioinformatics.

He spent over a year as a Visiting Professor at the MIT and Harvard School of Public Health, Boston MA, USA, as well as a period of 3 months at the Department of Physics of the IST (Instituto Superior Tecnico), Technical University in Lisbon, Portugal. He is Chairman of EMB18, Italian IEEE Chapter on Engineering in Medicine and Biology. He is also Chairman of the Biomedical Engineering Group of Italian AEIT (Association of Electrical Engineering and Telecommunication).

He is a Fellow member of IEEE, AIMBE and EAMBES and member of other international and national scientific associations. Since 2013 he is Member of the Ethical Committee of “Istituto Europeo di Oncologia (IEO)” and “Centro Cardiologico Monzino” in Milano. From 2016 he is also Chairman of this Ethical Committee. He is also Member of the Ethical Committee of the Politecnico in Milano. In 2009 he received the IEEE-EMBS Academic Career Achievement Award. In 2010 he received the Milan Ambassador Award in recognition of his scientific activity finalized to the organization of important Conferences and initiatives in the Conference Center of the City of Milano. He is a Member of the Group of the best Italian Scientists.
Paul Thompson, Ph.D.
USC

ENIGMA, Big Data and the Human Brain: Imaging and Genomics of Brain Diseases in 70,000 Individuals from 35 Countries
Wednesday, July 18, 2018, 15:30-16:30, Meeting Room 316A

Biography:
Paul Thompson, Ph.D., directs the ENIGMA Center for Worldwide Medicine, Imaging & Genomics – a U.S. National Center of Excellence for “Big Data” analysis in biomedical research. Since 2009, Dr Thompson has led the ENIGMA consortium (http://enigma.usc.edu), a worldwide medical network of 340 institutions across 35 countries studying the major diseases of the brain, with MRI, diffusion MRI, resting state fMRI, EEG and genomics. ENIGMA has published the largest neuroimaging studies of 8 major brain disorders – including schizophrenia, bipolar disorder, major depression, ADHD and OCD – and leads international studies of Alzheimer’s disease, Parkinson’s disease, epilepsy, PTSD, anorexia, substance use, and anxiety disorders. In ENIGMA’s series of papers in Nature, Nature Neuroscience, and Nature Communications, 340 institutions pooled DNA and MRI data from over 40,000 people to identify over 100 genomic loci that influence brain structure, function and disease risk using massively-parallel distributed “big data” computing (Medland Nature Neuroscience 2015). ENIGMA analyzes factors that affect Alzheimer's disease progression, schizophrenia, depression and bipolar illness, HIV/AIDS, substance abuse, autism, and childhood brain disorders.

Dr. Thompson’s group created the first MRI maps of Alzheimer’s disease and schizophrenia spreading in the living brain, and a method to detect brain growth in children (published in the journal Nature). Thompson directs the Imaging Genetics Center and is Associate Director of USC’s new Stevens Institute for Neuroimaging and Informatics. At USC, he is a Professor of Neurology, Psychiatry, Radiology, Pediatrics, Engineering, and Ophthalmology. Dr. Thompson obtained his M.A. in Mathematics and Greek & Latin Languages from Oxford University, England, and his Ph.D. in Neuroscience from UCLA. His team of 20 researchers includes students in neuroscience, genetics, biomedical engineering, and biomedical physics. Collaborating with over 300 imaging labs around the world, Dr. Thompson’s 1,600 published research papers combine the talents of researchers in mathematics, neuroimaging, and clinical neurology (see http://igc.ini.usc.edu).
James Bassingthwaighte
University of Washington, Seattle

Physiome Projects in Biological Research: Practical Philosophy
Wednesday, July 18, 2018, 15:30-16:30, Meeting Room 316B

Biography:
Dr. James B. Bassingthwaighte MD Ph.D. is a Professor in the Department of Bioengineering, Biomathematics and Radiology at the University of Washington. Dr. Bassingthwaighte served as Director of the Center for Bioengineering at the University of Washington since 1975 for 5 years. He served as a Member of Advisory Board at Teranode Corporation. He serves as Director at National Space Biomedical Research Institute. He also serves as Director of the National Simulation Resource for Circulatory Mass Transport and Exchange. He is the Editor of the Annals of Biomedical Engineering and serves as Chairman of the Commission on Bioengineering in Physiology, International Union of Physiological Sciences. Dr. Bassingthwaighte joined the Mayo faculty, advancing to Professor of Physiology and of Medicine. He is Affiliate Professor of Physiology at Universiteit Maastricht, The Netherlands. Dr. Bassingthwaighte is the recipient of numerous awards such as an NIH Research Career Development Award, the Louis and Arthur Lucian Award of McGill University, the Alza Award of the Biomedical Engineering Society and the Burlington Resources Foundation Faculty Achievement Award for Research. He received his BA and MD from the University of Toronto. Following post-graduate work in Medicine and Cardiology at the Postgraduate Medical School of London, he obtained his Ph.D. in Physiology from the Mayo Graduate School of Medicine.

Adam Seiver, MD, PhD, MBA, FACS, FCCM
Philips Healthcare

Lessons from an Engineering Life in Medicine
Wednesday, July 18, 2018, 15:30-16:30, Meeting Room 316C

Biography:
Adam Seiver serves as Chief Medical Officer for the Patient Care and Monitoring Solutions business of Philips Healthcare, with responsibility for medical direction of respiratory, emergency care, and monitoring solutions. Prior to joining industry — Respironics in 2003, and then Philips via acquisition in 2008—he practiced trauma surgery and surgical intensive care for 20 years on the faculty of the Department of Surgery at Stanford Medical School, in Palo Alto, California. His research has focused on computer applications to critical care, emphasizing mathematical modeling and decision support. He has taught on the consulting faculty of Management Science and Engineering in the School of Engineering at Stanford University. He has also taught Decision Models and Optimization as a visiting professor in the business school at Duke University. His current clinical practice involves critical care telemedicine, directing the 161-bed eICU program (VISICU/Philips) of the Sutter Health System, Sacramento, California. Dr. Seiver holds an MD and PhD (Decision Analysis) from Stanford University, with an MBA from Duke University. He completed his surgery residency at Stanford University Hospital leading to Board certification in Surgery with Added Qualifications in Critical Care. Additionally, he is certified in Clinical Informatics by the American College of Preventative Medicine. He is a Fellow of both the American College of Surgery and the American College of Critical Care Medicine.
Biochemistry:
Ronald A. Siegel received his ScD (1984) in EECS from MIT, under the supervision of Profs Robert Langer and Alan J. Grodzinsky. His first academic job (1984-1998) was in the Departments of Biopharmaceutical Sciences and Pharmaceutical Chemistry at the University of California at San Francisco. Since 1998 he has been Professor of Pharmaceutics and Biomedical Engineering at the University of Minnesota, and he was Dept Head of Pharmaceutics from 1999-2009. He is Fellow of the American Association of Pharmaceutical Scientists, the American Institute for Medical and Biological Engineering, and the Controlled Release Society (CRS). He was President of CRS during 1997-1998. Prof Siegel's research interests include drug delivery, polymer science, microfabrication, and mathematical modeling.
Nicholas A Peppas, ScD
Cockrell Family Regents Chair in Engineering, The University of Texas at Austin

Nanotechnology and Bioengineering for Intelligent Medical Devices
Thursday, July 19, 2018, 15:30-16:30, Meeting Room 312

Biography:
Nicholas A. Peppas is the Cockrell Family Regents Chair in Engineering, the Departments of Chemical, Biomedical Engineering, Pediatrics and Surgery in the Dell Medical School, and Pharmacy, and Director of the Institute of Biomaterials, Drug Delivery and Regenerative Medicine at the University of Texas at Austin. His work in biomaterials, drug delivery, regenerative medicine and bionanotechnology follows a multidisciplinary approach by blending modern molecular and cellular biology with engineering principles to design the next-generation of medical systems and devices for patient treatment. Over the past 42 years he has set the foundations and rational design of drug delivery systems and developed models of drug and protein diffusion in controlled release devices and biological tissues. In 2012 he received the Founders Award of the National Academy of Engineering (NAE), the highest recognition of the Academy, for these contributions to the field.

Dr. Peppas is an elected member of the National Academy of Engineering, the National Academy of Medicine, the American Academy of Arts and Sciences, the National Academy of Inventors, the Chinese Academy of Engineering, the International Academy of Medical and Biological Engineering, the National Academy of France, the Royal Academy of Spain, the Academy of Athens (Greece) and the Academy of Texas. He has been recognized with awards from AIChE (Founders Award, William Walker Award, Institute Lecture, Jay Bailey Award, Bioengineering Award, Materials Award), the Biomedical Engineering Society (Distinguished Scientist Award), the American Institute of Medical and Biological Engineering (Galletti Award), the Society for Biomaterials (Founders, Clemson and Hall Awards), the Controlled Release Society (Founders, Heller and Eurand Awards) and other societies. In 2008, AIChE named him one of the “One Hundred Chemical Engineers of the Modern Era”. He has been President of the International Union of Societies of Biomaterials Science and Engineering, Chair of the Engineering Section of the American Association for the Advancement of Science, and Chair of the Council of BME Chairs. Previously, he served as President of SFB and the Controlled Release Society. He is a fellow of AAAS, AIChE, APS, ACS, MRS, SFB, BMES, AIMBE, CRS, AAPS, and ASEE. He has supervised the research of more than 110 PhDs and about 180 postdocs and graduate students.

Peppas holds a Dipl. Eng. from the NTU of Athens (1971), a Sc.D. from MIT (1973), and honorary doctorates from the Universities of Ghent (Belgium), Parma (Italy), Athens (Greece), Ljubljana (Slovenia), Patras (Greece), Santiago de Compostela (Spain) and the National Technical University of Athens (Greece), and honorary professorships from Sichuan University, Peking Union Medical College, the PLA Hospital and Medical School, and Beihang University, all in China.
Bradley Nelson
ETH Zurich

Soft Microrobotics and its Application in Medicine
Thursday, July 19, 2018, 15:30-16:30, Meeting Room 314

Biography:
Brad Nelson has been the Professor of Robotics and Intelligent Systems at ETH Zürich since 2002. He has over thirty years of experience in the field of robotics and has received a number of awards in the fields of robotics, nanotechnology, and biomedicine. He was named to the ‘Scientific American 50’, Scientific American magazine’s annual list recognizing fifty outstanding acts of leadership in science and technology. His lab is the undefeated international champion in Robocup’s Nanogram Soccer League, and he is in the Guinness Book of World Records for the ‘Most Advanced Mini Robot for Medical Use.’ His research group has won more than a dozen best paper awards at various international conferences and in international journals.

Prof. Nelson serves on the advisory boards of a number of academic departments and research institutes across North America, Europe, and Asia and is on the editorial boards of several academic journals. He has been the Department Head of Mechanical and Process Engineering at ETH, Chairman of the ETH Electron Microscopy Center, and is a member of the Research Council of the Swiss National Science Foundation. He is also a member of the board of directors of three Swiss companies.

Chrit Moonen
University Medical Center Utrecht

Image Guided High Intensity Focused Ultrasound
Thursday, July 19, 2018, 15:30-16:30, Meeting Room 315

Biography:
Chrit Moonen did his Masters in Molecular Sciences and his Ph.D. in biophysics (Wageningen University). He went for a postdoctoral period to the University of Oxford (Sir Georg Radda). He then worked at the University of California at Davis as a Visiting Research Scientist before becoming head of the NIH In Vivo NMR Research Center from 1987-1996. He moved back to Europe (Bordeaux, France) in 1996 where he has been director of the laboratory “Molecular and Functional Imaging: from Physiology to Therapy” until 2011. He is currently professor at the Division of Imaging at the University Medical Center in Utrecht, the Netherlands. He was President of the “International Society of Magnetic Resonance in Medicine” (2006), of the “Society for Molecular Imaging” (2009), and of European Society for Molecular Imaging (2016). He was chairman of the 2015 meeting of the International Society for Therapeutic Ultrasound. He received the European Magnetic Resonance Award 2000, is a Fellow of the International Society of Magnetic Resonance in Medicine, of the European Society of Magnetic Resonance in Medicine and Biology, and of the World Molecular Imaging Society. His recent work is mainly in MRI guided Focused Ultrasound, image guided drug delivery, and molecular and cellular imaging.
Yuan-Ting Zhang  
City University of Hong Kong  
Cardiovascular Health Engineering: from Wearable “MINDS” to Emerging Convergence Technologies  
Thursday, July 19, 2018 15:30 – 16:30 Meeting Room 316A

Biography:
Prof. Yuan-Ting Zhang is currently the Chair Professor of Biomedical Engineering at City University of Hong Kong. He was the Sensing System Architect in Health Technology at Apple Inc., California, USA in 2015. He was the founding Director of the Key Lab for Health Informatics of Chinese Academy of Sciences (CAS) and the founding Director of the CAS-SIAT Institute of Biomedical and Health Engineering. Professor Zhang dedicated his service to the Chinese University of Hong Kong from 1994 to 2015 in the Department of Electronic Engineering, where he served as the first Head of the Division of Biomedical Engineering and the founding Director of the Joint Research Center for Biomedical Engineering. Prof. Zhang was the Editor-in-Chief for IEEE Transactions on Information Technology in Biomedicine and the founding Editor-in-Chief of IEEE Journal of Biomedical and Health Informatics. He served as Vice President of IEEE EMBS, Technical Program Chair of EMBC’98, Conference Chair of EMBC’05, Internationale Committee Chair of EMBC’13, and Technical Program Co-Chair of EMBC’17. Prof. Zhang is currently the Editor-in-Chief for IEEE Reviews in Biomedical Engineering, Chair of 2018 Gordon Research Conference on Advanced Health Informatics, Chair of the Working Group for the development of IEEE 1708 Standard on Wearable Cuffless Blood Pressure Measuring Devices, and Chair of 2016-2018 IEEE Award Committee in Biomedical Engineering.

Prof. Zhang’s research interests include cardiovascular health informatics, unobtrusive sensing and wearable devices, neural muscular modeling and pHealth technologies. He was selected on the 2014, 2015, 2016 and 2017 lists of China’s Most Cited Researchers by Elsevier. He won a number of international awards including IEEE-EMBS best journal paper awards, IEEE-EMBS Outstanding Service Award, IEEE-SA 2014 Emerging Technology Award. Prof. Zhang is elected to be IAMBE Fellow, IEEE Fellow and AIMBE Fellow for his contributions to the development of wearable and m-Health technologies.

John Parrish, MD  
Harvard Medical School, Founder of CIMIT  
Lost in Translation  
Thursday, July 19, 2018, 15:30-16:30, Meeting Room 316B

Biography:
Dr. Parrish is Edward Wigglesworth Distinguished Professor at Harvard Medical School, and the Chief Executive Officer and Founder of CIMIT, the Consortia for Improving Medicine with Innovation and Technology. A Boston-based consortium of major teaching hospitals, engineering schools and research laboratories, CIMIT brings together financial resources, scientific insights and business expertise to catalyze innovations that will have a major beneficial impact on healthcare. Dr. Parrish also founded the MGH-Harvard Cutaneous Biology Research Center, at the time, the largest industry-academia collaboration in all of medicine. A graduate of Duke University and Yale University School of Medicine, Dr. Parrish has spent over 30 years translating basic research into clinical care. He has over 300 publications including 7 books and is a member of the National Academy of Medicine and the American Academy of Arts and Sciences.
Dr. Elizabeth Iorns is co-founder and CEO of Science Exchange, the online marketplace for scientific research. She is also an active angel investor and a part-time partner at Y Combinator, a seed-stage accelerator widely regarded as “the world’s most powerful start-up incubator”. Her recent investments include Perlara, NURX, Antera, Notable Labs, and (via Y Combinator) Gingko Bioworks, Atomwise, and Bikanta. Elizabeth has been recognized as one of the “Ten People that Mattered” by Nature Magazine and one of the “50 Women Who Are Changing The World” by WIRED. Elizabeth was previously an Assistant Professor at the University of Miami’s Miller School of Medicine, where her research focused on identifying mechanisms of breast cancer development and progression. She holds a B.S. in Biomedical Science from the University of Auckland and a Ph.D. in Cancer Biology from the Institute of Cancer Research in London.

Please note this event requires separate advance registration
Early Career Achievement Award

Carmen Poon
Chinese University of Hong Kong, China

“For contributions to wearable sensing and endoscopic surgery”

Nominated by: Guang-Zhong Yang
Academic Career Achievement Award

Neville Hogan
Massachusetts Institute of Technology, USA

“For exceptional contributions of leadership, education and mentorship in the field of biological robotics, neural control of movement, and human-machine interface.”

Nominated by: James Patton on behalf of the Technical Committee on BioRobotics
Professional Career Achievement Award

Howard Levin
Coridea, LLC

“For outstanding scientific, medical and technical contributions to the development of novel medical technologies and devices for the treatment hypertension and heart failure.”

Nominated by: Dorin Panescu
Technical Achievement Award

Elliot McVeigh
University of California, San Diego

“For recognition of his outstanding and pioneering contributions to the advance of the magnetic resonance field in cardiac studies, with many seminal works now translated in the clinical practice.”

Nominated by: Enrico Grisan
Technical Achievement Award

Ellis Meng
University of Southern California

“For outstanding contributions to biomedical microelectromechanical systems and their applications in drug delivery, microsensors, and neural interfaces”

Nominated by: Michael Khoo
IEEE EMBS Turkey Chapter has been very active in 2017-2018. The annual conferences technically co-sponsored by our chapter were very beneficial to our members by means of their rich scientific and social programs. Medical Technologies Congress, TIPTEKNO-2017 was held in Trabzon, Turkey on October 12-14, 2017.

The Scientific Meeting on Electrical-Electronics & Biomedical Engineering and Computer Science (EBBT’2017) took place in April 20-21, 2017 at the Tepekent Campus in Istanbul Arel University.

In addition to these conferences where the latest information is exchanged among researchers on technical advances in the Biomedical Engineering area, a variety of student activities have been organized. EMBS Turkey student conference held in Yeditepe University Conference Hall in May 2017 was a big hit with more than 900 participants and a great program.

IEEE EMBS ISC’18 EUROPE organized May 5-6, 2018 by Izmir Katip Celebi University, IEEE Student Chapter in Izmir, Turkey.

After being selected for the Outstanding Performance Award EMBS Chapter for 2018, the EMBS Turkey Chapter will continue working hard with the upcoming technical and social events for its members and students to promote the IEEE EMBS and Biomedical Engineering field.
The Carleton “The IEEE EMBS Biomedical Engineering Student Chapter of the University of Concepción, Chile (or “Capítulo de Ingeniería Civil Biomédica CICB Concepción”) is an organization created by students in June 2011. It started as a Student Club, and became a Student Chapter in 2016. Our organization is formed by undergraduate and graduate students from different disciplines such as Biomedical, Electrical and Bioengineering.

Our goal is to promote the development of Biomedical Engineering in the region and the country, and to bring science and technology closer to the community to contribute to the comprehensive formation of the students of Biomedical Engineering and related areas.

Within our activities, we have talks and workshops in various areas such as "Design and 3D printing", "PCB Design", "Development of Mobile Applications", "Introduction to Programming" and "IoT". We sponsor the "Programando Futuro" initiative that brings programming and electronics closer to primary school children. We are the organizers of the "Women in Engineering Seminar", which promotes the visibility of women in various engineering specialties. Also, we actively participate in the organization of the Annual Biomedical Engineering Congress (CAIB) that manages to bring together students and professionals from all over the country to talk about the advances developed in the area of engineering for medicine and health.

In 2012, our group was recognized by the EMBS for "Best New Club / Student Chapter" in San Diego, United States. In 2013, we received the "Outstanding Performance Award for Student Branch Club". Finally, this year we have the honor of being recognized by the "Outstanding Performance Award EMBS Student Chapter or Club for 2018". This recognition of our effort and volunteer work not only fills us with joy but motivates us to continue advancing and striving every day to inspire new students and future professionals in the field of biomedical engineering.
The IEEE Engineering in Medicine and Biology Chapter at University of Illinois at Chicago (UIC) was established in February 2017. Our young chapter is devoted to enhancing the professional development of all engineers in the context of engineering applied to medicine and biology. Our mission is to expose students to engineering principles outside of the curriculum, allowing the students to advance their engineering skill set and apply their knowledge to real-world problems.

In the first year of our establishment, we have hosted multiple events, including the Distinguished Lecturer where Dr. Michael Friebe, Otto von Guericke University, spoke about medical device design and how to prevent poor devices from reaching the market. Sixty attendees from various engineering departments were present at the talk. The chapter also directed and sponsored two ongoing projects. The first project focuses on constructing a humanoid robot, and the second project's goal is to develop a prosthetic arm that can be controlled using a brain-computer interface. We also attended the IEEE Region 4 Student Conference at Northern Illinois University.
IEEE Biomedical Engineering Award

Mark S. Humayun

For contributions to the bioelectric retinal implant

A pioneer in vision restoration, Mark S. Humayun's development of the Argus II bioelectric artificial retina is improving patient quality of life by restoring sight to the blind. The first and to date only artificial retina to be both approved by the U.S. FDA and receive the European CE mark, the device receives image data from an external camera that is wirelessly transmitted to an electronic array implanted on the retina, enabling patients who are blind to recover enough vision to see letters and large objects and navigate obstacles. Key to the realization of the implant was Humayun's ability to lead diverse teams of engineers and combine the unique elements of electrical/biomechanical engineering, optics, materials science, and miniaturization. Humayun's current focus with the implant is on providing color vision and the ability to read smaller text.

An IEEE Fellow, Humayun is a professor at the University of Southern California, Los Angeles, CA, USA.

Sponsored by the IEEE Circuits and Systems Society
and IEEE Engineering in Medicine and Biology Society
IEEE Medal for Innovations in Healthcare Technology

Thomas F. Budinger

Thomas F. Budinger’s groundbreaking work has defined how radiation can be safely applied to medical imaging, enabling the development of positron emission tomography (PET) and single photon emission computed tomography (SPECT) radiotracers critical to investigating conditions including cancer, heart disease, Alzheimer’s disease, and brain injury. His research group at the Lawrence Berkeley National Laboratory has made world-class contributions in the fields of radiotracer development, radiotracer imaging, and tomographic image reconstruction. Budinger pioneered the use of the 82-Rb generator for heart imaging, which was commercialized under the brand name CardioGen-82, for clinical use. He performed the first SPECT dynamic imaging study of the human heart, which required a novel combination of list-mode data acquisition, cardiac gating, attenuation measurements of the spatially inhomogeneous human chest, and tomographic reconstruction. Budinger’s team created the Primer on Reconstruction Algorithms, which was distributed worldwide during the late 1970s and 1980s, allowing scientists and students to gain hands-on experience in computed tomography using radionuclides or X-rays. This work also led to the quantitative understanding of how time-of-flight could be used in PET and how the statistical noise in reconstructed PET images could be reduced as the timing resolution was improved. These concepts are found in PET scanners being used today. Under his leadership, the construction of the PET 280 and the PET 600 scanners demonstrated how the limits of PET resolution could be approached. The PET 600 was constructed using 600 individually paired detectors and photomultiplier tubes to obtain a landmark 2.3-mm resolution. Budinger was a key player in the development of the Committee on Medical Internal Radiation Dose (MIRD) guidelines for safe use of radiopharmaceuticals. The MIRD Primer was published in 1988, providing outlined models and methods for determining organ dosimetry. He described, from biophysical principles and experiments, the safety of magnetic resonance imaging that is leading to human studies at 10 Tesla and beyond.

An IEEE Life Member and member of both the U.S. National Academy of Medicine and National Academy of Engineering, Budinger is a professor of bioengineering at the University of California, Berkeley, Berkeley, CA, USA.
Pamela Ann Abshire
for contributions to CMOS biosensors

Gary Christensen
for contributions to medical image registration and analysis

Dario Farina
for contributions to neuromuscular electrophysiology and neurorehabilitation

Thomas Furness
for leadership in virtual and augmented reality

Cuntai Guan
for contributions to brain-computer interfaces and applications

Kullervo Hynynen
for contributions to image-guided therapeutic focused ultrasound

Leon Iasemidis
for developments in epileptic seizure prediction and closed-loop brain stimulation

Lynette Jones
for contributions to tactile and thermal displays

Sung Kim
for contributions to the design of microfabricated neural prosthetic devices

Pablo Laguna Larosa
for contributions to cardiac biomedical signal processing

Zhenqiang Ma
for contributions to flexible and biodegradable microwave electronics

Paul Meaney
for contributions to microwave tomography and its translation to clinical use

Konstantina Nikita
for contributions to bioelectromagnetics and implantable antennas for medical applications

Barbara Oakley
for outreach through online engineering pedagogy

Constantinos Pattichis
for contributions to medical diagnostic and mobile health systems

Josien Pluim
for contributions to medical image analysis

Badrinath Roysam
for contributions to image processing algorithms for biological microscopy

Dinggang Shen
for contributions to medical image analysis

Jocelyne Troccaz
for contributions to robotics and imaging for medical applications

Stephen T Wong
for leadership in drug discovery, systems biology, bioinformatics, and health analytics

Habib Zaidi
for contributions to quantitative multimodality molecular imaging
EMBS Past Award Recipients

Professional Career Achievement Awards
• 2018: Howard Levin
• 2017: Karl E. Friedl
• 2015: Matthew O’Donnell
• 2011: Yongmin Kim
• 2009: Luke Lee
• 1979: Robert Plonsey
• 1974: Dean L. Franklin
• 1973: Donald F. Childers
• 1968: Wilson Greatbatch
• 1967: Herman Schwan
• 1963: Otto Schmitt
• 1961: Britton Chance
• 1956: Edward F. MacNichol

Academic Career Achievement Awards
• 2018: Neville Hogan
• 2017: Nitish Thakor
• 2016: Maryellen Giger
• 2015: Bin He
• 2014: Max A. Viergever
• 2013: Theodore W. Berger
• 2012: Peter Hunter
• 2011: K. Kirk Shung
• 2010: Robert S. Langer
• 2009: Sergio Cerutti
• 2008: Roger Barr
• 2007: Jose Principe
• 2006: Jean-Louis Coatrieux
• 2005: Ewart Carson
• 2004: Michael R. Neuman
• 2003: Ante Santic
• 2002: Willis J. Tompkins
• 2001: John G. Webster
• 2000: Max Schaldach
• 1999: Fernand A. Roberge
• 1997: J. Lawrence Katz
• 1996: Max E. Valentinuzzi
• 1995: Floyd Dunn
• 1994: Wilson Greatbatch
• 1993: John M. Reid
• 1992: Edwin L. Carstensen

Early Career Achievement Award
• 2018: Carmen Poon
• 2017: Chulhong Kim
• 2016: Lei Ding
• 2015: Danielle S. Bassett
• 2014: Qi Wang
• 2013: Muhammad H. Zaman
• 2012: Utkan Demirci
• 2011: Jose M. Carmena
• 2010: Dario Farina
• 2009: Silvestro Micera
• 2008: Ali Khademhosseini
• 2007: Tejal Desai
• 2006: Alejandro Frangi
• 2005: Stephen Boppart
• 2004: Susan Hagness
• 2003: Paolo Vicini
• 2002: Dorin Panescu
• 2001: David Beebe
• 2000: James Collins
• 1999: Zhi-Pei Liang
• 1997: Metin Akay
• 1996: Joan E. Sanders
• 1995: Atam P. Dhawan
• 1993: Rory A. Cooper
• 1992: Yitzhak Mendelson
• 1991: Blake Hannaford
• 1990: Janie M. Fouke
• 1988: Yongmin Kim
• 1986: George V. Kondraske
Technical Field Awards

- 2018: Elliot McVeigh
- 2018: Ellis Meng
- 2017: Guang-Zhong Yang
- 2017: Anant Madabhushi
- 2016: Stephen Boppart
- 2016: Jeffrey Fessler
- 2015: Nigell Lovell
- 2015: Russell H. Taylor
- 2014: Brian T. Cunningham
- 2014: Zhi-Pei Liang
- 2013: Nicolas Chbat
- 2013: Ali Khademhosseini
- 2012: Rashid Bashir
- 2011: Michael Unser
- 2011: Lihong Wang
- 2010: Xiaochuan Pan
- 2010: Kenji Sunagawa
- 2010: Nitish Thakor

Distinguished Service Award

- 2018: No Award Given
- 2016: Bruce Wheeler
- 2015: Zhi-Pei Liang
- 2014: Bin He
- 2013: Donna Hudson
- 2011: Maximus A. Viergever
- 2010: Yongmin Kim
- 2008: Henrietta Galiana
- 2007: Nathalie Gosset
- 2006: Yuan-Ting Zhang
- 2005: Jose Principe
- 2004: John Enderle
- 2003: Christian Roux
- 2002: Swamy Laxminarayan
- 2001: Metin Akay
- 2000: Jack Iverson
- 1999: Jean–Louis Coatrieux
- 1998: Susan M. Blanchard
- 1996: Michael R. Neuman
- 1995: Charles Robinson
- 1994: Barry Feinberg
- 1993: Eli Fromme
- 1992: Swamy Laxminarayan
- 1990: Alvin Wald
- 1983: Eli Fromme

William J. Morlock Award

- 2017: Ali Khademhosseini
- 2012: Reese S. Terry, Jr.
- 2011: Rahul Mehra
- 2010: Mark Kroll
- 2009: Dorin Panescu

EMBS Past Award Recipients
2018 EMBC Student Paper Competition

Geographic Finalists

North America
Sina Miran
University of Maryland, College Park
Real-Time Decoding of Auditory Attention from EEG via Bayesian Filtering

Europe
Beatrice Barra
University of Fribourg
Selective Recruitment of Arm Motoneurons in Nonhuman Primates Using Epidural Electrical Stimulation of the Cervical Spinal Cord

Asia –Pacific
Seongyeon Kim
Korea Advanced Institute of Science and Technology (KAIST)
Improved Target Specificity of Transcranial Focused Ultrasound Stimulation (TFUS) Using Double-Crossed Ultrasound Transducers

Middle East–Africa
Mohamed A. Bahloul
King Abdullah University of Science and Technology
Three-Element Fractional-Order Viscoelastic Arterial Windkessel Model

South America
Lucas Fonseca
Universidade de Brasília
Investigating Upper Limb Movement Classification on Users with Tetraplegia as a Possible Neuroprosthesis Interface
2018 EMBC Student Paper Competition

Open Finalists

Michael Langenmair
Universitätsklinikum Freiburg
Low Temperature Approach for High Density Electrical Feedthroughs for Neural Implants Using Maskless Fabrication Techniques

Mohammadjavad Eslamian
University of Houston
Direct Measurement of Mass Transport in Actuation of Conducting Polymers Nanotubes

Christine F Martindale
Friedrich-Alexander-Universität Erlangen-Nürnberg
Mobile Gait Analysis Using Personalised Hidden Markov Models for Hereditary Spastic Paraplegia Patients

Giulia Gerboni
University of Melbourne
Cortical Brain Stimulation with Endovascular Electrodes

Nil Zeynep Gurel
Georgia Institute of Technology
Unobtrusive Heartbeat Detection from Mice Using Sensors Embedded in the Nest

Chen-Ying Hung
National Tsing Hua University
Improving Young Stroke Prediction by Learning with Active Data Augmenter in a Large-Scale Electronic Medical Claims Database

Dung Phan
Deakin University
Effect of Parkinsonism on Proximal Unstructured Movement Captured by Inertial Sensors

Enzo Mastinu
Chalmers - University of Technology
Myoelectric Signals and Pattern Recognition from Implanted Electrodes in Two TMR Subjects with an Osseointegrated Communication Interface

Alejandro Azocar
University of Michigan
Perception of Mechanical Impedance During Active Ankle and Knee Movement

Ravikiran Mane
Nanyang Technological University
Quantitative EEG As Biomarkers for the Monitoring of Post-Stroke Motor Recovery in BCI and Tdcs Rehabilitation
EMBS Student Paper Competition Award Recipient:

First Place Award Recipient:
Gabriela Torres
University of North Carolina, Chapel Hill & North Carolina State University

Second Place Award Recipient:
Soojin Lee
University of British Columbia

Third Place Award Recipient:
Eli Kinney-Lang
University of Edinburgh
The IEEE Engineering in Medicine and Biology Society advances the application of engineering sciences and technology to medicine and biology, promotes the profession, and provides global leadership for the benefit of its members and humanity by disseminating knowledge, setting standards, fostering professional development, and recognizing excellence.

The field of interest of the IEEE Engineering in Medicine and Biology Society is the application of the concepts and methods of the physical and engineering sciences in biology and medicine. This covers a very broad spectrum ranging from formalized mathematical theory through experimental science and technological development to practical clinical applications. It includes support of scientific, technological and educational activities.

PUBLICATIONS

IEEE PULSE: A Magazine of the IEEE Engineering in Medicine and Biology Society
Transactions on Biomedical Engineering
Journal of Biomedical and Health Informatics Life Sciences Letters
Transactions on Neural Systems and Rehabilitation Engineering Transactions on Medical Imaging
Transactions on NanoBioscience
Transactions on Computational Biology and Bioinformatics Transactions on Computational Imaging
Transactions on Biomedical Circuits and Systems Reviews on Biomedical Engineering
Journal on Translational Engineering in Health & Medicine
IEEE Transactions on Radiation and Plasma Medical Sciences
Journal on Electromagnetics, RF & Microwaves in Medicine
Electronic Products

ELECTRONIC PRODUCTS

EMBS Electronic Resource

CONFERENCES

Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)
IEEE EMBS Special Topic Conference on Neural Engineering (NER)
International Symposium on Biomedical Imaging (ISBI)
International Conference on Biomedical Robotics and Biomechatronics (BIOROB)
International Conference on Rehabilitation Robotics (ICORR)
Healthcare Innovation and Point-Of-Care Healthcare Technologies Conference (HICPT)
EMBS Micro and Nanotechnology in Medicine (MNMI)
IEEE EMBS International Conference on Body Sensor Networks (BSN)
IEEE EMBS International Conference on Biomedical and Health Informatics (BHI)
IEEE EMBS Student Conferences: For Students, By Students
Grand Challenges Conference Series (GCBE)

SUMMER SCHOOLS sponsored by EMBS

International Summer School on Biomedical Imaging
International Summer School on Biomedical Signal Processing
International Summer School on Biocomplexity, Biodesign and Bioinnova
International Summer School on Information Technology in Biomedicine
International Summer School on Emerging Technologies and Applications in Telemedicine
International Summer School on Neural Engineering
International Summer School on Computer Modeling in Medicine
Understanding the Program Coding

The conference program is scheduled for a specific day, time slot, and track.

A session code in the program will therefore have the following format:

- **WeAT1** This is a schedule code with a designating ‘A’ time slot on Wednesday (8:00-9:30) for track ‘T1’.
The IEEE Transactions on NanoBioscience (TNB) is a quarterly journal that publishes basic and applied research papers dealing with the study of bio-molecules, cells, tissues, and their assemblies into higher level constructs in the nanometer range with respect to engineering, physics, chemistry, modeling, and computer science.

Since its inception in 2002, the Transaction has published more than 400 articles. TNB is financially sponsored by the IEEE Engineering in Medicine and Biology, Computational Intelligence, Computer, and Robotics and Automation Societies and the IEEE Systems, Man, and Cybernetics Society.

TNB is indexed in all major databases including the Thomson Reuters Web of Knowledge, NLM Medline, and PubMed.

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The content of acceptable papers ranges from experimental results, technological development, formalized mathematical theory and mathematical techniques to engineering and medical/clinical/environmental applications and reviews.

All manuscripts are handled electronically through Manuscript Central at:

http://mc.manuscriptcentral.com/tnb-embs

TNB is a hybrid journal allowing either:

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· New Open Access (author-pays OA) manuscript submission at the discounted rate of $1,750 per article

The OA option enables unrestricted public access to the article via IEEE Xplore. The OA option will be offered to the author at the time the manuscript is submitted. If selected, the OA fee must be paid before the article is published in the journal. If you have unusual circumstances about this, please contact the Editor-in-Chief.

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The IEEE peer review standard of excellence is applied consistently to all submissions. All accepted articles will be included in the print issue mailed to subscribers.

Be sure to recommend IEEE Transactions on NanoBioscience to your librarian!

Editor-in-Chief:

Prof. Henry Hess
Department of Biomedical Engineering
Columbia University
hhess@columbia.edu
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Visit http://embs-jobs.careerwebsite.com/ to get started!

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Call for Papers

The 2nd IEEE Life Sciences Conference (LSC) will be held in Montreal, Canada 28-30 October 2018. The IEEE Life Sciences Technical Community (LSTC), which is supported by multiple IEEE member societies, is the sponsor of the conference. As such, the conference will cover diverse topics within the theme.

LSC 2018 will include tutorials and a scientific program composed of plenary talks, invited sessions, lecture and poster presentations of peer-reviewed papers. In addition, there will be a host of special events, including a Standards Track, an IEEE Women in Engineering event, a High School Competition, a graduate students’ competition, and other Initiatives to be announced shortly.

All are encouraged to submit papers containing original contributions to be considered for presentation at LSC 2018. Accepted 4-page regular papers will be published in the conference proceedings and included in IEEE Xplore. To communicate late scientific findings and to encourage attendance by a broader audience, LSC 2017 will provide additional presentation opportunities via a second track featuring posters.

Topics include, but are not limited to:

1. Smart medical devices and technologies
2. Wearable sensors and Smart garments/textiles
3. Biosensor technologies, mobile-health apps
4. Signal and image processing and technologies
5. Data preprocessing, compression and transmission
6. Data mining, cleansing, management, and integration
7. Synthetic biology
8. Big Data for healthcare
9. Virtual reality (VR) in healthcare and medicine
10. Point of Care devices and technologies
11. Rehabilitation and assistive technologies
12. Deep learning and pattern recognition
13. Bioinformatics, and Biometrics
14. Electronic medical records, and IoT for healthcare
15. Brain-computer interfaces
16. Wireless communication and networking
17. Energy harvesting/scavenging technology
18. Medical control systems
19. Security and privacy
20. Social implications of technology

Schedule for 2-page & 4-page Paper Submissions

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<tr>
<th>Schedule for 2-page &amp; 4-page Paper Submissions</th>
<th>Schedule for Special Session and Tutorial Proposals</th>
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<tr>
<td>Submission New Deadline: June 18, 2018</td>
<td>Submission of Special session proposal: June 25, 2018</td>
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<tr>
<td>Notification of Acceptance/Rejection: August 20, 2018</td>
<td>Submission of Tutorial proposal: June 25, 2018</td>
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<tr>
<td>Final Abstract/Paper Submissions: September 10, 2018</td>
<td>Notification of Acceptance/Rejection: July 5, 2018</td>
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For any information, please visit the LSC’18 webpage: [http://lsc.ieee.org/2018/](http://lsc.ieee.org/2018/) or contact General Co-Chairs: mohamad.sawan@polymtl.ca or carolyn.mcgregor@uoit.ca
CALL FOR PAPERS - Biomedical grand challenges facing our society can be addressed at the scale of biology with Micro and Nanoscale technologies. These technologies hold great potential for diagnostics, therapeutics, enhancement of physiological function, disease management, or early monitoring and prevention. IEEE EMBS is sponsoring the fourth biennial Conference on Micro and Nanotechnology in Medicine to foster interaction between scientists, engineers, entrepreneurs and medical researchers in the context of real-world medical needs and issues. The Conference will promote vigorous and open dialogue towards groundbreaking solutions to previously unaddressed problems and cutting edge technologies for faster, more quantitative, and less expensive biomedical solutions using advances in Micro and Nanotechnology.

Papers in the following technical areas are welcome:

- Cellular Technologies
- Neurotechnologies
- Diagnostics
- Regenerative Medicine
- Nanomedicine
- Life Science Research Tools
- Oncology
- Imaging
- DNA Nanotechnology

Confined Speakers

Rashid Bashir
Anja Boisen
Elliot Botvinick
Cullen Buie
Brian Cunningham
David Eddington
Polly Fordyce
Deborah Fygenson
Wei Gao
Steven George
Keisuke Goda
Carlotta Guiducci
Amy Herr
Dean Ho
I-Ming Hsiung
Dan Huh
David Issadore
Noo Li Jeon
Ravi Kapur
Ali Khademhosseini
Catherine Klapperich
Sunghoon Kwon
Abraham Lee
CT Lim
Jackie Linnes
Michel Maharbiz
Scott Manalis
Nick Melosh
Ellis Meng
Hywel Morgan
Aydogan Ozcan
Kamlesh Patel
Erkin Seker
Ajay Shah
William Shih
Hirofumi Shintak
Anderson Shum
David Sinton
Tom Soh
Aaron Streets
Winnie Svendsen
Shoji Takeuchi
Ashleigh Theberge
Mehmet Toner
Albert van den Berg
Aaron Wheeler
David Wood
Paul Yager

Submission Instructions

Submissions will be accepted for poster presentations. Authors will be given the option to submit research as 1 Page Poster Research Paper (non-publishable) or to submit research as a Contributed Paper (up to 4 pages, publishable) in IEEE Xplore.

Contributed Papers (up to 4 Pages)
Submission site OPENS: April 20, 2018
Submission Deadline: July 30, 2018
Accept/reject notification: August 20, 2018
Final submission deadline: September 10, 2018

1-page papers (Research Poster Papers)
Submission OPENS: April 20, 2018
Submission deadline: August 20, 2018
Accept/reject notification: September 4, 2018
Final submission deadline: September 17, 2018

https://mnm.embs.org/2018/
"Neurotechnologies for Medical Therapies and Beyond"

The 9th International IEEE EMBS Conference on Neural Engineering will be held at the Hilton San Francisco Union Square Hotel on March 20-23, 2019.

The conference program will feature preconference workshops, plenary talks, invited talks, and poster presentations. All papers will be peer reviewed. Accepted full-length 4-page papers will appear in the Conference Proceedings.

Members of the Neuroscience, Engineering and Bioethics Communities are encouraged to attend this highly multidisciplinary meeting. The conference will highlight emerging neurotechnologies for the restoration and enhancement of impaired sensory, motor, and cognitive functions, novel engineering tools for elucidating brain function, and discussions on the ethics of neurotechnology use and adoption by impaired and healthy individuals.

Contributions are invited in the following areas (but not limited to):

- Brain-machine and brain-computer interfaces
- Central and peripheral neural interfaces
- Nanotechnology, circuits and materials
- Bioelectronic medicine
- Neural prostheses
- Neuromodulation
- Neurorehabilitation
- Neural decoding and encoding algorithms
- Neural computation and modeling
- Neural imaging
- Neuroethics

Paper submission opens: 23 July 2018

- Contributed paper submission deadline: 21 September 2018
- Acceptance Announcement: 26 October 2018
- Final Submission Contributed Papers: 9 November 2018
- 1-page Abstract submission deadline: 16 November 2018
- 1-page Abstract Acceptance Announcement: 27 November 2018
- Final Submission 1-page Abstracts: 4 December 2018

https://neuro.embs.org/2019/
The IEEE International Symposium on Biomedical Imaging (ISBI) is a scientific conference dedicated to mathematical, algorithmic, and computational aspects of biological and biomedical imaging, across all scales of observation. It fosters knowledge transfer among different imaging communities and contributes to an integrative approach to biomedical imaging. ISBI is a joint initiative from the IEEE Signal Processing Society (SPS) and the IEEE Engineering in Medicine and Biology Society (EMBS). The 2019 meeting will be held in Venice, Italy and will include tutorials, challenges and a scientific program composed of plenary talks, invited special sessions, as well as oral and poster presentations of peer-reviewed papers. High-quality papers are requested containing original contributions to the topics of interest including image formation and reconstruction, image processing and analysis, dynamic imaging, visualization, image quality assessment, machine learning for big image data, and physical, biological, and statistical modeling. Accepted 4-page regular papers will be published in the symposium proceedings published by IEEE and included in IEEE Xplore. To encourage attendance by a broader audience of imaging scientists and clinical professionals and to offer additional presentation opportunities, ISBI 2019 will include special sessions with specific clinical focus and it will continue to have a second track featuring posters selected from 1-page abstract submissions.

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**Important Dates**

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<td>Marius George Linguraru</td>
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<td>Enrico Grisan</td>
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<td>Submission Opens</td>
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<td>Plenary Chairs</td>
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<td>Tutorials</td>
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<tr>
<td><strong>1 page papers</strong></td>
<td>Clinical Liaisons</td>
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<tr>
<td>Submission Opens</td>
<td>Marco Catani</td>
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<tr>
<td>Submission Deadline</td>
<td>Emanuele Neri</td>
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<td>Accept/Reject Notification</td>
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<td>Final Submission</td>
<td>Hasan Al-Nashash</td>
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Further information and details about the Conference, including Keynotes, Program, Registration, and Venue, will be available on: [https://biomedicalimaging.org/2019/](https://biomedicalimaging.org/2019/)
Biomedical engineering ranging from wellness to intensive care medicine
EMBC Future Locations

2019 → Berlin, Germany
23 - 27 July 2019

2020 → Montreal, Canada
20 - 24 July 2020

2021 → Guadalajara, Mexico
Summer 2021

2022 → Glasgow, Scotland
Summer 2022

2023 → Sydney, Australia
Summer 2023
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**Featured Speakers**

**Michael Taborn**  
*Chief Architect, IOTG Health Sector*  
Michael Taborn is presently the Chief Architect for the Healthcare Sector within the Intel IOT Group. This organization is responsible for supporting Intel devices and technologies in the global medical device marketplace. His current responsibilities include advising medical device customers on the security, architecture, and performance capabilities of Intel technologies as well as designing new approaches to security and remote patient monitoring applicable in healthcare use cases.

**Douglas Raymond**  
*GM, Semantic Scholar, Allen Institute for Artificial Intelligence*  
Douglas Raymond is the General Manager of Semantic Scholar, an AI-powered search engine and discovery tool that helps researchers survey the world’s scholarly knowledge and extract insights. He previously worked at Amazon where he held GM and Product leadership roles in the Alexa, performance advertising, and mobile applications groups, and at Google, where he held product management roles in the AdWords business and as the China monetization lead, based in Shanghai.
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### Program in Chronological Order

*Note: Minisymposia (MS) session talk times are only indicative and talks will be scheduled in such a way as to occupy the 90 minute time slot at the discretion of the MS organizer.*

#### Wednesday, 18 July 2018

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<th>Time</th>
<th>Session</th>
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<th>Title</th>
<th>Authors</th>
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<td>08:00-08:15</td>
<td>WeAT1.1</td>
<td>Meeting Room 311</td>
<td>A Bayesian Parametric Model for Quantifying Brain Maturation from Sleep-EEG in the Vulnerable Newborn Baby</td>
<td>Pillay, Kirubin* (University of Oxford); Dereymaeker, Anneleen (Dept. of Development and Regeneration, University of Leuven); Jansen, Katrien (Dept. of Pediatrics, University Hospital Gasthuisberg, Leuven); Naulaers, Gunnar (University Hospitals Leuven); De Vos, Maarten (University of Oxford)</td>
</tr>
<tr>
<td>08:00-08:30</td>
<td>WeAT1.2</td>
<td></td>
<td>Multiple Brain Activities during Sequential Memory Encoding – MEG Study of Modulation of Alpha-Band Rhythm</td>
<td>Yokosawa, Koichi* (Hokkaido University); Takase, Ryoken (Hokkaido University); Chitose, Ryota (Hokkaido University); Kimura, Keisuke (Hokkaido University)</td>
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<td>08:30-08:45</td>
<td>WeAT1.3</td>
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<td>Relationships between Behavioral and Single-Trial Target Detection Performance with Magnetoencephalography</td>
<td>Ceccotti, Hubert* (California State University Fresno)</td>
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<td>08:45-09:00</td>
<td>WeAT1.4</td>
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<td>Non-Invasive, Cost-Effective, Early Diagnosis of Mild Cognitive Impairment in an Outpatient Setting: Pilot Study</td>
<td>White, Austin T.* (East Carolina University); Merino, Ruby (East Carolina University); Kim, Sunghan (East Carolina University)</td>
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<td>09:00-09:15</td>
<td>WeAT1.5</td>
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<td>Functional Connectivity Analysis on Mild Alzheimer’s Disease, Mild Cognitive Impairment and Normal Aging using fNIRS</td>
<td>Tang, Tong Boon* (Universiti Teknologi Petronas); Chan, Yee Ling (Universiti Teknologi Petronas)</td>
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<td>09:15-09:30</td>
<td>WeAT1.6</td>
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<td>Cortical Functional Reorganization in Response to Intact Forelimb Stimulation from Acute to Chronic Stage in Rodent Amputation Model</td>
<td>Li, Yuanqi (Shanghai Jiao Tong Univ.); Li, Yao (Shanghai Jiao Tong Univ.); Omire-Mayor, Daryl (School of BioMedical Engineering, Science &amp; Health Systems, Drexel Univ.); Bo, Bin (Shanghai Jiao Tong Univ.); Li, Hangdao (Shanghai Jiao Tong Univ.); Tong, Shanbao* (Shanghai Jiao Tong Univ.)</td>
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<tr>
<td>08:00-09:00</td>
<td>WeAT2.1</td>
<td>Meeting Room 312</td>
<td>Real-Time Decoding of Auditory Attention from EEG via Bayesian Filtering</td>
<td>Miran, Sina* (University of Maryland, College Park); Akram, Sahar (Facebook); Sheikhhattar, AliReza (University of Maryland College Park); Simon, Jonathan Z. (University of Maryland, College Park); Zhang, Tao (Starkey Hearing Technologies); Babadi, Behtash (University of Maryland)</td>
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<td>08:30-08:45</td>
<td>WeAT2.2</td>
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<td>Bayesian Model Selection Framework to Improve Calibration of Continuous Glucose Monitoring Sensors for Diabetes Management</td>
<td>Acciaroli, Giada* (University of Padova); Vettoretti, Martina (University of Padova); Facchinetti, Andrea (University of Padova); Sparacino, Giovanni (University of Padova)</td>
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<tr>
<td>08:45-09:00</td>
<td>WeAT2.3</td>
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<td>A Smoother State Space Multitaper Spectrogram</td>
<td>Song, Andrew* (Massachusetts Institute of Technology); Chakravarty, Sourish (Massachusetts Institute of Technology); Brown, Emery N. (MGH-Harvard Medical School-MIT)</td>
</tr>
<tr>
<td>09:00-09:15</td>
<td>WeAT2.4</td>
<td></td>
<td>A Point Process Characterization of Electrodermal Activity</td>
<td>Subramanian, Sandya* (Massachusetts Institute of Technology); Barbieri, Riccardo (Politecnico di Milano); Brown, Emery N. (MGH-Harvard Medical School-MIT)</td>
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<tr>
<td>09:15-09:30</td>
<td>WeAT2.5</td>
<td></td>
<td>Bayesian Transfer Learning for the Prediction of Self-Reported Well-Being Scores</td>
<td>Christinaki, Eirini (University of Essex); Poli, Riccardo (University of Essex); Citi, Luca* (University of Essex)</td>
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<tr>
<td>08:00-09:30</td>
<td>WeAT3.1</td>
<td>Meeting Room 314</td>
<td>Segmentation of the Uterine Wall by an Ensemble of Fully Convolutional Neural Networks</td>
<td>Buri, Peter (Faculty of Informatics, University of Debrecen); Hajdu, Andras (University of Debrecen); Edgardo Manuel Felipe, Riverón (Laboratorio de Inteligencia Artificial, Laboratorios del Centro de Investigación en Computación); Harangi, Balazs* (University of Debrecen)</td>
</tr>
<tr>
<td>08:00-08:15</td>
<td>WeAT3.2</td>
<td></td>
<td>Fully Automated Spleen Localization and Segmentation using Machine Learning and 3D Active Contours</td>
<td>Wood, Alexander* (University of Michigan); Soroshmehr, S.M.Reza (University of Michigan, Ann Arbor); Farzaneh, Negar (University of Michigan); Ward, Kevin (University of Michigan); Fessell, David (University of Michigan); Gryak, Jonathan (University of Michigan); Najarian, Kayvan (University of Michigan - Ann Arbor)</td>
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<tr>
<td>08:30-08:45</td>
<td>WeAT3.3</td>
<td></td>
<td>Alzheimer’s Disease Classification using Bag-of-Words based on Visual Pattern of Diffusion Anisotropy for DTI Imaging</td>
<td>Eldeeb, Ghaidaaw W.* (Faculty of Engineering, Cairo University); Zayed, Nourhan (Electronics Research Institute); Yassin, Inas (Cairo University)</td>
</tr>
</tbody>
</table>
**Self-Affine Transformation Applied to Smartphone-Based Sensors of Smartphones**

Shi, Jun* (Shanghai University); Yan, Minjun (Shanghai First Maternity and Infant Hospital); Dong, Yun (Shanghai East Hospital of Tongji University); Zheng, Xiao (Shanghai University); Zhang, Qi (Shanghai University); An, Hedi (Shanghai East Hospital of Tongji University)

09:00-09:15  
WeAT3.5  
Classification of Informatio Frames in Colonoscopy Videos using Convolutional Neural Networks with Binarized Weights

Akbari, Mojtaba (Isfahan University of Technology); Mohrekesh, Majid (Isfahan University of Technology); Rafiei, Shima (IUT); Soroushmehr, S.M.Reza* (University of Michigan, Ann Arbor); Karimi, Nader (Isfahan University of Technology); Samavi, Shadrokh (McMaster University); Najarian, Kayvan (University of Michigan - Ann Arbor)

09:15-09:30  
WeAT3.6  
Polyp Segmentation in Colonoscopy Images using Fully Convolutional Network

Akbari, Mojtaba (Isfahan University of Technology); Mohrekesh, Majid (Isfahan University of Technology); NasrEsfahani, Ebrahim (Isfahan University of Technology); Soroushmehr, S.M.Reza* (University of Michigan, Ann Arbor); Karimi, Nader (Isfahan University of Technology); Samavi, Shadrokh (McMaster University); Najarian, Kayvan (University of Michigan - Ann Arbor)

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**Sleep Theranostics (I)**

Minisymposium: Towards P4 Medicine

Chair: Khoo, Michael (University of Southern California)  
Co-Chair: Penzel, Thomas (Charite Universitätssmedizin Berlin)

08:00-08:15  
WeAT4.1  
Improved Methods for Detection of Obstructive Sleep Apnoea Detection

de Chazal, Philip* (University of Sydney); Sadr, Nadi (University of Sydney); Naivala Pathirannehelage, Madhuka (University of Sydney); Tabatabaei Balaee, Aghar (University of Sydney)

08:15-08:30  
WeAT4.2  
EIT Imaging of Chest and Upper Airway for OSA Diagnosis

Woo, Eung Je* (Kyung Hee University); Oh, Tong In (Kyung Hee University); Wi, Hun (Kyung Hee University)

08:30-08:45  
WeAT4.3  
Monitoring Sleep Apnea Patients using Built-In Sensors of Smartphones

Jané, Ramon* (Institut de Bioenginyeria de Catalunya (IBEC)); Bianco-Almazán, Dolores (Institute for Bioengineering of Catalonia); Castillo, Yolanda (Institute for Bioengineering of Catalonia (IBEC)); Ferrer Lluis, Ignasi (Institute for Bioengineering of Catalonia); Estrada, Luis (Institut de Bioenginyeria de Catalunya)

08:45-09:00  
WeAT4.4  
Self-Affine Transformation Applied to Smartphone-Based Oximetry to Detect Sleep Apnea

Garde, Ainar* (University of Twente); Nagnar, Sunil Belur (Massachusetts General Hospital); Kheirkhah Dekhordi, Parastoo (University of British Columbia); Petersen, Christian (British Columbia Children's Hospital); Ansermino, J. Mark (British Columbia's Children's Hospital); Dumont, Guy (University of British Columbia)

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**Minisymposium: Invasive and Non-Invasive Brain-Computer Interfaces for Medical Applications (49g4y)**

Chair: Guger, Christoph (g.tec Medical Engineering GmbH)  
Co-Chair: Kamada, Kyousuke (Asahikawa Medical University)

08:00-08:15  
WeAT5.1  
Invasive and Non-Invasive Brain-Computer Interfaces for Medical Applications

Kamada, Kyousuke* (Asahikawa Medical University); Guger, Christoph (g.tec Medical Engineering GmbH); Ince, Nuri Firat (University of Houston)

08:15-08:30  
WeAT5.2  
Towards Automated Prediction of STN-DBS Electrode Implantation Track in Parkinson's Disease by using Local Field Potentials

Ince, Nuri Firat* (University of Houston)

08:30-08:45  
WeAT5.3  
ECog based Passive Functional Brain Mapping

Kamada, Kyousuke* (Asahikawa Medical University)

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**Minisymposium: Technologies to Bypass Nervous System Injuries – The Path from Clinic to In-Home Use (7dsvd)**

Chair: Sharma, Gaurav (Battelle)

08:00-08:15  
WeAT6.1  
Long-Term High Performance Neuroprosthetic Arm Control

Collinger, Jennifer* (University of Pittsburgh); Downey, John (University of Chicago); Weiss, Jeffrey (University of Pittsburgh); Gaunt, Robert (University of Pittsburgh); Boninger, Michael (University of Pittsburgh)

08:15-08:30  
WeAT6.2  
Technologies to Bypass Nervous System Injuries – The Path from Clinic to In-Home Use

Burkhart, Ian* (Ian Burkhart Foundation)

08:30-08:45  
WeAT6.3  
Neural Decoding Algorithm Requirements for a Take-Home Brain Computer Interface

Friedenberg, David* (Battelle Memorial Institute); Schwemmer, Michael (Battelle Memorial Institute); Skomrock, Nicholas (Battelle Memorial Institute); Sederberg, Per (University of Virginia); Ting, Jordyn (Battelle Memorial Institute); Bockbrader, Marcia (The Ohio State University); Sharma, Gaurav (Battelle)

08:45-09:00  
WeAT6.4  
A Sleeve Electrode Array for Myoelectric Control of Functional Electrical Stimulation-Assisted Hand Function

Weber, Douglas* (University of Pittsburgh); Sharma, Gaurav (Battelle); Friedenberg, David (Battelle Memorial Institute); Colachis, Sam (Battelle Memorial Institute); Zhang, Mingming (Battelle Memorial Institute); Urbin, Mike (University of Pittsburgh School of Medicine); Sarma, Devapratim (University of Washington); Sethi, Amit (University of Pittsburgh)

09:00-09:15  
WeAT6.5  
Implanted FES+BCI for Restoration of Reaching and Grasping in Persons with Chronic Tetraplegia

Aibaye, Abidemi Bolu* (Cleveland VA Medical Center); Hochberg, Leigh (VA / Brown U. / MGH / Harvard Med. School); Kirsch, Robert (Case Western Reserve University)

09:15-09:30  
WeAT6.6  
GAIN Clinical Performance Evaluation for a Take-Home Brain Computer Interface for Grasp

Bockbrader, Marcia* (The Ohio State University); Eipel, Kaitlin (The Ohio State University); Friedenberg, David (Battelle Memorial Institute); Sharma, Gaurav (Battelle)
WeAT7: 08:00-09:30 Meeting Room 316C
Minisymposia: Making Medical Devices Wireless in the Digital Health Age: Issues, Risks, and Practical Advice (d2q4f) (Minisymposium)
Chair: Witters, Donald (Food and Drug Administration)

08:00-08:15 WeAT7.1
Delivering on the Promise of Wirelessly Enabled Digital Health and the Internet of Health (IOH) Wireless Connectivity Issues, Risks, Technologies and Practical Advice
Raymond, Phil* (Philips)

08:15-08:30 WeAT7.2
Medical Device Systems and Bluetooth Wireless Technology: Opportunities and Challenges
Saltzstein, Bill* (Code Blue Communications, Inc)

08:30-08:45 WeAT7.3
Trends and Issues for Wireless Medical Devices
Witters, Donald* (Food and Drug Administration)

WeAT8: 08:00-09:30 Meeting Room 318A
Minisymposia: Digital Psychiatry: Smartphones, Sensors, and Signal Processing for Improving Detection and Outcomes in Serious Mental Illness (4bgx6) (Minisymposium)
Chair: Torous, John (Digital Psychiatry Program)
Co-Chair: Larsen, Mark Erik (University of New South Wales)

08:00-08:15 WeAT8.1
Automatic Speech-Based Assessment of Mental State via Mobile Device
Epps, Julien* (The University of New South Wales)

08:15-08:30 WeAT8.2
Profiling Suicide Risk on Twitter using Linguistic Style and Response Rate
O'Dea, Bridianne* (University of New South Wales)

08:30-08:45 WeAT8.3
Unobtrusive Monitoring of Mental Health Symptoms
Carr, Oliver (University of Oxford); Nicias, Palmius (University of Oxford); Saunders, Kate (University of Oxford); Goodwin, Guy (University of Oxford); De Vos, Maarten* (University of Oxford)

08:45-09:00 WeAT8.4
Using Smartphones and Wearable Sensors to Assess Mental Health
Pratap, Abhishek* (Sage Bionetworks / University of Washington); N. Remm, Brenna (University of Washington); A. Anguera, Joaquin (University of California, San Francisco); A. Areán, Pat (University of Washington)

09:00-09:15 WeAT8.5
Preventing Suicide with Real-Time Feedback Systems
Larsen, Mark Erik* (University of New South Wales); Shand, Fiona (University of New South Wales); Nicholas, Jennifer (University of New South Wales); Christensen, Helen (University of New South Wales)

09:00-09:15 WeAT8.6
Pilot Spatial Analysis of Digital Phenotyping Smartphone Activity for Mental Health Research in a Schizophrenia Patient Cohort
Pearson, John (Harvard Medical School); Keshavan, Matcheri (Harvard Medical School); Sandoval, Lius (Harvard Medical School); Torous, John* (Digital Psychiatry Program)

WeAT9: 08:00-09:30 Meeting Room 318B
Minisymposia: Artificial Intelligence in Magnetic Resonance Imaging (5skqm) (Minisymposium)
Chair: Du, Yiping (Shanghai Jiao Tong University)

08:00-08:15 WeAT9.1
MoDL: Model-Based Deep Learning Architecture for Inverse Problems
Aggarwal, Hemant Kumar* (University of Iowa); Mani, Merry (University of Iowa); Jacob, Mathews (University of Iowa)

08:15-08:30 WeAT9.2
Using Artificial Intelligence to Transform Cardiac MRI Reconstruction Methods
DiBella, Edward V.R.* (University of Utah); Gibbons, Eric (University of Utah); Mendes, Jason (University of Utah); Tian, Ye (University of Utah); Adluru, Ganesh (University of Utah)

08:30-08:45 WeAT9.3
A Marriage of Spin Physics with Machine Learning for Ultrastiff MRSI: Method and Applications
Liang, Zhi-Pei (University of Illinois at Urbana-Champaign); Li, Yudu (Tsinghua University); Peng, Xi (Shenzhen Institutes of Advanced Technology); Clifford, Bryan (University of Illinois at Urbana-Champaign); Lam, Fan (University of Illinois at Urbana-Champaign); Du, Yiping* (Shanghai Jiao Tong University); Li, Yao (Shanghai Jiao Tong University)

08:45-09:00 WeAT9.4
KI-Net: Cascaded Convolutional Neural Network for Dynamic MR Image Reconstruction
Liang, Dong* (Shenzhen Institutes of Advanced Technology)

WeAT10: 08:00-09:30 Meeting Room 319A
Minisymposia: Advances in Technologies for Obesity Phenotyping and Weight Loss Intervention (6wj49) (Minisymposium)
Chair: Poon, Carmen C.Y. (Chinese University of Hong Kong)

08:00-08:15 WeAT10.1
New Technologies: Role in Diagnosing and Managing Obesity
Heymsfield, Steven* (Pennington BioMedical Research Center)

08:15-08:30 WeAT10.2
Food Photography and Mhealth in Obesity Research and Weight Loss
Martin, Corby* (Pennington BioMedical Research Center); DiBiano, Robert (Louisiana State University); Abdelwahab, Manal (Louisiana State University); Apolzan, John (Pennington BioMedical Research Center); Thomas, Diana (West Point); Gunturk, Bahadir (Istanbul Medipol University)

08:30-08:45 WeAT10.3
Validating Three-Dimensional Photonic Imaging for Obesity Phenotyping in Adults and Children
Ng, Bennett (University of California, Berkeley and University of California, San Francisco Graduate Program in Bioengineering); Piel, Michaela (University of California, San Francisco); Bourgeois, Brianna (Pennington BioMedical Research Center); Heymsfield, Steven (Pennington BioMedical Research Center); Shepherd, John* (University of Hawaii Cancer Center)
08:00-08:15 WeAT11.1 A Feasibility Study of an X-Ray Induced Acoustic Imaging System with a Portable X-Ray Source and a Focused Ultrasound Transducer Park, Eunyeeong (Pohang University of Science and Technology (POSTECH)); Lee, Donghyun (POSTECH); Lee, Changho* (Chonnam National University Medical School); Kim, Chulhong (Pohang University of Science and Technology)

08:15-08:30 WeAT11.2 Non-Contrast Agents for Photoacoustic Imaging Min, Jung-Joon* (Chonnam National University Medical School)

08:30-08:45 WeAT11.3 Ex vivo Biological Tissue Denaturation Observation using Speckle Variance Optical Interferometry Lee, Changho* (Chonnam National University Medical School)

08:00-08:15 WeAT12.1 Capturing and Modifying Eating Behavior in the Wild Sazonov, Edward* (University of Alabama)

08:15-08:30 WeAT12.2 Image based Dietary Behavior and Analysis using Deep Learning Fang, Shaobo (Purdue University); Yarlagadda, Sri Kalyan* (Purdue University); Wang, Yu (Nvidia); Zhu, Fengqing (Purdue University); Boushey, Carol (University of Hawaii Cancer Center); Kerr, Deb (Curtin University); Delp, Edward (Purdue University)

08:30-08:45 WeAT12.3 Improving individuals' Behavior and State Estimates with Model-Based Data Science and Sensor Fusion Pavel, Misha* (Northeastern University); Li, Xuan (Northeastern University); Kos, Maciej Rafal (Northeastern University); Khaghani-Far, Iman (Northeastern University); Gordon, Christine (Northeastern University); Jimson, Holly (Northeastern University); Williams, Raleigh (Northeastern University)

08:45-09:00 WeAT12.4 Mood, Stress and Sleep Sensing with Wearable Sensors and Mobile Phones Sano, Akanè* (Massachusetts Inst. of Tech.); Taylor, Sara (Massachusetts Inst. of Tech.); Jacques, Natasha (Massachusetts Inst. of Tech.); Chen, Weixuan (Massachusetts Inst. of Tech.); Lopez-Martinez, Daniel (Massachusetts Inst. of Tech.); Nosakhare, Ehimwenma (Massachusetts Inst. of Tech.); Rudovic, Ognjen (Massachusetts Inst. of Tech.); Umematsu, Terumi (NEC Corp.); Picard, Rosalind (Massachusetts Inst. of Tech.)

08:00-08:15 WeAT13.1 Linear-Array-Based Photoacoustic Imaging of Human Palm, Foot, and Breast Wang, Yuehang (University at Buffalo); Lim, Rachel Su Ann (University at Buffalo); Nyayapathi, Nikhila (University at Buffalo); Xia, Jun* (University at Buffalo)

08:15-08:30 WeAT13.2 Second Generation Pulsed Laser Diode based Compact Photoacoustic Tomography System Kalva, Sandeep Kumar (Nanyang Technological University); Upputuri, Paul Kumar (Nanyang Technological University); Pramanik, Manojit* (Nanyang Technological University)

08:30-08:45 WeAT13.3 Quantitative Photoacoustic Imaging without Optical Inversion Cai, Chuanqiang (Tsinghua University); Deng, Kexin (Tsinghua University); Luo, Jianwen (Tsinghua University); Ma, Cheng* (Tsinghua University, Beijing, China)

08:45-09:00 WeAT13.4 High-Speed Wide-Field Photoacoustic Microscopy Yao, Junjie* (Duke University)

09:00-09:15 WeAT13.5 Multi-Parametric Photoacoustic Microscopy Hu, Song* (University of Virginia)

08:00-08:15 WeAT14.1 Tonometric and Skin Surface Measurement of Pulse Transit Time: Relevance to Cuffless Measurement of Blood Pressure Avolio, Alberto P* (Macquarie University); Kazzi, Christina (Macquarie University); Blackmore, Conner (Macquarie University); Shirbani, Fatemeh (Macquarie University, Faculty of Medicine and Health Sciences); Tan, Isabella (Macquarie University); Butlin, Mark (Macquarie University)

08:15-08:30 WeAT14.2 PAT vs. PTT Difference in Cardiac Patients: A Possible Confounding Factor in the Cuffless BP Measure in Clinics Di Rienzo, Marco* (Fondazione Don Carlo Gnocchi); Vaini, Emanuele (IRCCS PoliClinico San Donato); Lombardi, Prospero (Fondazione Don Carlo Gnocchi ONLUS)

08:30-08:45 WeAT14.3 Tracking Blood Pressure Changes in Anesthetized Patients: The Optical Blood Pressure Monitoring (oBPM) Technology Sola, Josep (CSEM - Centre Suisse d'Electronique et Microtechnique); Ghamri, Yassine (CHUV); Proença, Martin (CSEM SA); Braun, Fabian (CSEM SA); Pierrcl, Nicolas (CHUV); Verjus, Christophe (CSEM); Bertschi, Martia (CSEM); Schoettker, Patrick (CHUV – Centre Hospitalier Universitaire Vaudois); Lemkaddem, Alija* (CSEM)

08:45-09:00 WeAT14.4 Local Pulse Wave Velocity and Cuffless Blood Pressure Assessment using ARTSENS Pm, Nabeel* (Indian Institute of Technology Madras); V, Raj Kiran (IIT Madras); Joseph, Jayaraj (HTIC, Indian Institute of Technology Madras); Sivaprakasam, Mohanasankar (Indian Institute of Technology Madras)

09:00-09:15 WeAT14.5 SeismoWatch 2.0: Wrist-Worn Sensing System for Pulse Transit Time based Cuffless Blood Pressure Estimation Carek, Andrew (Georgia Institute of Technology); Inan, Omer* (Georgia Institute of Technology)
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<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
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<td>08:00-08:15</td>
<td>WeAT15</td>
<td>Meeting Room 323A</td>
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<tr>
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<td>Minisymposia: Pulse Wave Analysis and Pulse Simulator in the TCM Perspective (54x72) (Minisymposium)</td>
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<td>Chair: Kim, Jaeuk U (Korean Institute of Oriental Medicine)</td>
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<tr>
<td>08:00-08:15</td>
<td>WeAT15.1</td>
<td>Robotic Tonometry System for Accurate Measurement of Radial Artery Pulse Waveform</td>
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<td>Kim, Young-Min* (Korea Institute of Oriental Medicine)</td>
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<td>08:15-08:30</td>
<td>WeAT15.2</td>
<td>Dynamic Pulse Wave Characteristics of In-Line Arranged Piezo-Resistive Pressure Sensors with Cover Layers</td>
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<td>Jun, Min-Ho (KIOM); Jeon, Youngji (Korea Institute of Oriental Medicine); Kim, Young-Min* (Korea Institute of Oriental Medicine)</td>
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<td>08:30-08:45</td>
<td>WeAT15.3</td>
<td>Soft Computing Techniques for Pulse Pattern Classification</td>
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<td>Bae, Jang-Han (Korea Institute of Oriental Medicine, KAIST); Kim, Jaeuk U* (Korea Institute of Oriental Medicine)</td>
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<td>08:45-09:00</td>
<td>WeAT15.4</td>
<td>A New Cam-Based Compact Radial Pulsation Simulator</td>
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<td>Yang, Tae-Heon (Korea National University of Transportation); Koo, Jeong-Hoi (Miami); Woo, Sam Yong (KRISS); Kim, Young-Min* (Korea Institute of Oriental Medicine)</td>
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<td>08:00-09:30</td>
<td>WeAT16</td>
<td>Meeting Room 323B</td>
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<td>Minisymposium: Deep Learning in Medical Imaging (g6735) (Minisymposium)</td>
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<td>Chair: Lee, Jae Sung (Seoul National University)</td>
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<td>08:00-08:15</td>
<td>WeAT16.1</td>
<td>Deep Learning for Nuclear Medicine Image Generation</td>
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<td>Lee, Jae Sung* (Seoul National University)</td>
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<td>08:15-08:30</td>
<td>WeAT16.2</td>
<td>Deep Learning-Based Brain Connectivity Analysis</td>
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<td>Han, Cheol* (Korea Univ.); Kim, Daegyeom (Korea Univ.); Lee, Suji (Korea Univ.); Jeong, Hyun-Ghang (Korea Univ.)</td>
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<tr>
<td>09:00-09:15</td>
<td>WeAT17</td>
<td>Meeting Room 323C</td>
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<td>Minisymposium: Subcellular Neural Interfaces (eu344) (Minisymposium)</td>
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<td>Chair: Otto, Kevin (University of Florida)</td>
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<td>08:00-08:15</td>
<td>WeAT17.1</td>
<td>The Need for Subcellular Neural Interfaces for Neuromodulation and Recording</td>
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<td>Urdaneta, Morgan E (Univ. of Florida); Otto, Kevin* (Univ. of Florida)</td>
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<td>08:15-08:30</td>
<td>WeAT17.2</td>
<td>Axon-Like Nerve Interface with Low Flexural Rigidity</td>
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<td>Durand, Dominique* (Case Western Reserve University); McCallum, Grant (Case Western Reserve University)</td>
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<td>08:30-08:45</td>
<td>WeAT17.3</td>
<td>A Data Pipeline for 65,536 Channels of Extracellular Unit Recordings</td>
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<td>Khan, Aamir Ahmed* (Paradromics, Inc.); Sahasrabuddhe, Kunal (Paradromics); Pouzzner, Daniel (Paradromics, Inc.); Nishimura, Kurtis (University of Hawaii); Angle, Matthew (Paradromics Inc)</td>
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<td>08:45-09:00</td>
<td>WeAT17.4</td>
<td>Nanoelectronic Threads for Long-Term, Large-Scale Neural Interface</td>
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<td>Li, Xue (University of Texas at Austin); Zhao, Zhengtuo (University of Texas at Austin); Zhu, Hanlin (University of Texas at Austin); Luan, Lan (University of Texas at Austin); Xie, Chong* (University of Texas at Austin)</td>
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<td>09:00-09:15</td>
<td>WeAT17.5</td>
<td>Meeting Room 324</td>
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<td>Minisymposium: Fully Implantable Biomechatronic Organs (9fd16) (Minisymposium)</td>
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<td>Chair: Ricotti, Leonardo (Scuola Superiore Sant’Anna)</td>
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<td>Co-Chair: Menciassi, Arianna (Scuola Superiore Sant’Anna)</td>
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<tr>
<td>08:00-08:15</td>
<td>WeAT18</td>
<td>Novel Technologies for the Development of Bionic Humanoids</td>
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<td>Arai, Fumihiro* (Nagoya University)</td>
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<td>08:15-08:30</td>
<td>WeAT18.2</td>
<td>Is Fully Implantable Artificial Heartrealistic in Practical Use?</td>
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<td>Umezui, Mitsuo* (Waseda University Graduate School); Yamazaki, Kenji (Hokkaido Cardiovascular Hospital); Iwasaki, Kiyotaka (Waseda University); Motomura, Tadashi (Evahere Inc.); Yamazaki, Shun-Ichi (Sun Medical Technology Research Corp.)</td>
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<td>08:30-08:45</td>
<td>WeAT18.3</td>
<td>Forgetting Diabetes through a Fully Implantable and Rechargeable Robotic Pancreas</td>
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<td>Ricotti, Leonardo* (Scuola Superiore Sant'Anna); Iacovacci, Veronica (Scuola Superiore Sant'Anna); Dario, Paolo (Scuola Superiore Sant'Anna); Menciassi, Arianna (Scuola Superiore Sant'Anna)</td>
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<td>08:45-09:00</td>
<td>WeAT18.4</td>
<td>Implantable Mechatronic Technologies for the Urinary System</td>
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<td>Menciassi, Arianna* (Scuola Superiore Sant'Anna); Ricotti, Leonardo* (Scuola Superiore Sant'Anna); Iacovacci, Veronica* (Scuola Superiore Sant'Anna); Lucarini, Gioia (Scuola Superiore Sant'Anna); Cazzoncchi, Tommaso (The BioRobotics Institute, Scuola Superiore Sant'Anna); Marziale, Leonardo (The Biorobotics Institute, Scuola Superiore Sant'Anna)</td>
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<td>09:00-09:15</td>
<td>WeAT18.5</td>
<td>Which Directions for Bionic Organs?</td>
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<td>Dario, Paolo* (Scuola Superiore Sant’Anna)</td>
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<td>09:15-09:30</td>
<td>WeAT18.6</td>
<td>Extracardiac Augmentation of Cardiac Function with a Soft Robotic Sleeve</td>
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<td>Roche, Ellen* (Harvard); Walsh, Conor (Harvard University)</td>
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<tr>
<td>09:00-09:15</td>
<td>WeAT19</td>
<td>Meeting Room 325A</td>
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<tr>
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<td>Minisymposium: Using Lasers and Polarization-Sensitive Technology in Retinal Scanning / Imaging (38biw) (Minisymposium)</td>
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<td>Chair: Gramatikov, Boris (Johns Hopkins Univ. School of Medicine)</td>
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<td>Co-Chair: Isch, Kristina (Johns Hopkins University (USA) &amp; UPMC-Sorbonne Universites (France))</td>
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<tr>
<td>08:00-08:15</td>
<td>WeAT19.1</td>
<td>Birefringence and Depolarization Imaging of the Retina by Polarization Sensitive Optical Coherence Tomography</td>
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<td>Hitzenberger, Christoph* (Medical University of Vienna)</td>
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<tr>
<td>08:15-08:30</td>
<td>WeAT19.2</td>
<td>Combining Retinal Birefringence Scanning with Long Working Distance OCT for Pediatric Imaging</td>
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<td>Gramatikov, Boris* (Johns Hopkins University School of Medicine); Isch, Kristina (Johns Hopkins University (USA) &amp; UPMC-Sorbonne Universites (France)); Guyton, David (Johns Hopkins University School of Medicine)</td>
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</table>
08:30-08:45  WeAT19.3  Modeling and Minimizing the Effect of Corneal Birefringence in Polarization-Sensitive Retinal Scanning  
Irsch, Kristina* (Johns Hopkins University (USA) & UPMC-Sorbonne Universities (France)); Gramatikov, Boris (Johns Hopkins University School of Medicine); Guyton, David (Johns Hopkins University School of Medicine)

08:45-09:00  WeAT19.4  The use of Phase Shift Subtraction to Obtain Differential Polarization Measurements with a Single Detector and Eliminate Unwanted Frequencies in Periodic Signals  
Guyton, David* (Johns Hopkins University School of Medicine); Gramatikov, Boris (Johns Hopkins University School of Medicine); Irsch, Kristina (Johns Hopkins University (USA) & UPMC-Sorbonne Universities (France))

09:00-09:15  WeAT20.5  Reporting the Dose of Non-Invasive Brain Stimulation using SimNIBS 2  
Bicalho Saturnino, Guilherme (Technical University of Denmark); Puonti, Oula (Copenhagen University Hospital Hvidovre, Denmark & Dept. of Electrical Engineering, Technical University of Denmark, Denmark); Antunes, Andre (Medtronic); Nielsen, Jesper D. (Copenhagen University Hospital Hvidovre, Denmark & Dept. of Applied Mathematics and Computer Science, Technical University of Denmark); Madsen, Kristoffer H. (Copenhagen University Hospital Hvidovre, Denmark & Dept. of Applied Mathematics and Computer Science, Technical University of Denmark); Thielser, Axel* (Copenhagen University Hospital Hvidovre, Denmark & BioMedical Engineering Section)

09:15-09:30  WeAT20.6  Verification and Validation of Computational Electromagnetic Modeling for Radiofrequency Safety of Medical Devices  
Horner, Marc* (ANSYS, Inc.); Iacono, Maria Ida (Food and Drug Administration); Morrison, Tina M. (Food and Drug Administration (FDA)); Pathmanathan, Pras (US Food and Drug Administration); Kainz, Wolfgang (Food and Drug Administration); Angelone, Leonardo M. (US Food and Drug Administration, Center for Devices and Radiological Health)

08:00-08:15  WeAT20.1  Toward Individualized Specific Absorption Rates: Progress in Building Surface-Based Human Head Models  
Kozlov, Mikhail* (Max Planck Institute for Human Cognitive and Brain Sciences); Horner, Marc (ANSYS, Inc.); Bazin, Pierre-Louis (Max Planck Institute for Human Cognitive and Brain Sciences); Weiskopf, Nikolaus (Max Planck Institute for Human Cognitive and Brain Sciences); Möller, Harald (Max Planck Institute for Human Cognitive and Brain Sciences)

08:15-08:30  WeAT20.2  Verification of the VHP-Female V.5.0 Full Body CAD Human Model  
Noetscher, Gregory* (Worcester Polytechnic Institute); Wartman, William (Worcester Polytechnic Institute); Pham, Dung (Worcester Polytechnic Institute); Adams, Johnathan (Worcester Polytechnic Institute); Makarov, Sergey (Electrical and Computer Engineering, Worcester Polytechnic Institute)

08:30-08:45  WeAT20.3  Calculating MRI RF-Induced Voltages for Implanted Medical Devices using Computational Human Models  
Brown, James* (MS EI); Qiang, Rui (Micro System Engineering Inc. (Biotronik)); Stadnik, Paul (Micro Systems Engineering, Inc.); Stolte, Larry (Biotronik); Von Arx, Jeffrey (Micro Systems Engineering, Inc.)

08:45-09:00  WeAT20.4  Simulations of a Birdcage Coil B1+ Field for Designing a 3T Multichannel TMS/HR Head Coil Array  
Navarro de Lara, Lucia Isabel* (Martinos Center - MGH); Golestanirad, Laleh (Dept. of NeuroSciences, Cleveland Clinic, Cleveland); Makarov, Sergey (Electrical and Computer Engineering, Worcester Polytechnic Institute); Stockmann, Jason P. (Athinoula A. Martinos Center for BioMedical Imaging, Dept. of Radiology, Massachusetts General Hospital); Wald, Lawrence L. (A. A. Martinos Center for BioMedical Imaging, Dept. of Radiology); Nummenmaa, Aapo (Massachusetts General Hospital)

09:00-09:15  WeAT20.5  Reporting the Dose of Non-Invasive Brain Stimulation using SimNIBS 2  
Bicalho Saturnino, Guilherme (Technical University of Denmark); Puonti, Oula (Copenhagen University Hospital Hvidovre, Denmark & Dept. of Electrical Engineering, Technical University of Denmark, Denmark); Antunes, Andre (Medtronic); Nielsen, Jesper D. (Copenhagen University Hospital Hvidovre, Denmark & Dept. of Applied Mathematics and Computer Science, Technical University of Denmark); Madsen, Kristoffer H. (Copenhagen University Hospital Hvidovre, Denmark & Dept. of Applied Mathematics and Computer Science, Technical University of Denmark); Thielser, Axel* (Copenhagen University Hospital Hvidovre, Denmark & BioMedical Engineering Section)

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Horner, Marc* (ANSYS, Inc.); Iacono, Maria Ida (Food and Drug Administration); Morrison, Tina M. (Food and Drug Administration (FDA)); Pathmanathan, Pras (US Food and Drug Administration); Kainz, Wolfgang (Food and Drug Administration); Angelone, Leonardo M. (US Food and Drug Administration, Center for Devices and Radiological Health)
July 18 Wednesday

WeBT2: 13:30-15:00  Meeting Room 312
Biomedical Signal Classification: EEG Signal Analysis (Theme 1) [Oral Session]
Chair: Bianchi, Anna Maria (Politecnico di Milano)

13:30-13:45  WeBT2.1
Single-Channel Real-Time Drowsiness Detection based on Electroencephalography
Albalawi, Hassan* (Duke University); Li, Xin (Duke University)

13:45-14:00  WeBT2.2
Performance Improvement of Driving Fatigue Identification based on Power Spectra and Connectivity using Feature Level and Decision Level Fusions
Harvy, Jonathan (Singapore Institute for Neurotechnology); Sigalas, Evangelos (Singapore Institute for Neurotechnology); Thakor, Nitish (Johns Hopkins University); Bezerianos, Anastasios (National University of Singapore); Li, Junhua* (National University of Singapore)

14:00-14:15  WeBT2.3
Online Automatic Artifact Rejection using the Real-Time EEG Source-Mapping Toolbox (REST)
Pion-Tonachini, Luca* (University of California, San Diego); Hsu, Sheng-Hsiou (University of California, San Diego); Chang, Chi-Yuan (University of California, San Diego); Jung, Tzyy-Ping (University of California San Diego); Makeig, Scott (University of California San Diego)

14:15-14:30  WeBT2.4
Towards the Development of Physiological Models for Emotions Evaluation
Reali, Pierfrancesco (Politecnico di Milano); Cosentini, Claudia (Politecnico di Milano); de Carvalho, Paula (University of Coimbra); Traver, Vicente (ITACA - Universitat Politècnica de València); Bianchi, Anna Maria* (Politecnico di Milano)

14:30-14:45  WeBT2.5
Classification of Propofol-Induced Sedation States using Brain Connectivity Analysis
Rathee, Dheeraaj* (Ulster University); Cecotti, Hubert (California State University Fresno); Prasad, Girijesh (University of Ulster)

14:45-15:00  WeBT2.6
A Parametric EEG Signal Model for BCIs with Rapid-Trial Sequences
Marghi, Yeganesh M.* (Northeastern Univ.); Gonzalez-Navarro, Paula (Northeastern Univ.); Azari, Bahar (Northeastern Univ.); Erdogmus, Deniz (Northeastern Univ.)

WeBT3: 13:30-15:00  Meeting Room 314
Brain Imaging (I) (Theme 2) [Oral Session]
Chair: Angelini, Elsa (Imperial NIHR BRC, Imperial College London)

13:30-13:45  WeBT3.1
Brain Morphometry Analysis with Surface Foliation Theory
Wen, Chengfeng (Stony Brook University); Lei, Na (Dalian University of Technology); Ma, Ming* (Stony Brook University); Qi, Xin (Stony Brook University); Zhang, Wen (School of Computing, Informatics, and Decision Systems Engineering, Arizona State University); Wang, Yalin (Arizona State University); Gu, David Xianfeng (State University of New York at Stony Brook)

13:45-14:00  WeBT3.2
Radiomics Features as Predictors to Predict Progression of Mild Cognitive Impairment to Alzheimer’s Disease
Li, Yupeng (Shanghai University); Jiang, Jiehui* (Shanghai University); Shen, Ting (Shanghai University); Ping, Wu (PET Center, Huashan Hospital, Fudan University); Zuo, Chuantao (PET Center, Huashan Hospital)

14:00-14:15  WeBT3.3
Automatic Midline Shift Detection in Traumatic Brain Injury
Hoooshmand, Mohsen* (University of Michigan); Soroushmehr, S.M.Reza (University of Michigan, Ann Arbor); Williamson, Craig (University of Michigan); Geryak, Jonathan (University of Michigan); Najarian, Kayvan (University of Michigan - Ann Arbor)

14:15-14:30  WeBT3.4
Approximating Cellular Densities from High-Resolution Neuroanatomical Imaging Data
LaGrow, Theodore J.* (Georgia Institute of Technology); Moore, Michael (Georgia Institute of Technology); Prasad, Judy (University of Chicago); Davenport, Mark A. (Georgia Institute of Technology); Dyer, Eva L. (Georgia Institute of Technology & Emory University)

14:30-14:45  WeBT3.5
A Novel MRI-Based Radiomics Model for Predicting Recurrence in Chordoma
Wei, Wei (Xi’an Polytechnic Univ.); Wang, Ke (Beijing Tiantan Hospital, Capital Medical Univ.); Tian, Kaibing (Beijing Tiantan Hospital, Capital Medical Univ.); Liu, Zhenyu (Institute of Automation, Chinese Academy of Sciences); Wang, Liang (Beijing Tiantan Hospital, Capital Medical Univ.); Zhang, Junting (Beijing Tiantan Hospital, Capital Medical Univ.); Tang, Zhenchao (Shandong Univ., Weihai); Wang, Shuo (Chinese Academy of Sciences); Dong, Di (Chinese Academy of Sciences); Zang, Yali (Institute of Automation, Chinese Academy of Sciences); Gao, Yuan (Key Lab of Molecular Imaging, Institute of Automation, Chinese Academy of Sciences); Wu, Zhen (Beijing Tiantan Hospital, Capital Medical Univ.); Tian, Jie* (Chinese Academy of Sciences)

14:45-15:00  WeBT3.6
Tracking and Analysis of the Whole Mouse Brain Vasculature with Systematic Cleaning to Remove and Consolidate Erroneous Images
Lee, Junseok* (Texas A&M University, Dept. of Computer Science and Engineering); Yoo, Jaewook (Texas A&M University); Choe, Yoonsuck (Texas A&M University)

WeBT4: 13:30-15:00  Meeting Room 315
Minisymposia: Towards P4 Medicine in Sleep Theranostics (II) (IBIS) (Minisymposium)
Chair: Khoo, Michael (University of Southern California)

13:30-13:45  WeBT4.1
Development of Reliable Sleep EEG Biomarkers
Penzel, Thomas* (Charité Univ. Berlin); Schoebel, Christoph (Charité Univ. Berlin); Ludka, Ondrej (St. Anne’s University Hospital and ICRC Brno); Glos, Martin (Charité-Univ. Berlin); Fietze, Ingo (Charité-Univ. Berlin)

13:45-14:00  WeBT4.2
Contactless Detection of Sleep Phases with the Help of Regression Analysis
Seepold, Ralf* (HTWG Konstanz); Gaiduk, Maksym (HTWG Konstanz); Martínez Madrid, Nataly (University of Applied Sciences Konstanz)

14:00-14:15  WeBT4.3
Obstructive Sleep Apnoea: Decreased Cerebral Perfusion when Awake and Investigating the Benefit of CPAP
Jones, Richard D.* (New Zealand Brain Research Institute); Innes, Carrie R. H. (Cantebury District Health Board); Buckley, Russell (New Zealand Brain Research Institute); Kelly, Paul (Christchurch Hospital); Hlavac, Michael (Christchurch Hospital); Beckert, Lutz (University of Otago)

14:15-14:30  WeBT4.4
Cheyne Stokes Respiration Cycle Length as a Risk Predictor in Patients with Heart Failure
Schoebel, Christoph* (Charité Universitätsmedizin Berlin); Fietze, Ingo (Charité-Universitätsmedizin Berlin); Penzel, Thomas (Charité Universitätsmedizin Berlin)
WeBT5: 13:30-15:00 Meeting Room 316A
Minisymposia: Mapping the Peripheral Nervous System with State-of-the-Art Nerve Interfaces (gu32) (Minisymposium)
Chair: Seymour, John P. (University of Michigan)
Co-Chair: Ludwig, Kip (Mayo Clinic)

13:30-13:45 WeBT5.1
Soft, Conformal Wireless Optoelectronic Systems for Long-Term Neuromodulation of Bladder Function
Gereau, Robert* (Washington University School of Medicine)

13:45-14:00 WeBT5.2
Multimodal Approach to Comprehensively Study Autonomic Nerve Stimulation in Swine Model
Ross, Erika (Cala Health); Settell, Megan (Mayo Clinic); Nicolai, Evan (Mayo Clinic); Ludwig, Kip* (Mayo Clinic)

14:00-14:15 WeBT5.3
Treatment of Peripheral Nerve Injury with HF10 Therapy: Clinical Results and Potential Mechanisms
Subbaroyan, Jeyakumar* (Neuro Corp.)

14:15-14:30 WeBT5.4
Functional and Anatomical Mapping of the Superior Cervical Ganglion and Cervical Sympathetic Chain
Hsieh, Yee-Hse* (Case Western Reserve University); Liu, YeHe (Case Western Reserve University); Thyagarajah, Nishanth (Case Western Reserve University); Hassan, Sarah (Galvani Bioelectronics); Jenkins, Michael W. (Case Western Reserve University); Lewis, Stephen (Case Western Reserve University)

14:30-14:45 WeBT5.5
Bidirectional Minimally Invasive Optogenetic Peripheral Nerve Interface
Weir, Richard* (Univ. of Colorado Denver/Anschutz Medical Campus)

14:45-15:00 WeBT5.6
High-Density Flexible Penetrating Arrays in the Dorsal Root Ganglia: A Tool to Map PNS Afferents
Seymour, John P.* (University of Michigan); Na, Kyongwhwan (University of Michigan); Sperry, Zachariah (University of Michigan); Parizi, Saman (University of Michigan); Bruns, Tim M. (University of Michigan); Yoon, Euisik (University of Michigan)

WeBT6: 13:30-15:00 Meeting Room 316B
Minisymposia: Biomedical Imaging and Image Processing for Radiotherapy Application (fx381) (Minisymposium)
Chair: Gu, Xuejun (University of Texas Southwestern Medical Center)
Co-Chair: Ji, Jim Xiuxuan (Texas A&M University)

13:30-13:45 WeBT6.1
Deformable Image Registration and Machine Learning based Modeling for Rectal Tumor Prediction for Prostate Cancer
Zhen, Xin* (Southern Medical Univ.); He, Qiang (Southern Medical Univ.); Long, Troy (Univ. of Texas Southwestern Medical Center); Kim, Nathan (Univ. of Texas Southwestern Medical Center); Chen, Mingli (Univ. of Texas Southwestern Medical Center); Lu, Weiguo (Univ. of Texas Southwestern Medical Center); Gu, Xuejun (Univ. of Texas Southwestern Medical Center)

13:45-14:00 WeBT6.2
Artificial Intelligence-Based Auto-Segmentation for Radiotherapy Application
Gu, Xuejun* (University of Texas Southwestern Medical Center)

14:00-14:15 WeBT6.3
The Application of PET Imaging in Radiotherapy for Treatment Outcome Improvement
McGuire, Sarah* (Univ. of Texas Southwestern Medical Center)

14:15-14:30 WeBT6.4
Ultrasound Imaging in Image-Guided Radiotherapy
Yang, Xiaofeng* (Emory University)

14:30-14:45 WeBT6.5
The Application of Dual-Energy Computed Tomography in Proton Radiotherapy
Yang, Ming* (UT Southwestern Medical Center)

14:45-15:00 WeBT6.6
Imaging and Localizing Brachytherapy Seeds using Positive Contrast MRI
Vafay Esfahri, Samira (Texas A&M Univ.); Shi, Caiyun (Shenzhen Institutes of Advanced Technology, Lauterbur Research Center for Biomedical Imaging); Huang, Yi (Guangzhou Panyu Central Hospital); Wang, Haifeng (Chinese Academy of Sciences); Yifeng, Ye (Guangzhou Panyu Central Hospital); Chen, Hanwei (Guangzhou Panyu Central Hospital); Xie, Guoxi (Shenzhen Institutes of Advanced Technology, Lauterbur Research Center for Biomedical Imaging); Ji, Jim Xiuxuan* (Texas A&M Univ.)
WeBT9: 13:30-15:00 Meeting Room 318B
Minisymposia: How to Teach Robots How to Move: Lessons from Biological Motor Control (qJ6y6) (Minisymposium)
Chair: Forner-Cordero, Arturo (Polytechnic School. Univ. of Sao Paulo)
Co-Chair: Dario, Paolo (Scuola Superiore Sant’Anna)

13:30-13:45 WeBT9.1
On the Development of a Biomimetic Impedance Control Law for Lower Extremity Wearable Robots
Rouse, Elliot* (University of Michigan); Shorter, Amanda (Northwestern University)

13:45-14:00 WeBT9.2
Teaching Robots: Biology Helps Us to Make Robots Walk
Duyssens, Jacques (KU-Leuven, FABER); Moura, Rafael Traldi (Polytechnic School. University of Sao Paulo); Forner-Cordero, Arturo* (Escola Politécnica da Universidade de Sao Paulo)

WeBT10: 13:30-15:00 Meeting Room 319A
Minisymposia: Time-Varying Estimation of Human Neuromechanics: Modern Approaches and their Applications (sfmvy) (Minisymposium)
Chair: Ludwig, Daniel (Northwestern University)
Co-Chair: Perreault, Eric (Northwestern University)

13:30-13:45 WeBT10.1
Temporal Expansion and Nonlinear Parameter Varying Approaches to the Identification of Time-Varying Dynamic Joint Stiffness
Kearney, Robert Edward* (McGill Univ.); Sobhani Tehrani, Ehsan (McGill Univ.); Guarini, Diego Luis (Harvard Medical School)

13:45-14:00 WeBT10.2
Estimation of Time-Varying Joint Impedance using an Ensemble of Short Segments
Ludvig, Daniel* (Northwestern University)

14:00-14:15 WeBT10.3
Identification of Time-Varying Wrist Joint Impedance
Mugge, Winfred* (Delft University of Technology); van de Ruit, Mark (School of Sport, Exercise and Rehabilitation Sciences, College of Life and Environmental Life Sciences, University of Birmingham); Kerklaan, Martijn (Delft University of Technology); Cavallo, Gaia (Vrije Universiteit Brussel); Lataire, John (Vrije Universiteit Brussel); van der Helm, Frans C.T. (Delft University of Technology); van Wingerden, Jan-Willem (Delft University of Technology); Schouten, Alfred (Delft University of Technology)

14:15-14:30 WeBT10.4
Estimating Time-Varying Joint Dynamics: What Do We Need?
Schouten, Alfred* (Delft University of Technology); van de Ruit, Mark (School of Sport, Exercise and Rehabilitation Sciences, College of Life and Environmental Life Sciences, University of Birmingham); Mugge, Winfred (Delft University of Technology)

WeBT11: 13:30-15:00 Meeting Room 319B
Minisymposia: Microphysiological System for Drug Screening and Disease Modeling (u698e) (Minisymposium)

13:30-13:45 WeBT11.1
Development of a Micro-Vessel-Containing Liver-on-a-Chip System
Gu, Zhong-Ze* (Southeast University); Chen, Zaozao (Southeast University); Zheng, Fuyin (MIT)

13:45-14:00 WeBT11.2
Microphysiological System of Cerebral Organoid for Disease Modeling of Neuropsychiatric Disorders
Xu, Bin* (Columbia University); Chen, Zaozao (Southeast University); Leong, Kam (Columbia University)

WeBT12: 13:30-15:00 Meeting Room 321A
Pharmaceutical Engineering (Theme 13) (Oral Session)
Chair: Kang, Dongwoo (Daichi Sankyo)

13:30-13:45 WeBT12.1
Parameter Optimization of Injectable Polycaprolactone Microspheres Containing Curcumin using Response Surface Methodology
Bark, Anwesha (School of Medical Science and Technology, IIT Kharagpur); Choudhury, Indranil (School of Medical Science and Technology, IIT Kharagpur); Chakravorty, Nishant* (School of Medical Science and Technology, IIT Kharagpur)

13:45-14:00 WeBT12.2
Spiral Folded Adhesive Plaster Optimization for Laparoscopic Surgery
Miura, Satoshi* (Waseda University); Tsuda, Naoya (Waseda University); Parque, Victor (Waseda University); Miyashita, Tomoyuki (Waseda University)

14:00-14:15 WeBT12.3
The Inhibition of Acetylcholinesterase by a Brain-Targeting Polylysine-ApoE Peptide: Biochemical and Structural Characterizations
Lu, Lu (Wenzhou-Kean Univ.); Michelena, Toby (Wenzhou-Kean Univ.); Wong, Aloysius (Wenzhou-Kean Univ.); Zhang, Changjiang (Wenzhou-Kean Univ.); Meng, Yu* (Wenzhou-Kean Univ.)

14:15-14:30 WeBT12.4
A Model of Acetaminophen Pharmacokinetics and Its Effect on Continuous Glucose Monitoring Sensor Measurements
Schiavon, Michele (University of Padova); Acciaroli, Giada (University of Padova); Vettoretti, Martina (University of Padova); Giaretta, Alberto (University of Padova, Dept. of Information Engineering); Visentin, Roberto* (University of Padova)

WeBT13: 13:30-15:00 Meeting Room 321B
Signal Processing and Classification in Sleep Studies (Theme 1) (Oral Session)
Chair: Penzel, Thomas (Charité Universitätsmedizin Berlin)
Co-Chair: Phan, Huy (University of Oxford)

13:30-13:45 WeBT13.1
Probabilistic Data-Driven Method for Limb Movement Detection during Sleep
Cesari, Matteo* (Technical University of Denmark); Christensen, Julie Anja Engelhard (Technical University of Denmark); Jennum, Poul (University of Copenhagen, Denmark); Sorensen, Helge B D (Technical University of Denmark)

13:45-14:00 WeBT13.2
Improving the Diagnostic Ability of Oximetry Recordings in Pediatric Sleep Apnea-Hypopnea Syndrome by Means of Multi-Class AdaBoost
Vaquerizo-Villar, Fernando (BioMedical Engineering Group, Univ. of Valladolid); Álvarez, Daniel (Univ. of Valladolid); Kheirandish-Gozal, Leila (Section of Sleep Medicine, Dept. of Pediatrics, Pritzker School of Medicine, The Univ. of Chicago); Gutierrez, Gonzalo Cesar (Univ. of Valladolid); Barroso-Garcia, Verónica (BioMedical Engineering Group, E.T.S.I. de Telecomunicación, Univ. of Valladolid); Crespo, Andrea (Hospital Univ. Rio Hortega, Valladolid); del Campo, Félix (Hospital del Río Hortega, Univ. De Valladolid); Gozal, David (Section of Sleep Medicine, Dept. of Pediatrics, Pritzker School of Medicine, Biological Sciences Division, The Univ. of); Hornero, Roberto* (Univ. of Valladolid)

14:00-14:15 WeBT13.3
Multichannel Sleep Stage Classification and Transfer Learning using Convolutional Neural Networks
Andreotti, Fernando* (Univ. of Oxford); Phan, Huy (Univ. of Oxford); Cooray, Navin (Institute of BioMedical Engineering, Univ. of Oxford); Lo, Christine (Sheffield Institute of Translational Neuroscience); Hu, Michele (Nuffield Dept. of Clinical NeuroSciences, Univ. of Oxford); De Vos, Maarten (Univ. of Oxford)
14:15-14:30 WeBT14.4

Bispectral Analysis to Enhance Oximetry as a Simplified Alternative for Pediatric Sleep Apnea Diagnosis

Gutierrez, Gonzalo Cesar* (Univ. of Valladolid); Kheirandish-Gozal, Leila (Section of Sleep Medicine, Dept. of Pediatrics, Pritzker School of Medicine, The Univ. of Chicago); Vazquez-Villar, Fernando (Biomedical Engineering Group, Univ. of Valladolid); Álvarez, Daniel (Univ. of Valladolid); Barmaz-García, Verónica (Biomedical Engineering Group, E.T.S.I. de Telecomunicación, Univ. of Valladolid); Crespo, Andrea (Hospital Universitario Rio Hortega, Valladolid); del Campo, Félix (Hospital del Río Hortega. Univ. de Valladolid); Gozal, David (Section of Sleep Medicine, Dept. of Pediatrics, Pritzker School of Medicine, Biological Sciences Division, The Univ. o); Hornero, Roberto (Univ. of Valladolid)

14:30-14:45 WeBT13.5

Night to Night Pulse Oximetry Variability in Children with Suspected Sleep Apnea

Hoppenbrouwer, Xenia L.R.* (University of Twente); Kheirkhah Dekhordi, Parastoo (University of Twente); Rollinson, Aryannah Umedal (University of British Columbia); Dunsmuir, Dustin (British Columbia's Children Hospital); Ansermino, J. Mark (British Columbia's Children's Hospital); Dumont, Guy (University of British Columbia); Garde, Ainara (University of Twente)

14:45-15:00 WeBT13.6

Interactive Sleep Stage Labelling Tool for Diagnosing Sleep Disorder using Deep Learning

Lee, Woonghee (Hanyang University); Kim, Younghoon* (Hanyang University)

13:30-13:45 WeBT14.1

Smartphone-Based Blood Pressure Monitoring

Chandrasekhar, Anand (Indian Institute of Technology Madras); Kim, Chang-Sei (Chonnam National University); Najj, Mohammed (Michigan State University); Natarajan, Keerthana (Michigan State University); Hahn, Jin-Oh (University of Maryland); Mukkamala, Ramakrishna* (Michigan State University)

13:45-14:00 WeBT14.2

Tonometry-Based Blood Pressure Measurements using a Two-Dimensional Force Sensor Array

Mehrotra, Sanjay* (Northwestern Univ.); Mikhelson, Ilya (Northwestern Univ.); Sahakian, Alan (Northwestern Univ.)

14:00-14:15 WeBT14.3

Correlation between Arterial Blood Pressure and Pulse Transit Time Measured by a Patch-Type Wearable Device

Park, Jonghyun (Seoul National University, Graduate School); Lee, Joonyong (Seoul National University); Yang, Seungman (Seoul National University); Sohn, Jangjay (Seoul National University); Lee, Saram (Seoul National University Hospital); Kim, Hee Chan* (Seoul National University)

14:15-14:30 WeBT14.4

Pre-and-Post Exercise Blood Pressure Estimation from Force-Measured Ultrasound: First Results

Zakrzewski, Aaron M. (Massachusetts Institute of Technology); Anthony, Brian W.* (Massachusetts Institute of Technology)
July 18 Wednesday

**WeBT17:** 13:30-15:00 Meeting Room 323C


**Chair:** Caspi, Avi (JCT - Lev Academic Center)

13:30-13:45 **WeBT17.1**

*Mobile Object Recognition for Prosthetic Vision*

Katyal, Kapil* (Johns Hopkins University Applied Physics Lab); Billings, Seth (JHU/APL); Duckworth, Dexter (Johns Hopkins University Applied Physics Lab)

13:45-14:00 **WeBT17.2**

*Energy-Efficient Multichannel Intracortical Visual Stimulation*

Hasanuzzaman, Md. (Polytechnique Montreal); Wang, Guoqing (Shanghai Jiao Tong University); Raut, Rabindranath (Concordia University); Sawan, Mohamad* (Polytechnique Montreal)

14:00-14:15 **WeBT17.3**

*Eye Tracking Control in Visual Prostheses*

Caspi, Avi* (JCT - Lev Academic Center); Roy, Arup (Second Sight Medical Products, Inc.)

14:15-14:30 **WeBT17.4**

*Computer Vision to Improve Navigation with Retinal Implants*

Weiland, James* (University of Michigan); Adebiyi, Aminat (IBM); Mante, Niti Tete (BuzzFeed); Hojun Son, Hojun (University); Cheung, Kai Ho Edgar (University of Michigan Ann Arbor); Johnson-Roberson, Matthew (University of Michigan)

**WeBT18:** 13:30-15:00 Meeting Room 324

*Minisymposia: Using Engineering Approaches for Basic Discovery in Neuroscience (1e91r) (Minisymposium)*

**Chair:** White, John (Boston University)

**Co-Chair:** Durand, Dominique (Case Western Reserve University)

13:30-13:45 **WeBT18.1**

*Origins of Coherent Oscillatory Activity in the Brain*

White, John* (Boston University)

13:45-14:00 **WeBT18.2**

*Reading and Writing the Neural Code in Neural Circuits*

Stanley, Garrett* (Georgia Institute of Technology & Emory University)

14:00-14:15 **WeBT18.3**

*Is Ephaptic Coupling Involved in Self-Propagating Non-Synaptic Waves in the Brain?*

Durand, Dominique* (Case Western Reserve University); Wei, Xile (Tianjin University)

**WeBT19:** 13:30-15:00 Meeting Room 325A

*Minisymposia: Pharmacometrics Approaches and Novel Drug Delivery Systems in Pharmaceutical Engineering (h1v9g) (Minisymposium)*

**Chair:** Park, Kyungsoo (Yonsei University College of Medicine)

13:30-13:45 **WeBT19.1**

*Pharmaceutical Engineering for Novel Drug Delivery Systems*

Jung, Hyungil* (Yonsei University)

13:45-14:00 **WeBT19.2**

*Chronic Drug Delivery to Deep Brain Region*

Cho, Il-Joo* (Korea Institute of Science and Technology (KIST)); Shin, Hyeoung (Korea Institute of Science and Technology); Chae, Uikyu (Korea Institute of Science and Technology (KIST)); Roh, Donghyeon (KIST)

14:00-14:15 **WeBT19.3**

*Precision Machine Learning Assisted Clinical Trial Eligibility Assessment using Health Record*

Jeon, Yoomin (Seoul National University); Lee, Howard* (Seoul National University Hospital)

**WeBT20:** 13:30-15:00 Meeting Room 325B


13:30-13:45 **WeBT20.1**

*Deformation of Mesh-Type ICRP Reference Computational Dose Calculations*

Han, Haegin (Hanyang University); Yeom, Yeon Soo (Hanyang University); Nguyen, Thang Tat (Hanyang University); Choi, Chansoo (Hanyang University); Lee, Hanjin (Hanyang University); Shin, Bangho (Hanyang University); Zhang, Xiaojie (Hanyang University); Kim, Chan Hyeong* (Hanyang University)

13:45-14:00 **WeBT20.2**

*A Computational Method for Voxel to Polygon Mesh Conversion of Anatomic Computational Human Phantoms*

Brown, Justin (University of Florida); Furuta, Takuya (Japan Atomic Energy Agency); Wesley, Bolch* (University of Florida)

14:00-14:15 **WeBT20.3**

*Personalized Models and Human Growth Models for EMF Simulations*

Nagaoka, Tomoki* (National Institute Info & Comm Tech)

14:15-14:30 **WeBT20.4**

*Modeling of the Bone Healing Process using Deep Machine Learning*

Ghasi, MohammadSadegh (Northeastern University and Beth Israel Deaconess Medical Center at Harvard Medical); Margaret, Babikian (BIDMC); Hussein Ali, Amira (BU); Louis, Gerstenfeld (BU); Nazarian, Ara* (Harvard Med School)

14:30-14:45 **WeBT20.5**

*Use of Xray Imaging and Machine Learning to Assess Feature Risk in Patients with Osteoporosis and Low Bone Density: A Potential Solution for Resource Constrained Settings*

Cubria, Maria (BIDMC); Oftadeh, Ramin (BIDMC); Lechtig, Aron (BIDMC); Egän, Jonathan (BIDMC); Hanna, Philip (BIDMC); Putman, Melissa (MGH); Elhamifar, Ehsan (BIDMC); Nazarian, Ara* (Harvard Med School); Rodriguez, Edward (Beth Israel Deaconess Medical Center)

14:45-15:00 **WeBT20.6**

*Breathing Sequence for CAD NELLY Model and Its Applications*

Noetischer, Gregory (Worcester Polytechnic Institute); Tran, Anh Le (Worcester Polytechnic Institute); Makarov, Sergey (Electrical and Computer Engineering, Worcester Polytechnic Institute); Prokop, Alexander* (CST - A Dassault Systèmes Company)

**WePoS-01:** 17:15-19:00 Exhibit Hall 2

*Poster Session (Theme 1) (Poster Session)*

17:15-19:00 **WePoS-01.1**

*Analysis of the Effects of Medication for the Treatment of Epilepsy by Ensemble Iterative Extended Kalman Filtering*

Moonhaha, Sidratul* (Christian-Albrechts-Univ. of Kiel, Univ. Schleswig-Holstein); Galka, Andreas (Christian-Albrechts-Univ. of Kiel); Meurer, Thomas (Faculty of Engineering, Univ. of Kiel); Sinatichkin, Michael (Univ. of Kiel)

17:15-19:00 **WePoS-01.2**

*Knowledge-Driven Dictionaries for Sparse Representation of Continuous Glucose Monitoring Signals*

Goel, Niraj (Texas A&M Univ.); Chaspari, Theodora* (Texas A&M Univ.); Mortazavi, Bobak (Texas A&M Univ.); Prieleau, Temiloluwa (Rice Univ.); Sabharwal, Ashutosh (Rice Univ.); Gutierrez-Osuna, Ricardo (Texas A&M Univ.)
17:15-19:00 WePoS-01.3
Tracking the Time Varying Neural Tuning via Adam on Point Process Observations
Zitong, Zhang (Zhejiang Univ.); Chen, Shuhang* (Hong Kong Univ. of Science and Technology); Yang, Zaiyue (Southern Univ. of Science and Technology); Wang, Yixen (Hong Kong Univ. of Science and Technology)

17:15-19:00 WePoS-01.4
Pipeline for Forward Modeling and Source Imaging of Magneto-cardiographic Recordings via Spatiotemporal Kalman Filtering
Habboush, Nawar* (University of Kiel); Hamid, Laith (University of Kiel); Siniatchkin, Michael (University of Kiel); Stephani, Ulrich (Christian-Albrechts-University of Kiel); Galka, Andreas (Christian-Albrechts-University of Kiel)

WePoS-02: 17:15-19:00
Biosignal Processing for Motor Imagery Studies – Poster Session (Theme 1) (Poster Session)

17:15-19:00 WePoS-02.1
Comparison of Different EEG Signal Analysis Techniques for an Offline Lower Limb Motor Imagery Brain-Computer Interface
Ortiz, Mario* (Universidad Miguel Hernández); Rodríguez-Ugarte, Marisol (Miguel Hernández University of Elche); Ianez, Eduardo (Universidad Miguel Hernandez de Elche); Azorin, Jose M. (Universidad Miguel Hernández de Elche)

17:15-19:00 WePoS-02.2
Sparse Kernel Machines for Motor Imagery EEG Classification
Oikonomou, Vangelis (Centre for Research and Technology Hellas); Nikolopoulos, Spiros (Information Technologies Institute, Centre for Research and Technology Hellas); Petranotakis, Panagiotis* (Information Technologies Institute, Centre for Research and Technology-Hellas (CERTH)); Kompatsiaris, Ioannis (Yannis) (Information Technologies Institute, CERTH)

17:15-19:00 WePoS-02.3
Analysis and Classification for EEG Patterns of Force Motor Imagery using Movement Related Cortical Potentials
Wang, Kun* (Tianjin University); Xu, Minquing (Tianjin University); Zhang, Shanshan (Tianjin University); Ke, Yufeng (Tianjin University); Ming, Dong (Tianjin University)

17:15-19:00 WePoS-02.4
FBSCP-Based Multi-Class Motor Imagery Classification using BP and TDP Features
Abbas, Waseem* (Lahore University of Management Sciences); Khan, Nadeem Ahmad (Signal Image and Video Processing Lab, Electrical Engineering, Syed Babar Ali School of Science and Engineering, Lahore University)

17:15-19:00 WePoS-02.5
DeepMI: Deep Learning for Multiclass Motor Imagery Classification
Abbas, Waseem* (Lahore University of Management Sciences); Khan, Nadeem Ahmad (Signal Image and Video Processing Lab, Electrical Engineering, Syed Babar Ali School of Science and Engineering, Lahore University)

17:15-19:00 WePoS-02.6
Emotion Recognition for Brain Machine Interface: Non-linear Spectral Analysis of EEG Signals using Empirical Mode Decomposition
Esmaeilbeigi, Hananeh (Univ. of Illinois at Chicago (UIC)); Carella, Tommaso (Univ. of Illinois at Chicago); De Silvestri, Matteo (Univ. of Illinois at Chicago); Finedore, Mary* (Univ. of Illinois at Chicago); Haniff, Isaac (Univ. of Illinois at Chicago)

17:15-19:00 WePoS-02.7
Unsupervised Phase Learning and Extraction from Repetitive Movements
Jatesikat, Prayook (NTU); Anopas, Dollaporn* (Nanyang Technological University); Ang, Wei Tech (Nanyang Technological University)

17:15-19:00 WePoS-01.9
EEG Processing to Discriminate Transitive-Intransitive Motor Imagery Tasks: Preliminary Evidences using Support Vector Machines
Franaszczuk, Piotr* (U.S. Army Research Lab); Boatman-Reich, Dana; Esmailbeigi, Hananeh (University of Valladolid); Alangari, Haitham M.* (Tianjin University); Yang, Jiajia* (Tianjin University)

17:15-19:00 WePoS-02.8
Evaluation of Different Signal Processing Methods in Time and Frequency Domain for Brain-Computer Interface Applications
Armin, Jetsada* (University of Strathclyde); Kahani, Daniel (University of Strathclyde); Lakany, Heba (University of Strathclyde); Conway, Bernard A. (University of Strathclyde)

17:15-19:00 WePoS-02.10
Real-Time Human Physical Activity Recognition with Low Latency Prediction Feedback using Raw IMU Data
Mascret, Quentin* (Laval University); Bielemann, Mathieu (Laval University); Cheikh Latyr, Fall (Université Laval); Bouyer, Laurent (University of Laval); Gosselin, Benoît (Laval University)

17:15-19:00 WePoS-02.9
EEG based Network Connectivity Classification in 7 and 9 Years-Old Children
Almabruk, Tahani A. A.* (Omar Al-Mukhtar University); Tan, Tele (Curtin University); Khan, Masood Mehmood (Curtin University)

17:15-19:00 WePoS-03.2
Low Gamma Band Cortico-Muscular Coherence Inter-Hemisphere Difference following Chronic Stroke
Bao, Shu-chun* (Chinese Univ. of Hong Kong); Wang, Wan-wa (Chinese Univ. of Hong Kong); Leung, Wai Hong (Chinese Univ. of Hong Kong); Tong, Kai Yu, Raymond (Chinese Univ. of Hong Kong)

17:15-19:00 WePoS-03.3
Preliminary Evaluation of Fetal Congenital Heart Defects Changes on Fetal-Maternal Heart Rate Coupling Strength
Alangari, Haitham M.* (Khalifa University); Kimura, Yoshitaka (Tohoku University); Khandoker, Ahsan H (Khalifa University of Science, Technology and Research)

17:15-19:00 WePoS-03.4
Complex Modulation Method for Measuring Cross-Frequency Coupling of Neural Oscillations
Malinowska, Urszula (Johns Hopkins University School of Medicine); Zielieniewska, Magdalena (University of Warsaw); Boatoan-Reich, Dana (Johns Hopkins School of Medicine); Franaszczuk, Piotr* (U.S. Army Research Lab)

17:15-19:00 WePoS-03.5
Modulation of Low-Frequency Pulsed Magnetic Field on Hippocampal Neural Oscillation in Depression Rats
Wang, Ling (Tianjin University); Yang, Jiajia* (Tianjin University); Wang, Faqi (Tianjin University); Zhou, Peng (Tianjin University); Wang, Kun (Tianjin University); Ming, Dong (Tianjin University)

17:15-19:00 WePoS-03.6
Assessment of EEG Connectivity Patterns in Mild Cognitive Impairment using Phase Slope Index
Gomez, Carlos* (University of Valladolid); Ruiz, Saúl J. (BioMedical Engineering Group, University of Valladolid); Poza, Jesús (University of Valladolid); Maturana-Candelas, Áarón (University of Valladolid); Núñez, Pablo (University of Valladolid); Pinto, Nádia (Institute of Molecular Pathology and Immunology of the University of Porto (IPATIMUP)); Tola-Arribas, Miguel A. (Dept. of Neurology, Hospital Universitario Rio Hortega); Cano, Mónica (Dept. of Clinical Neurophysiology, Hospital Universitario Rio Hortega); Hornero, Roberto (University of Valladolid)
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<td>WePoS-04.1</td>
<td>Nonlinear Interaction Analysis of Cardiovascular-Respiratory Data by Means of Convergent Cross Mapping</td>
<td>Schiecke, Karin* (Jena University Hospital, Friedrich Schiller University Jena); Pester, Britta (Jena University Hospital; Friedrich Schiller University Jena); Schumam, Andy (Psychiatric Brain &amp; Body Research Group Jena, Dept. of Psychiatry and Psychotherapy, Jena University Hospital, Jena, Germany); Bär, Karl-Jürgen (Friedrich-Schiller-University of Jena)</td>
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<td>WePoS-04.2</td>
<td>Adaptive Multi-Task Elastic Net based Feature Selection from Pharmacogenomics Databases</td>
<td>Rahman, Razier (Texas Tech University); Perera, Chamilia (Texas Tech University); Ghosh, Soupamo (Texas Tech University); Pal, Ranadip* (Texas Tech University)</td>
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<td>WePoS-04.3</td>
<td>Analysis of Features Extracted from EEG Epochs by Discrete Wavelet Decomposition and Hilbert Transform for Sleep Apnea Detection</td>
<td>Prucnal, Monika A. (Wroclaw Univ. of Science and Technology); Polak, Adam G.* (Wroclaw Univ. of Science and Technology)</td>
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<td>WePoS-04.4</td>
<td>Multi-Modal Approach for Affective Computing</td>
<td>Siddharth, Siddharth* (University of California, San Diego); Jung, Tzyy-Ping (University of California San Diego); Sejnowski, Terrence J. (The Salk Institute)</td>
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<td>WePoS-04.5</td>
<td>Classifying the Mental Representation of Word Meaning in Children with Multivariate Pattern Analysis of fNIRS</td>
<td>Gemignani, Jessica* (NIRx Medizintechnik GmbH); Bayet, Laurie (Labs of Cognitive Neuroscience, Boston Children’s Hospital); Kabdebon, Claire (Haskins Labs); Blankertz, Benjamin (Technische Universität Berlin); Pugh, Kenneth R. (Haskins Labs); Aulin, Richard N. (Haskins Labs)</td>
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17:15-19:00 WePoS-05.3
Deep Classification of Epileptic Signals
Ahmedt-Aristizabal, David* (Queensland Univ. of Technology); Fookees, Clinton (Queensland Univ. of Technology); Nguyen, Kien (Queensland Univ. of Technology); Sridharan, Sridha (Queensland Univ. of Technology)

17:15-19:00 WePoS-05.4
Finger ECG based Two-Phase Authentication using 1D Convolutional Neural Networks
Chen, Ying* (University of Aizu); Chen, Wenxi (University of Aizu)

17:15-19:00 WePoS-05.5
Optimal Insulin Bolus Dosing in Type 1 Diabetes Management: Neural Network Approach Exploiting CGM Sensor Information
Cappon, Giacomo* (University of Padova); Vettoretti, Martina (University of Padova); Marturano, Francesca (University of Padova); Facchinetti, Andrea (University of Padova); Sparacino, Giovanni (University of Padova)

17:15-19:00 WePoS-05.6
Arrhythmia Classification from Single Lead ECG by Multi-Scale Convolutional Neural Networks
Yao, Zhenjie* (Beijing University of Technology); Chen, Yixin (Washington University in St. Louis)

17:15-19:00 WePoS-05.7
Machine Learning of Spatiotemporal Bursting Behavior in Developing Neural Networks
Lee, YunHsuan* (Univ. of Washington Bothell); Stiber, Michael (Univ. of Washington Bothell); Si, Dong (Univ. of Washington)

17:15-19:00 WePoS-05.8
Detection of Early Stage Alzheimer’s Disease using EEG Relative Power with Deep Neural Network
Kim, Donghyeon (Gwangju Institute of Science and Tech. (GIST)); Kim, Kiseon* (Gwangju Institute of Science and Tech.)

17:15-19:00 WePoS-05.9
Crackle and Breathing Phase Detection in Lung Sounds with Deep Bidirectional Gated Recurrent Neural Networks
Messerer, Elmar* (Graz University of Technology); Fediku, Melanie (Medical University of Graz); Swatek, Paul (Medical University of Graz); Scheidl, Stefan (Medical University of Graz); Smolle-Jüttner, Freyja-Maria (Medical University of Graz); Olschewski, Horst (Medical University of Graz); Pernkopf, Franz (Graz University of Technology)

17:15-19:00 WePoS-05.10
Enhanced Error Decoding from Error-Related Potentials using Convolutional Neural Networks
Mayor Torres, Juan Manuel (University of Trento); Clarkson, Tessa (Stony Brook University); Stepanov, Evgeny A. (University of Trento); Luhmann, Christian C. (Stony Brook University); Lerner, Matthew D. (Stony Brook University); Riccardi, Giuseppe* (University of Trento)

17:15-19:00 WePoS-05.11
Nonlinear System Identification based on Convolutional Neural Networks for Multiple Drug Interactions
Kashihara, Koji* (Tokushima University)

17:15-19:00 WePoS-05.12
Biosignal Data Augmentation based on Generative Adversarial Networks
Harada, Shota* (Kyushu University); Hayashi, Hideaki (Kyushu University); Uchida, Seiichi (Kyushu University)

17:15-19:00 WePoS-05.13
Automated Pain Assessment using Electrodermal Activity Data and Machine Learning
Susam, Susam* (University of Pittsburgh); Akcakaya, Murat (University of Pittsburgh); Nezamfar, Hooman (Northeastern University); Diaz, Damaris (Rady Children's Hospital, University of California San Diego); de Sa, Vinicius (University of California, San Diego); Craig, Kenneth (University of British Columbia); Xu, Xiaojing (University of California, San Diego); Huang, Jeannie (Rady Children's Hospital, University of California San Diego); Goodwin, Matthew (Northeastern University)

17:15-19:00 WePoS-05.14
Convolutional Feature Vectors and Support Vector Machine for Animal Sound Classification
Ko, Kyungdew (Korea University); Park, Sangwook (Korea University); Ko, Hanseok* (Korea University)

17:15-19:00 WePoS-06-06:15-19:00 Nonlinear Analysis of Biosignals – Poster Session (Theme 1) (Poster Session)

17:15-19:00 WePoS-06.1
Enhanced Frequency Difference of Tumor Inside Vibrated Tissue by a Compression Cylinder
Miura, Satoshi* (Waseda Univ.); Shintaku, Yuta (Waseda Univ.); Ishiiuchi, Hidetaka (Waseda Univ.); Parque, Victor (Waseda Univ.); Miyashita, Tomoyuki (Waseda Univ.)

17:15-19:00 WePoS-06.2
Sample Entropy of High Frequency Oscillations for Epileptogenic Zone Localization
Su, Yung-Chin (National Tsing Hua University); Wu, Shun Chi* (National Tsing Hua University); Chen, Chien (Taipei Veterans General Hospital); Chou, Chen-Wei (National Tsing Hua University); Hung, Sheng-Che (University of North Carolina at Chapel Hill); Swindlehurst, A. Lee (University of California, Irvine); Kwan, Shang-Yeong (Taipei Veterans General Hospital)

17:15-19:00 WePoS-06.3
Normalization Factor for the Assessment of Elbow Spasticity with Passive Stretch Measurement: Maximum Torque vs. Body Weight
Nardielli, Mimmia (University of Pisa); Greco, Alberto* (University of Pisa); Valenza, Gaetano (University of Pisa); Lanata’, Antonio (University of Pisa); Ballon, Raquel (University of Zaragoza); Scilingo, Enzo Pasquale (University of Pisa)

17:15-19:00 WePoS-06.4
A Multiclass Arousal Recognition using HRV Nonlinear Analysis and Affective Images
Nardelli, Mimmia (University of Pisa); Greco, Alberto* (University of Pisa); Valenza, Gaetano (University of Pisa); Lanata’, Antonio (University of Pisa); Ballon, Raquel (University of Zaragoza); Scilingo, Enzo Pasquale (University of Pisa)

17:15-19:00 WePoS-06.5
Stress Effects on Exam Performance using EEG
Hafeez, Muhammad Adeel* (Institute of Space Technology, Islamabad, Pakistan); Shakil, Sadia (Institute of Space Technology); Jangsher, Sobia (Institute of Space Technology, Islamabad, Pakistan)

17:15-19:00 WePoS-06.6
A Stimulus-Response Processing Framework for Pupil Dynamics Assessment during Iso-Luminant Stimuli
Brambilla, Riccardo (Politecnico di Milano); Onorati, Francesco (Politecnico di Milano); Russo, Vincenzo (IULM Univ. of Milan); Mauri, Maurizio (IULM Univ. of Milan); Magrassi, Lorenzo (Fondazione IRCCS PoliClinico S. Matteo); Mainardi, Luca (Politecnico di Milano); Barbieri, Riccardo* (Politecnico di Milano)
WePoS-07: 17:15-19:00
Signal Processing and Classification of Acoustic and Auditory Signals – Poster Session (Theme 1) (Poster Session)

17:15-19:00
Improving the Performance of Hearing Aids in Noisy Environments based on Deep Learning Technology
Lai, Ying-Hui (National Yang-Ming University); Wei, Zhong, Zheng (Yuan Ze University); Tang, Shih-Tsang (Ming Chuan University); Fang, Shih-Hau (Yuan-Ze University); Liao, Wen-Huei (National Yang-Ming University, Dept. of Otolaryngology, Taipei Veterans General Hospital); Tsao, Yu (Academia Sinica)

17:15-19:00
Fundamental Heart Sound Classification using the Continuous Wavelet Transform and Convolutional Neural Networks
Meintjes, Andries* (Auckland University of Technology); Lowe, Andrew (Auckland University of Technology); Leggett, Malcolm E. (University of Auckland)

17:15-19:00
Low Level Texture Features for Snore Sound Discrimination
Demir, Fatih (Firat University); Sengur, Abdulkadir (Firat University); Cummins, Nicholas* (University of Augsburg); Amiriparian, Shahin (University of Augsburg); Schuller, Bjoern (Imperial College London)

17:15-19:00
Influence of MVDR Beamformer on a Speech Enhancement based Smartphone Application for Hearing Aids
Shankar, Nikhil* (Univ. of Texas at Dallas); Kucuk, Abdullah (Univ. of Texas at Dallas); Karadagur Ananda Reddy, Chandan (Univ. of Texas at Dallas); Shreedhar Bhat, Gautam (Univ. of Texas at Dallas); Panahi, Issa (Univ. of Texas at Dallas)

17:15-19:00
Tracheal Sounds Features Changes in Different Sleep Stages based on Complex Wavelet Analysis
Soltanzadeh, Ramin* (University of Manitoba); Shafai, Cyrus (University of Manitoba); Winkler, Jeff (University of Manitoba)

17:15-19:00
Quantitative Assessment of Syllabic Timing Deficits in Ataxic Dysarthria
Keshiyap, Bipasha* (Deakin Univ.); Pathirana, Pubudu N. (Deakin Univ.); Horna, Malcolm (Florey Institute of Neuroscience and Mental Health); Power, Laura (Royal Victorian Eye and Ear Hospital); Szmulewicz, David (Victorian Eye and Ear Hospital)

17:15-19:00
Design of Compensated Multi-Channel Dynamic-Range Compressor for Hearing Aid Devices using Polyphase Implementation
Zou, Ziyan* (University of Texas at Dallas); Hao, Yiya (University of Texas at Dallas); Panahi, Issa (University of Texas at Dallas)

17:15-19:00
Real-Time Smartphone Application for Improving Spatial Awareness of Hearing Assistive Devices
Ganguly, Anshuman* (University of Texas at Dallas); Kucuk, Abdullah (University of Texas at Dallas); Panahi, Issa (University of Texas at Dallas)

17:15-19:00
Prediction of Physiological Response Over Varying Forecast Lengths with a Wearable Health Monitoring Platform
Mohammadzadeh, Farrokh* (North Carolina State University); Nam, Chang S. (North Carolina State University); Lobaton, Edgar (North Carolina State University)

17:15-19:00
A New Physiological Signal Acquisition Patch Designed with Advanced Respiration Monitoring Algorithm based on 3-Axis Accelerometer and Gyroscope
Wang, Sikai (Institute of Semiconductors, Chinese Academy of Sciences; University of Chinese Academy of Sciences); Liu, Ming* (Institute of Semiconductors, Chinese Academy of Sciences); Pang, Bo (Institute of Semiconductors, Chinese Academy of Sciences); Li, Peng (Institute of Semiconductors, Chinese Academy of Sciences); Yao, Zhaolin (Institute of Semiconductors, Chinese Academy of Sciences); Zhang, Xu (Tsinghua University); Chen, hongda (Institute of Semiconductors, CAS)

17:15-19:00
Smartphone based Human Breath Analysis from Respiratory Sounds
Azam, Muhammad Awais (Univ. of Engineering and Technology, Taxila); Shahzadi, Aeman (Univ. of Engineering & Technology Taxila); Khalid, Asra (COMSATS Institute of Information Technology, Wah Cantt); Anwar, Syed* (Univ. of Engineering and Technology); Naeem, Usman (East London Univ., London)

17:15-19:00
Systematic Comparison of Respiratory Signals for the Automated Detection of Sleep Apnea
Van Steenkiste, Tom* (Ghent Univ. - imec); Groenendaal, Willemijn (imec Netherlands); Ruysssinc, Joeri (Ghent Univ. - imec); Dreesen, Pauline (Future Health, Ziekenhuis Oost-Limburg); Klerkx, Susie (Dept. of Pneumology, Ziekenhuis Oost-Limburg); Smeets, Christophe (Ziekenhuis Oost-Limburg); de Francisco, Ruben (imec); Deschrijver, Dirk (Ghent Univ. - imec); Dhane, Tom (Ghent Univ., Dept. of Information Technology (INTEC))

17:15-19:00
DNN Filter Bank Improves 1-Max Pooling CNN for Single-Channel EEG Automatic Sleep Stage Classification
Phan, Huy* (University of Oxford); Andreatti, Ferdanodo (University of Oxford); Cooray, Navin (Institute of BioMedical Engineering, University of Oxford); Chén, Oliver (University of Oxford); De Vos, Maarten (University of Oxford)

17:15-19:00
Mobile Apnea Screening System for At-Home Recording and Analysis of Sleep Apnea Severity
Pinto Bonnesen, Mathias* (Technical University of Denmark (DTU)); Sorensen, Helge B D (Technical University of Denmark); Jennum, Pouli (University of Copenhagen, Denmark)

17:15-19:00
Sleep Posture Classification using Bed Sensor Data and Neural Networks
Enayati, Moein* (University of Missouri); Skubic, Marjorie (University of Missouri); Keller, James M (University of Missouri); Popescu, Mihai (University of Missouri); Zanjirani Farahani, Nasibeh (University of Missouri)

17:15-19:00
A Two Stage Approach for the Automatic Detection of Insomnia
Shahin, Mostafa* (Texas A&M University at Qatar); Mulaffer, Lamana (Texas A&M University at Qatar); Penzel, Thomas (Charite Universitätsmedizin Berlin); Ahmed, Beena (University of New South Wales)

17:15-19:00
The Neurophysiological Effect of Acoustic Stimulation with Real-Time Sleep Spindle Detection
Choi, Jinyoung (Gwangju Institute of Science and Technology); Han, Sangjun (Gwangju Institute of Science and Technology); Won, Kyungho (Gwangju Institute of Science and Technology); Jun, Sung Chan* (Gwangju Institute of Science and Technology)
Automatic Identification and Classification of Fetal Heart-Rate Decelerations from Cardiotocographic Recordings
Sbrollini, Agnese (Univ. Politecnica delle Marche); Carnicelli, Amalia (Univ. Politecnica delle Marche); Massacci, Alessandra (Univ. Politecnica delle Marche); Tomaiuolo, Leonardo (Univ. Politecnica delle Marche); Zara, Tommaso (Univ. Politecnica delle Marche); Marcantonio, Ilaria (Univ. Politecnica delle Marche); Burattini, Luca (Univ. Politecnica delle Marche); Morettini, Micaela (Univ. Politecnica delle Marche); Fioretti, Sandro (Univ. Politecnica delle Marche); Burattini, Laura* (Univ. Politecnica delle Marche)

A Simple and Robust Method for Determining the Quality of Cardiovascular Signals using the Signal Similarity
Jang, Dae-Geun* (Samsung Advanced Institute of Tech.); Kwon, Ukjun (Samsung Electronics); Yoon, Seung Keun (Samsung Advanced Institute of Tech.); Park, Chang Soon (Samsung Advanced Institute of Tech.); Ku, Yunseo (Chungnam Natl. Univ. College of Medicine); Noh, Seungwoo (Interdisciplinary Program, Bioengineering, Graduate School, Seoul Natl. Univ., Seoul, Korea); Kim, Youn Ho (Samsung Advanced Institute of Tech.)

Pattern Analysis in Physiological Pulsatile Signals: An Aid to Personalized Healthcare
Bandyopadhyay, Soma* (Tata Consultancy Services); Ukil, Arijit (Tata Consultancy Services); Puri, Chetanya (Research and Innovation, Tata Consultancy Services, India); Singh, Rituraj (Tata Consultancy Services); Pal, Argan (Tata Consultancy Services); Murthy, C. A. (Indian Statistical Institute)

Classification of Cardiovascular Disease via a New SoftMax Model
Hao, L (Guangxi Normal University National); Ling, Sai Ho, Steve* (University of Technology Sydney); Jiang, Frank (University of Technology Sydney)

Spatio-Temporal Analysis of Multichannel Atrial Electrogroms based on a Concept of Active Areas
Doessel, Olaf* (Karlsruhe Institute of Technology (KIT)); Oesterlein, Tobias (Institute of BioMedical Engineering, Karlsruhe Institute of Technology); Unger, Laura Anna (Institute of BioMedical Engineering, Karlsruhe Institute of Technology); Loewe, Axel (Karlsruhe Institute of Technology (KIT)); Schmitt, Claus (Staeddisches Klinikum Karlsruhe); Luik, Armin (Staeddisches Klinikum Karlsruhe)

Robust Heart Rate Estimation during Physical Exercise using Photoplethysmographic Signals
Motin, Mohammad Abdul (Univ. of Melbourne); Karmakar, Chandan* (Deakin Univ.); Palaniswami, Marimuthu (Univ. of Melbourne)

Real-Time Evaluation of ECG Acquisition Systems through Signal Quality Assessment in Horses during Submaximal Treadmill Test
Nardelli, Mimma (Univ. of Pisa); Lanata’, Antonio (Univ. of Pisa); Valenza, Gaetano (Univ. of Pisa); Sgorbini, Micaela (Dept. of Vet. Sciences, Univ. of Pisa); Baragli, Paolo (Dept. of Vet. Sciences, Univ. of Pisa); Scilingo, Enzo Pasquale* (Univ. of Pisa)

Performance Evaluation of Processing Methods for Ballistocardiogram Peak Detection
Suliman, Ahmad* (Kansas State University); Carlson, Charles (Kansas State University); Warren, Steve (Kansas State University); Thompson, David (Kansas State University)
17:15-19:00  WePoS-12.3
Quantitative Characteristics of Hypsarrhythmia in Infantile Spasms
Smith, Rachel J. (University of California, Irvine); Shrey, Daniel W. (Children’s Hospital of Orange County); Hussain, Shaun A. (University of California Los Angeles); Lopour, Beth* (University of California, Irvine)

17:15-19:00  WePoS-12.4
Dengue Fever Detecting System using Peak-Detection of Data from Contactless Doppler Radar
Yang, Xiaofeng* (The University of Electro-Communications); Ishibashi, Koichiro (The University of Electro-Communications); Hoi, Le (National Hospital for Tropical Diseases); Vu, Trung Nguyen (National Hospital for Tropical Diseases); Van, Kinh Nguyen (National Hospital for Tropical Diseases); Sun, Guanghao (The University of Electro-Communications)

17:15-19:00  WePoS-13.1
Brain Imaging (II) – Poster (Theme 2) (Poster Session)

17:15-19:00  WePoS-13.2
Brain Tumor Segmentation on Multimodal MRI Scans using EMAP Algorithm
Anwar, Syed* (University of Engineering and Technology); Yousaf, Sobia (UET Taxila); Majid, Muhammad (University of Engineering and Technology, Taxila)

17:15-19:00  WePoS-13.3
Heritability of Nested Hierarchical Structural Brain Network
Chung, Moo K.* (University of Wisconsin-Madison); Luo, Zhan (University of Wisconsin - Madison); Adluru, Nagesh (University of Wisconsin-Madison); Alexander, Andrew (University of Wisconsin); Davidson, Richard J. (University of Wisconsin-Madison); Goldsmith, H. Hill (University of Wisconsin-Madison)

17:15-19:00  WePoS-13.4
Abnormal Dynamic Functional Network Connectivity and Graph Theoretical Analysis in Major Depressive Disorder
Zhi, Dongmei (Institute of Automation, Chinese Academy of Sciences, Beijing); Ma, Xiaohong (Psychiatric Lab and Mental Health Center, State Key Lab of Biotherapy, West China Hospital of Sichuan Univ.); Lv, Luxian (Dept. of Psychiatry, Henan Mental Hospital, The Second Affiliated Hospital of Xinhua Medical University); Ke, Qing (Dept. of Neurology, The First Affiliated Hospital, Zhejiang Univ. School of Medicine); Yang, Youngfeng (Dept. of Psychiatry, Henan Mental Hospital, The Second Affiliated Hospital of Xinhua Medical University); Yang, Xiao (Psychiatric Lab and Mental Health Center, State Key Lab of Biotherapy, West China Hospital of Sichuan Univ.); Pan, Miao (Dept. of Psychiatry, Henan Mental Hospital, The Second Affiliated Hospital of Xinhua Medical University, Xinhua); Qi, Shile (Brainnetome center & National Lab of Pattern Recognition, Institute of Automation, Chinese Academy of Sciences); Jiang, Rongtao (Institute of Automation, Chinese Academy of Sciences); Du, Yuhui (The Mind Research Network); Yu, Qiangbo (The Mind Research Network); Calhoun, Vince (The Mind Research Network/Univ. of New Mexico); Jiang, Tianzi (Institute of Automation); Sui, Jing* (Institute of Automation, Chinese Academy of Sciences)

17:15-19:00  WePoS-13.5
Tracing Tubular Structures from Teravoxel-Sized Microscope Images
Raghavan, Shruthi (Kettering Univ.); Kwon, Jaerock* (Kettering Univ.)

17:15-19:00  WePoS-13.6
Performance of Registration Tools on High-Resolution 3D Brain Images
Nazib, Abdullah* (Queensland University of Technology); Galloway, James (Queensland University of Technology); Fookes, Clinton (Queensland University of Technology); Perrin, Dimitri (Queensland University of Technology)
Metabolomic Data
Osteosarcoma Patients Classification using Plain X-Rays and
17:15-19:00 WePoS-16.1

An Mrm-SVM Approach for Opto-Fluidic
Microorganism Classification
Luo, Jiawen (Nanyang Technological Univ.;) Liu, Ai Qun
(Nanyang Technological Univ.;) Yap, Peng Huat (Nanyang
Technological Univ.;) Liedberg, Bo Gunnar (Nanyang
Technological Univ.;) Ser, Wee* (Nanyang Technological Univ.)
17:15-19:00 WePoS-16.4

Fusing Results of Several Deep Learning Architectures for
Automatic Classification of Normal and Diabetic Macular Edema in
Optical Coherence Tomography
Chan, Genevieve C Y (Universiti Teknologi Petronsas); Kamble,
Ravi (SGGS India); Müller, Henning (University of Applied
Sciences Wester Switzerland (HES-SO)); Shah, Syed
(COMSATS Institute of Information Technology Abbottabad,
Pakistan); Tang, Tong Boon (Universiti Teknologi Petronas);
Meraudeau, Fabrice* (Universite de Bourgogne)
17:15-19:00 WePoS-16.5

Automated Assessment of Bone Age using Deep Learning and
Gaussian Process Regression
Van Steenkiste, Tom* (Ghent University - imec); Ruyssinck, Joeri
(Ghent University - imec); Janssens, Olivier (Ghent University -
imec); Vandersmissen, Baptiste (Ghent University - imec);
Vandecasteele, Florian (Ghent University - imec); Devolder, Pieter
(University Hospital (UZ) Ghent); Achten, Eric (University Hospital
(UZ) Ghent); Van Hoecke, Sofie (Ghent University - imec);
Deschrijver, Dirk (Ghent University - imec); Dhaene, Tom
(Ghent University, Dept. of Information Technology (INTEC))
17:15-19:00 WePoS-16.6

A 3D Convolutional Neural Network Framework for Polyp
Candidates Detection on the Limited Dataset of CT Colonography
Chen, Yizhi (Shanghai Jiao Tong University); Ren, Yacheng
(Shanghai Jiao Tong University); Fu, Ling (Shanghai Jiao Tong
University); Xiong, Junfeng (Shanghai Jiao Tong University);
Larsson, Rasmus (Shanghai Jiao Tong University); Xu, Xiaowei
(Shanghai Jiao Tong University); Sun, Jianqi (Shanghai Jiao Tong
University); Zhao, Jun* (Shanghai Jiao Tong University)
17:15-19:00 WePoS-16.7

Analysis of DCE-MRI for Early Prediction of Breast Cancer
Therapy Response
Machireddy, Archana* (Oregon Health & Science University);
Thibault, Guillaume (Oregon Health & Science University); Huang,
Wei (Oregon Health & Science University); Song, Xubo (Oregon
Health & Science University)
17:15-19:00 WePoS-16.8

Using Multi-Level Convolutional Neural Network for
Classification of Lung Nodules on CT Images
Lyu, Juan (Harbin Engineering University); Ling, Sai Ho, Steve*
(University of Technology Sydney)
17:15-19:00 WePoS-16.9

Osteosarcoma Patients Classification using Plain X-Rays and
Metabolomic Data
Shen, Rebecca (University of Michigan, Ann Arbor); Li, Zhi
(University of Michigan); Zhang, Linglin (University of Michigan,
Ann Arbor); Hua, Yingqi (Shanghai Jiao Tong University); Mao,
Min (Shanghai Bone Tumor Institute, Shanghai General Hospital,
Shanghai Jiao Tong University School of Medicine, Shanghai,
China); Li, Zhicong (Shanghai Jiao Tong University); Cai,
Zhengdong (Shanghai Jiao Tong University); Qiu, Yunping (Albert
Einstein College of Medicine); Gryak, Jonathan* (University of
Michigan); Najarian, Kayvan (University of Michigan - Ann Arbor)
17:15-19:00 WePoS-16.10

Performance Evaluation of Age Estimation from T1-Weighted
Images using Brain Local Features and CNN
Ito, Koichi* (Tohoku Univ.); Fujimoto, Ryuchi (Tohoku Univ.);
Huang, Tzu-Wei (National Tsing-Hua Univ.); Chen, Hwann-Tzong
(National Tsing-Hua Univ.); Wu, Kai (South China Univ. of
Technology); Sato, Kazunori (Tohoku Univ.); Taki, Yasuyuki
(Tohoku Univ.); Fukuda, Hiroshi (Tohoku Pharmaceutical Univ.);
Aoki, Takefumi (Tohoku Univ.)
17:15-19:00 WePoS-16.11

Mahalanobis Outlier Removal for Improving the
Non-Viable Detection on Human Injuries
Heredia Juesas, Juan (Northeastern Univ.); Graham, Katherine
(Northeastern Univ.); Thatcher, Jeffrey (Spectral MD); Wensheng,
Fan (Spectral MD); DiMaio, J. Michael (UT Southwestern Medical
Center of Dallas); Martinez Lorenzo, J.A.* (Northeastern Univ.)
17:15-19:00 WePoS-16.12

A New and Improved Method for Automated Screening of
Age-Related Macular Degeneration using Ensemble
Deep Neural Networks
Govindadha, Arun* (iHealthScreen Inc.); Bhuian, Alauddin
(iHealthScreen Inc.); Smith, Roland Theodore (Professor)
17:15-19:00 WePoS-16.13

Automated Classification using End-to-End Deep Learning
Sanddeep Jaiipurkar, Shobhit* (National University of Singapore);
Wang, Jie (National University of Singapore, Agency for Science
Technology and Research (A*STAR)); Zeng, Zeng (I2R,
A*STAR); Teo, Sin Gee (Institute for Infocomm Research);
Veeravalli, Bharadwaj (National University of Singapore); Chua,
Matthew (National University of Singapore)
17:15-19:00 WePoS-16.14

Image Classification (Theme 2) (Poster Session)
Exhibit Hall 2
Chair: An, Jingzhi (MIT)
17:15-19:00 WePoS-19.6
Development of Software for Obtaining Image Attributes for Evaluation of the Wound Cicatricial Process
Costa, Alexandre (Universidade Tecnológica Federal do Paraná); Mehli, Adriano (Federal University of Technology of Paraná); Schneider, Jr., Bertoldo (Federal University of Technology of Paraná - Brazil); Abatti, Paulo J. (Federal University of Technology of Paraná); Stadnik, Adriana Maria Wan (UTFPR - Federal Technological University of Paraná); De Faría, Rubens Alexandre* (Federal University of Technology of Paraná)

17:15-19:00 WePoS-19.7
Mathematical Model for Body Fat Percentage in Military using Thermal Imaging and Circumferences
Neves, Eduardo Borba (Federal Technological Univ. of Paraná (UTFPR)); Salamunes, Ana Carla Chierighini (Universidade Tecnologia Federal do Paraná); Stadnik, Adriana Maria Wan* (UTFPR - Federal Technological Univ. of Paraná)

17:15-19:00 WePoS-19.8
Co-Sparse Analysis Model based Image Registration to Compensate Brain Shift by using Intra-Operative Ultrasound Imaging
Farjami, Parastoo (Tehran University of Medical Sciences); Najafzadeh, Ebrahim (Tehran University of Medical Sciences); Ahmadian, Alireza (Tehran University of Medical Sciences); Makki Abadi, Bahador (Tehran University of Medical Sciences); Maysam, Alimohamadi (Tehran University of Medical Sciences); Alirezaie, Javad* (Ryerson University, University of Waterloo)

17:15-19:00 WePoS-19.9
Reversible Image Watermarking for Health Informatics Systems using Distortion Compensation in Wavelet Domain
Zarrabi, Hamidreza (Isfahan University of Technology); Hajabdollahi, Mohsen (Isfahan Univ. of Technology); Soroshmehr, S.M.Reza* (Univ. of Michigan, Ann Arbor); Karimi, Nader (Isfahan University of Technology); Samavi, Shadrokh (McMaster Univ.); Najarian, Kayvan (Univ. of Michigan - Ann Arbor)

17:15-19:00 WePoS-19.10
MRI based Brain-Specific 3D-Printed Model Aligned to Stereotactic Space for Registering Histology to MRI
Boopathi Jegathambal, Sethu Kovendhan (McGill University); Mok, Kelvin (McGill University); Rudko, David A. (McGill University, Dept. of BioMedical Engineering, Dept. of Neurology and Neurosurgery); Shmuel, Amir* (McGill University)

17:15-19:00 WePoS-20.1
Background Modeling Method to Identify Interactions between Circulating Tumor Cells and Dendritic Cells
Zeng, Xuejiao (Sanghao Jiao Tong University); Wei, Dan (School of BioMedical Engineering, Shanghai Jiao Tong University); Wei, Xunbin* (Shanghai Jiao Tong University)

17:15-19:00 WePoS-20.2
Segmentation of Overlapped Steatosis in Whole-Slide Liver Histopathology Microscopy Images
Roy, Mousum* (Stony Brook University); Wang, Fusheng (Stony Brook University); Teodoro, George (University of Brasilia); Miriam, Vos (Emory University); Farris, Alton (Emory University); Kong, Jun (Emory University)

17:15-19:00 WePoS-20.3
Multiple Neutrophils Tracking in Vitro Array using High-Order Temporal Information
Yang, Fan* (Temple University); Sorouh, Fariborz (Temple University); Yu, Sijia (Temple University); Deng, Ge (Temple University); Kiani, Mohammad (Temple University); Ling, Haibin (Temple University); Chu, Peng (Temple University)

17:15-19:00 WePoS-20.4
Tracking Gene Expression via Light Sheet Microscopy and Computer Vision in Living Organisms
Buckner, Eli* (North Carolina State University); Melvin, Charles (North Carolina State University); Otfälle, Chanee (North Carolina State University); Balaguer, Angels de Luis (North Carolina State University); Sozzani, Rosangela (North Carolina State University); Williams, Cranos (North Carolina State University)

17:15-19:00 WePoS-20.5
Confocal Imaging of Cytosolic Ca2+ and Fuzzy Clustering Reveal the Circuit Topology Details Underlying Synchronization in Hippocampal Neurons
Swain, Sarpras (Indian Institute of Technology, Hyderabad); Pantula, Priyanka (Indian Institute of Technology, Hyderabad); Mitra, Kishalay (Indian Institute of Technology Hyderabad); Girì, Lopamudra* (Indian Institute of Technology, Hyderabad)

17:15-19:00 WePoS-20.6
Enhanced Image Sensor Module for Head-Mounted Microscopes
Jueune, Jill* (Rice Univ.); Duret, Guillaume (Rice Univ.); Robinson, Jacob T. (Rice Univ.); Kemere, Caleb (Rice Univ.)
17:15-19:00 WePoS-21.6
Super-Resolution in Optical Coherence Tomography
Wang, Qifan (University of Bristol); Zheng, Rencheng (University of Bristol); Achim, Alin* (University of Bristol)

17:15-19:00 WePoS-21.7
Dynamic Analysis of Mental Sweating of the Sweat Glands and Peripheral Vessels by Optical Coherence Tomography
Ohmi, Masato* (Osaka University); Wada, Yuki (Osaka University)

17:15-19:00 WePoS-21.8
Diffuse Speckle Contrast Analysis Assisted Intraoperative Blood Flow Monitoring in the Rat Model of Femoral Arterial Occlusion
Yeo, Chaeboom (DGIST); Kim, Heejaung (DGIMF); Jo, Woon (DGIMF); Song, Cheol* (DGIST)

17:15-19:00 WePoS-21.9
Optic Disc and Cup Segmentation with Blood Vessel Removal from Fundus Images for Glaucoma Detection
Jiang, Yuming* (Univ. of Electronic Science and Technology of China); Xia, Hu (Univ. of Electronic Science and Technology of China); Xu, Yanwu (Guangzhou Shiyuan Ltd. Co); Cheng, Jun (Institute of BioMedical Engineering, Chinese Academy of Sciences); Fu, Huazhu (Institute for Inforcomm Research, A*STAR); Duan, Lixin (Univ. of Electronic Science and Technology of China); Meng, Zhigang (Changsha Univ.); Liu, Jiang (Ningbo Institute of Materials Technology and Engineering, CAS)

17:15-17:30 WePoS-21.10
High Resolution Volumetric Imaging of Primary and Secondary Tumor Spheroids using Multi-Angle Light Sheet Fluorescence Microscopy (LSFM)

17:15-17:30 WePoS-21.11
Retinal Artery and Vein Classification for Automatic Vessel Caliber Grading
Bhuiyan, Alauddin* (iHealthScreen Inc.); Wong, Tien Yin (National University of Singapore); Klein, Ronald (University of Wisconsin); Hussain, Md Akter (iHealthScreen Inc.)

17:15-19:00 WePoS-22.1
Speckle Suppression of Ultrasonography using Maximum Likelihood Estimation and Weighted Nuclear Norm Minimization
Xu, Haochao (Shanghai University); Zhang, Qi* (Shanghai University); Dong, Huaipeng (Shanghai University); Jiang, Xiyuan (Shanghai University); Shi, Jun (Shanghai University)

17:15-19:00 WePoS-22.2
Fast and Simple Automatic 3D Ultrasound Probe Calibration based on 3D Printed Phantom and an Untracked Marker
Shen, Jun* (LIRMM & LTSI-University of Rennes 1); Zemlit, Nabil (Université Montpellier); Dillenseger, Jean-Louis (Université de Rennes 1); Poignet, Philippe (LIRMM, UMR CNRS 5506, University of Montpellier II)

17:15-19:00 WePoS-22.3
A Visual Probe Positioning Tool for 4D Ultrasound-Guided Radiotherapy
Ipsen, Svenja* (University of Luebeck); Bruder, Ralf (University of Luebeck); Kühlemann, Ivo (University of Luebeck); Jauer, Philipp (University of Luebeck); Motisi, Laura (University Clinic Schleswig Holstein, Campus Luebeck); Cremers, Florian (University Clinic Schleswig Holstein, Campus Luebeck); Ernst, Florian (University of Luebeck); Schweikard, Achim (University of Luebeck, Germany)
A Novel CMOS-Based 3D Nanoelectrode Array as a Sensor for Hydrogen Peroxide
Lien, Chun Lung (National Chiao Tung University); Yuan, Chiun-Jye* (National Chiao Tung University)

Preparation of Bioactive Titanium Oxide Nanotubes
Lee, Hyeran (Daeilim University); Yun, Yonghyeon (Daeilim University)

Preliminary Study: Real-Time Sleep Staging using Ballistocardiogram Signal
Choi, Sang Ho (Seoul National University); Yoon, Heenam (Seoul National University); Kwon, Hyunbin (Seoul National University); Oh, Sung Min (Seoul National University Hospital); Lee, Yujin (Seoul National University Hospital); Park, Kwang S.* (Seoul National University)

Piloting a Novel Communication System for Mechanically Ventilated Critical Care Patients
Goldberg, Miriam A.* (Univ. of Massachusetts MD/PhD Program); Hochberg, Leigh (VA / Brown U. / MGH / Harvard Med. School); Carpenter, Dawn (Univ. of Massachusetts Medical School); Mangiamele, Daniel (Univ. of Massachusetts Medical School); Celik, Ugur (Univ. of Massachusetts Medical School); Walz, J. Matthias (Univ. of Massachusetts Medical School)

A Novel, Multifunctional Digital Platform for Home Telehealth
Xu, Andrew (Sharon High School); Xiao, Qiwei* (Down LLC); Li, Baojun (Boston University Medical Center)

Social Event Memory Test [SEMT]: A Sensitive Cognitive Test that can Detect Early Stage Dementia
Choi, Jongdo* (Samsung Medical Center); Kim, Jinho (Samsung Medical Center)

Personal Identification by Walking Vibration on Veneer Board
Sugimoto, Ryosuke (University of Toyama); Kim, Juhyon (University of Toyama); Kanayama, Yoshio (NEC Solution Innovators, Ltd.); Nakajima, Kazuki* (University of Toyama)

What’s Absolute Humidity Affected during Noninvasive Ventilation?
Fueda, Yuri* (Himeji Dokkyo University); Kataoka, Takuya (Himeji Dokkyo University); Matsuda, Fuka (Himeji Dokkyo University)

Unipolar Intracardiac Signal Morphology as a Parameter for Catheter Contact Evaluation
Jovicic, Ivana* (BioSig Technologies Inc); Padmanaban, Deepak (Mayo Clinic); Sugre, Alan (Mayo Clinic); Vaidya, Vaibhav (Mayo Clinic); Vlajnic, Branislav (BioSig Technologies Inc); Mokolaliis, Lora (BioSig Technologies Inc); Krsitc, Djordje (BioSig Technologies Inc); Foxall, Tom (BioSig Technologies Inc); Drakulić, Budimir (BioSig Technologies Inc); Venkatachalam, K.L. (Mayo Clinic); Asirvatham, Samuel (Mayo Clinic); Fakhar, Sina (BioSig Technologies Inc)

Technical Image Quality Concerns in Radiology
Mabotuwana, Thushitha* (Philips Healthcare); Bhandarkar, Varun (Univ. of Washington); Hall, Christopher (Philips Healthcare, Univ. of Washington); Gunn, Martin (Univ. of Washington)

Seizure Prediction Algorithms for Realizing Closed-Loop Treatment of Refractory Epilepsy
Sakane, Fumiy a* (Kyoto Univ.); Fujiwara, Koichi (Kyoto Univ.); Miyajima, Miho (Tokyo Medical and Dental Univ.); Suzuki, Yoko (Univ. of Tsukuba); Yamakawa, Toshitaka (Kumamoto Univ.); Kano, Manabu (Kyoto Univ.); Maehara, Taketoshi (Tokyo Medical and Dental Univ.)

Stiffness Estimation of the Medial Gastrocnemius Muscle in Toe Walking
Fukumori, Daichi* (Graduate School of Science and Technology, Keio University); Uchiyama, Takano (Keio University)

An N200 Brain-Computer Interface based on Retinotopic Mapping
Chen, Jingjing (Tsinghua University); Li, Zhuruan (Tsinghua University); Zhang, Dan* (Tsinghua University)

Towards a Flexible Microfluidic Test Strip for IL-8 Detection
Siu, Vince* (IBM T.J. Watson Research Center); Lu, Minhua (IBM T.J. Watson Research Center); Colgan, Evan (IBM T.J. Watson Research Center); Knickerbocker, John (IBM T.J. Watson Research Center)

Optogenetic Position Control of Murine Limb
Srinivasan, Shriya* (MIT); Maimon, Benjamin (MIT); Song, Hyun-Geon (MIT); Diaz, Maurizio (MIT); Herr, Hugh (MIT)

Prediction of Depressive Tendency from Multidimensional Health Data Collected through Crowdsourcing
Yamaguchi, Shiori* (Nara Institute of Science and Technology); Tanaka, Hiroki (Nara Institute of Science and Technology); Maki, Hayato (Nara Institute of Science and Technology); Kanaya, Shigehiko (Nara Institute of Science and Technology); Suzuki, Nobutaka (Kanazawa University); Satoshi, Nakamura (Nara Institute of Science and Technology)
Study on Characteristics of Unintended Indwelling Needle Dislodgement Detection Circuit
Nakaya, Naofumi* (Tsukuba International Univ.); Watanabe, Satoshi (International Univ. of Health and Welfare); Mori, Yukio (Salesian Polytechnic); Shirahama, Naoki (National Institute of Technology, Kitakyushu College); Abe, Takayuki (Tokyo Women’s Medical Univ.); Aoki, Kazuo (Nihon Univ.)

Detection of Relaxing Kawaii using Stuffed Animals and ECG
Ohkura, Michiko* (Shibaura Institute of Technology); Tombe, Takafumi (Shibaura Institute of Technology); Ito, Kodai (Shibaura Institute of Technology)

Survival Prediction of Hepatocellular Carcinoma Patients Treated by Transarterial Chemoembolization using CT Radiomics Analysis
Kim, Jonghoon (Sungkyunkwan Univ.); Park, Bo-yong (Sungkyunkwan Univ.); Park, Hyunjin* (Sungkyunkwan Univ.)

Wrist-Wearable Bioelectrical Impedance Analyzer with Miniature Electrodes for Wellness Applications
Jung, Myoung Hoon (Samsung Advanced Institute of Technology); Namkoong, Kak* (Samsung Advanced Institute of Technology, Samsung Electronics Co., Ltd.)

Decoding EEG with Capsules: A Preliminary Study
Ha, Kwon Woo (Kumoh National Institute of Technology); Jeong, Jin-Woo* (Kumoh National Institute of Technology)

Cuff-Less Blood Pressure Measurement using Wearable Device
Gil, Yeongjoon* (Huninn, Inc.); Jung, Sungkhoon (Huninn, Inc.); Agarwal, Rajeev (Concordia University)

The Influence of the Astrocyte Activity on the Synaptic Input
Piekut, Roman (Laboratoire LE2i, FRE CNRS, Université de Bourgogne Franche Comté); Lorenzo, Junhyn (Laboratoire LE2i, FRE CNRS, Université de Bourgogne Franche Comté); Binczak, Stéphane (Université de Bourgogne); Jacquir, Sabir* (Laboratoire LE2i UMR CNRS 6306, Université de Bourgogne)

Evaluation of Suicidal Ideation based on the Pitch Detection Rate
Shinohara, Shuji* (University of Tokyo); Negrea, Aurelian Denis (University of Pitești); Taicu, Marian (University of Pitești); Sâvoiu, Gheorghe (University of Pitești); Omiya, Yasuhiro (PST Inc.); Nakamura, Mitsuteru (University of Tokyo); Higuchi, Masakazu (University of Tokyo); Takano, Takeshi (PST Inc.); Hagiwara, Naoki (PST Inc.); Mitsuyoshi, Shuji* (University of Pitești); Nishi, Kazuhiko (University of Tokyo)

Pediatric Respiratory Rate Estimation through Deep Neural Nets
Starkov, Pierre* (Swiss Center for Electronics and Microtechnologies (CSEM); Sergio, Manzuno (University Hospitals of Geneva); Hugon, Florence (University Hospitals of Geneva); Braun, Fabian (CSEM SA); Lemkaddem, Alia (CSEM); Verjus, Christophe (CSEM); Delgado-Gonzalo, Ricard (CSEM); Solà, Josep (CSEM - Centre Suisse d'Electronique et Microtechnique); Alain, Gervaix (University Hospitals of Geneva); Mohamed-Rida, Benissa (University of Geneva)

Evaluation of Mind Monitoring System (MIMOSYS) by Subjects with Romanian and Russian as Their Native Language
Uraguchi, Tomotaka* (PST Inc.); Shinohara, Shuji (University of Tokyo); Negrea, Aurelian Denis (University of Pitești); Taicu, Marian (University of Pitești); Sâvoiu, Gheorghe (University of Pitești); Omiya, Yasuhiro (PST Inc.); Nakamura, Mitsuteru (University of Tokyo); Higuchi, Masakazu (University of Tokyo); Takano, Takeshi (PST Inc.); Hagiwara, Naoki (PST Inc.); Mitsuyoshi, Shuji* (University of Pitești); Nishi, Kazuhiko (University of Tokyo)

Simulated Microgravity Exposure Strikingly Attenuates the Baroreflex Total Loop Gain and Induces Orthostatic Hypotension
Kamada, Kazuhiro* (Kyushu Univ.); Saku, Keita (Kyushu Univ.); Mannoji, Hiroshi (Kyushu Univ.); Tohyma, Takeshi (Kyushu Univ.); Nishikawa, Takuya (Kyushu Univ.); Sunagawa, Genya (Kyushu Univ.); Abe, Kiyokazu (Kyushu Univ.); Kishi, Takuya (Kyushu Univ. Graduate School of Medical Sciences); Sunagawa, Kenji (Kyushu Univ.)

A Novel Framework to Identify the Baroreflex Total Loop Gain by the Power Spectral Density of Arterial Pressure Time Series
Mannoji, Hiroshi* (Kyushu Univ.); Saku, Keita (Kyushu Univ.); Kinoshiha, Hiroyuki (Omron Healthcare Co., Ltd.); Nishikawa, Takuya (Kyushu Univ.); Tohyma, Takeshi (Kyushu Univ.); Kamada, Kazuhiro (Kyushu Univ.); Sunagawa, Genya (Kyushu Univ.); Abe, Kiyokazu (Kyushu Univ.); Kishi, Takuya (Kyushu Univ. Graduate School of Medical Sciences); Sunagawa, Kenji (Kyushu Univ.)
Reperfusion Therapy with Delayed Vagal Nerve Stimulation in Acute Myocardial Infarction Strikingly Reduces Infarct Size and Improves Left Ventricular Function in the Long-Term
Sunagawa, Genya (Kyushu University); Saku, Keita* (Kyushu University); Kishi, Takuya (Kyushu University Graduate School of Medical Sciences); Sunagawa, Kenji (Kyushu University)

Deep Learning based Breast Cancer Diagnosis based on Protein Expression Array Data
Ji, Dongjin (Korea Advanced Institute of Science and Technology); Song, Yong-Joon (Korea Advanced Institute of Science and Technology [KAIST]); Han, Gyu-Bum (Korea Advanced Institute of Science and Technology [KAIST]); Cho, Dong-Ho* (Korea Advanced Institute of Science and Technology [KAIST])

Intervention Subject Selection based on Medical Cost Prediction by using Bayesian Networks
Hasegawa, Yasutaka* (Hitachi, Ltd.); Tanumi, Shinji (Research and Development Group, Hitachi, Ltd.); Miyoshi, Toshinori (Central Research Lab, Hitachi Co. Ltd.); Ban, Hideyuki (Central Research Lab, Hitachi, Ltd.); Negishi, Shoji (Hitachi Health Insurance Society); Kunichika, Norihito (Hitachi Health Insurance Society)

Using One-Channel EEG Features from Multiple Task Conditions for Classifying ADHD vs. Non-ADHD Children
Huang, Shihuan (National Taiwan Univ. of Technology); Chen, Muhong (Taipei Veterans General Hospital); Tsai, Chia-Fen (Taipei Veterans General Hospital); Wu, Chien-Ts (National Taiwan Univ.); Liu, Yi-Hung* (National Taiwan Univ. of Technology)

Eye Movements in Facial Expression Recognition using Hidden Markov Models: Comparison of Younger and Older Adults
Noh, Soo Rim* (Chungnam National University); Kim, Sang-Ho (Engineering Center of Hyundai Engineering, co); Lee, Eumbyul (Dept. of Psychology, Chungnam National University); Han, Kyunghun (Division of Sport Science, Pusan National University)

Localized Bioimpedance during Abduction and Adduction of Vocal Folds: Pilot Pediatric Patient
Freeborn, Todd* (University of Alabama); Gosa, Memorie (University of Alabama)

Modified Fast Fully Adaptive Beamforming for Source Localization
Ravan, Maryam* (New York Institute of Technology)

Predictive Multiscale Approach (3D-1D) for Blood Flow Simulations in Cardiovascular Networks
Seyed Vaheidejn, Yasmar* (Rochester Institute of Technology); Karnam, Yogesh (Rochester Institute of Technology); Liberson, Alexander (Rochester Institute of Technology)

Aging Dulls Frontal-Theta Increase during Memory Maintenance
Takase, Ryoken (Hokkaido University); Kuriki, Shinya (Tokyo Denki University); Yokosawa, Koichi* (Hokkaido University)

Pilot Clinical Trial for a New Deep Brain Stimulation Device with Enhanced Magnetic Resonance Imaging Compatibility
Jiang, Changqing* (Tsinghua University); Zhang, Feng (Tsinghua University); Gong, Chen (Tsinghua University); Wan, Seli (Tsinghua University); Yao, Chen (Tsinghua University); Li, Linze (Tsinghua University); He, Changgeng (Tsinghua University); Li, Luming (Tsinghua University)

Sparse Principal Components used as Structural Features in Alzheimer’s Disease Identification
Liu, Yan* (University of Chinese Academy of Sciences); Zeng, Xiangzhu (Peking University Third Hospital); Wang, Ling (University of Electronic Science and Technology of China); Wang, Zheng (Capital University of Medical Sciences); Wang, Qiang (Beijing Union University)

Influence of Slight Changes in Electrode Locations Upon the Classification Accuracy of a SSVEP-Based BCI
Kim, Hodam (Hanyang Univ.); Im, Chang-Hwan* (Hanyang University)

Assessing Circuit Design Parameters for Lower-Power Clinically-Viable Intracortical Brain-Computer Interfaces
Even-Chen, Nir* (Stanford University); Muratore, Dante (Stanford University); Murmann, Boris (Stanford University); Sheny, Krishna V. (Stanford University)

Development of a Data Selection Method for the Learning of a Brain-Machine Interface
Shibata, Mahoko* (Waseda Univ.); Ishiyan, Atsushi (Waseda University)

Classification of Two Motor Imagery using Customized Frequency and Electrodes Suitable for Each Subject
Hoshino, Kei* (Waseda Univ.); Ishiya, Atsushi (Waseda University)

Performance Comparison of Classification Algorithms for SSVEP-Based BCI in Terms of Robustness to Mental States
Park, Seonghun (Hanyang University); Kwon, Jinuk (Hanyang University); Kim, Hodam (Hanyang University); Chae, Yoonsou (Hanyang University); Im, Chang-Hwan* (Hanyang University)

Mental Wellness Evaluation based on Heart Rate Rhythm
Jamalpournokande, Omid* (Hosei University); Shibui, Toyohto (Hosei University Graduate School); Yoshikawa, Reina (Hosei University); Yana, Kazuo (Hosei University); Asakawa, Kiyoshi (Hosei University); Momoi, Emi (University of Electro-Communications); Moon, Chihc (ISID-AO, Ltd.); Yokochi, Jun (ISID-AO, Ltd.); Oshirabe, Katsuyuki (ISID-AO, Ltd.)

Droplet based Microfluidic System for Multicellular Tumor Spheroid Formation
Kwak, Bongseop* (Korea Institute of Machinery & Materials)

Profiles of Normal Sinus Heart Rhythm and Arrhythmias based on Symbolic Dynamics and Shannon Entropy
Tian, Zhaoyin (Nara Institute of Science and Technology); Kido, Kosho (Nara Institute of Science and Technology); Huang, Ming* (Nara Institute of Science and Technology); Tamura, Toshiyuki (Waseda University); Ono, Naoki (Nara Institute of Science and Technology); Yoshimura, Takumi (Tokyo Metropolitan College of Industrial Technology); Kanaya, Shigehiko (Nara Institute of Science and Technology); Altuf-Il-Amin, MD. (Nara Institute of Science and Technology)
17:15-19:00 WePoS-25.31
An Augmentation Method Specific for X-Ray Images used in Image-Guided Navigation
Liu, Shiqi (State Key Lab of Management and Control for Complex Systems, Institute of Automation, Chinese Academy of Science); Xie, Xiao-Liang (Chinese Academy of Sciences); Bian, Gui-Bin (Institute of Automation, Chinese Academy of Sciences); Hou, Zeng-Guang* (Institute of Automation, Chinese Academy of Sciences); Cui, Chengkun (Institute of Automation, Chinese Academy of Sciences); Wu, Yu-Dong (Institute of Automation, Chinese Academy of Sciences); Cheng, Xiaoran (State Key Lab of Management and Control for Complex Systems, Institute of Automation, Chinese Academy of Sciences); Wang, Qiaoli (State Key Lab of Management and Control for Complex Systems, Institute of Automation, Chinese Academy of Sciences); Chen, Sheng (Institute of Automation, Chinese Academy of Sciences)

17:15-19:00 WePoS-25.32
Cell Membrane Extraction in H&E Stained Histological Sections using Deep Learning
Sugimoto, Keita* (Graduate School of Engineering and Science, Shibaura Institute of Technology); Takahashi, Masanobu (Shibaura Institute of Technology); Nakano, Masayuki (Shonan Fujiwara Tokushukai Hospital)

17:15-19:00 WePoS-25.33
Cortical Current Estimation based on Standard Brain Model using EEG Signals during Motor Imagery
Takase, Yuya* (Shibaura Institute of Tech.); Ogata, Yousuke (Tokyo Institute of Tech.); Yoshimura, Natsue (Tokyo Institute of Tech.); Koike, Yasuharu (Tokyo Institute of Tech.); Kanoh, Shin'ichiro (Shibaura Institute of Tech.)

17:15-19:00 WePoS-25.34
Investigation of Event-Related Potentials Elicited by Virtually Located Auditory Tones
Asai, Miyako* (Shibaura Institute of Technology); Kanoh, Shin'ichiro (Shibaura Institute of Technology); Sakamoto, Shuichi (Tokohu University); Suzuki, Yotichi (Tokohu University)

17:15-19:00 WePoS-25.35
Automated Classification of Pulmonary Nodule in CT Images: Development of Analysis Method using Multi DCNNs
Onishi, Yuya (Fujita Health University); Teramoto, Atsushi* (Fujita Health University); Yamada, Ayumi (Fujita Health University); Tsujimoto, Masakazu (Fujita Health University); Inoue, Takahiro (Fujita Health University); Imaizumi, Kazuyoshi (Fujita Health University); Toyama, Hiroshi (Fujita Health University); Saito, Kunihiko (Fujita Health University); Fuji, Hiroshi (Gifu University)

17:15-19:00 WePoS-25.36
Validation of the Temporal Accuracy of a Capacitive Electrodogram
Kido, Koshiro (Nara Institute of Science and Technology); Tian, Zhaoyin (Nara Institute of Science and Technology); Huang, Ming* (Nara Institute of Science and Technology); Tanuma, Toshiyo (Waseda University); Ono, Naoko (Nara Institute of Science and Technology); Yoshimura, Takumi (Tokyo Metropolitan College of Industrial Technology); Kanaya, Shigehiko (Nara Institute of Science and Technology); Altaf-Ul-Amin, MD. (Nara Institute of Science and Technology)

17:15-19:00 WePoS-25.37
Voice-Based Emotion Model for Identifying Major Depression
Higuchi, Masakazu* (University of Tokyo); Shinohara, Shuji (University of Tokyo); Nakamura, Mitsuteru (University of Tokyo); Omiya, Yasuhito (PST Inc.); Hagihara, Naoki (PST Inc.); Takano, Takeshi (PST Inc.); Toda, Hiroyuki (National Defense Medical College); Saito, Taku (National Defense Medical College); Terashii, Hiroo (Tokyo Medical University); Mitoma, Hiroshi (Tokyo Medical University); Mitsu, Shunji (Dept. of Vocal Analysis of Pathophysiologist Graduate School of Medicine, University of Tokyo); Tokuno, Shinichi (University of Tokyo)

17:15-19:00 WePoS-25.38
Effects of Magnetic Field on Permeability and Heating Properties of Hyperthermia Implant using Micro-/Nano-Magnetic Particles
Tonthat, Loi* (Akita Univ.); Yamamoto, Yoshiyuki (Akita Univ.); Saito, Hajime (Akita Univ.); Mitobe, Kazutaka (Akita Univ.)

17:15-19:00 WePoS-25.39
Finite-Difference-Measurement Methods for Effects of Amyotrophic Lateral Sclerosis on Bio-Impedance of Skeletal Muscles
Sekine, Katsuhisa* (Kanazawa University)

17:15-19:00 WePoS-25.40
Dynamic Neuronal Firing during High Frequency Stimulation in Brain
Huang, Lu (Zhejiang University); Feng, Zhouran (Zhejiang University); Wang, Xiaoxiang (Zhejiang University)

17:15-19:00 WePoS-25.41
User Authentication for Virtual Reality Applications based on Facial EMG induced by Facial Expression Changes
Choi, SeongJun (Hanyang University); Cha, Ho-Seung (Hanyang University); Im, Chang-Hwan* (Hanyang University)

17:15-19:00 WePoS-25.42
The Different Degree of Correlation between Fluctuations of H-Wave Amplitude and Blood Pressure among Triceps Surae Muscles
Taki, Chinami* (Kobe University); Shiozawa, Narihiro (Ritsumeikan University); Kimura, Tetsuya (Kobe University)

17:15-19:00 WePoS-25.43
Estimation of Whole-Brain Task-Evoked Dynamic Effective Connectivity from fMRI in a Visual Oddball Experiment
Zhang, Li# (Shenzhen University); Li, Jiwei (University of Hong Kong); Liu, Chenyang (University of Hong Kong); Chen, Shing-Chow (University of Hong Kong); Chen, Xin (Shenzhen University); Li, Minhua (Shenzhen University); Zhang, Xin-Yu (Shenzhen University); Zhang, Zhiqiu (Shenzhen University)

17:15-19:00 WePoS-25.44
Development of an Unrestrained System for Estimating Urine Volume using an Electrode Matrix Sheet
Tachibana, Katsumori* (Osaka Electro-Communication University); Niikawa, Takuya (Osaka Electro-Communication University)

17:15-19:00 WePoS-25.45
Ultrasound Stimulation Elicits Action Potentials in Leech Noxious Cells
Dedola, Francesca* (BioRobotics Institute Scuola Superiore Sant’Anna); Ulloa Severino, Francesco Paolo (Duke University); Cutrone, Amnaria (Scuola Superiore Sant’Anna); Torre, Vincent (International School for Advanced Studies (SISSA)); Mazzone, Alberto (Istituto di Biorobotica, Scuola Superiore Sant’Anna); Micera, Silvestro (Scuola Superiore Sant’Anna)

17:15-19:00 WePoS-25.46
Impact of the Skull Model on Simulated TFUS Beam Profiles
Pasquinelli, Cristina* (Technical University of Denmark); Montanaro, Hazel (ITIS Foundation for Research on Information Technologies in Society); Neufeld, Esra (Foundation for Research on Information Technologies in Society (ITIS)); Lee, Hyunjo (Korea Advanced Institute of Science and Technology (KAIST)); Thielscher, Axel (Copenhagen University Hospital Hvidovre, Denmark & Biomedical Engineering Section)

17:15-19:00 WePoS-25.47
Pulsation Detection with Acoustic Palpation for Robotic Surgery
Chen, Chien-Hsi (OVGU); Sühn, Thomas (TU Ilmenau); Illanes, Alfredo (Otto-von-Guericke-University Magdeburg); Maldonado, Ivan (OVGU, INKA); Wex, Cora (Otto-von-Guericke-University Magdeburg); Croner, Roland (Otto-von-Guericke-University Magdeburg); Boese, Axel (Dept. of Medical Engineering, Otto-von-Guericke-University of Magdeburg, Germany); Friebel, Michael* (Otto-von-Guericke-University)
17:15-19:00  WePoS-26.15
Comparison between Condyle and Mastoid
17:15-19:00  WePoS-26.14
Contribution of Placement in Bone Conduction Transmission – Comparison between Condyle and Mastoid
Qin, Xiuyuan* (Chiba University); Otsuka, Sho (Chiba University); Nakagawa, Seiji (Chiba University)

17:15-19:00  WePoS-26.13
Estimation of Body Water using Wrist-Type Bioelectrical Impedance Analyzer
Lee, Yeolho (SAIT (Samsung Advanced Institute of Technology)); Namkoong, Kak* (Samsung Advanced Institute of Technology, Samsung Electronics Co., Ltd.)

17:15-19:00  WePoS-26.12
Modelling Valvular Diseases using a Virtual Physiology Engine
Ruales Rosero, Paul (University of Illinois at Urbana-Champaign); Rajeswaran, Pavithra (University of Illinois at Urbana-Champaign); Webb, Jeffrey (Kitware, Inc.); Bray, Aaron (Kitware, Inc.); Kesavadas, Thanekurussi* (UIUC/HCESC)

17:15-19:00  WePoS-26.11
One-Point Calibration of Pulse Transit Time to Blood Pressure
Mousavi, Azin Sadat (University of Maryland); Zhu, Junxi (University of Maryland); Carek, Andrew (Georgia Institute of Technology); Inan, Omer (Georgia Institute of Technology); Hahn, Jin-Oh* (University of Maryland); Makkamala, Ramakrishna (Michigan State University)

17:15-19:00  WePoS-26.10
Cardiovascular Risk Predictors Tracking from Arm and Ankle Cuff Pulse Volume Waveform Information Fusion
Ghasemi, Zahra (Univ. of Maryland); Lee, Jongchan (Univ. of Maryland); Kim, Chang-Sei (Chonnam National Univ.); Cheng, Hao-min (Taipei Veterans General Hospital); Sung, Shih-Hsien (Taipei Veterans General Hospital); Chen, Chen-Huan (National Yang-Ming Univ.); Makkamala, Ramakrishna (Michigan State University); Hahn, Jin-Oh* (Univ. of Maryland)

17:15-19:00  WePoS-26.9
Problem of Controlling Blood Flow through an Intravascular Membrane Catheter
Karabegovic, Alen (Vienna University of Technology); Lukitsch, Benjamin (Vienna University of Technology); Janeczek, Christoph (Vienna University of Technology); Huber-Dangl, Florentine (Vienna University of Technology); Ecker, Paul (TU Wien); Hasar, Michael (Vienna University of Technology); Gloehler, Margit* (TU Wien)

17:15-19:00  WePoS-26.8
Molecular Dynamics Simulation Studies of Thermal Effects Created by Cell Membrane Electroporation
Song, Jiahui* (Wentworth Institute of Technology)

17:15-19:00  WePoS-26.7
Localization of Atrial Fibrillation Rotors in Fibrotic Tissue using Circular Diagnostic Catheters
Ganesan, Prasanth (Florida Atlantic University); Zilouchian, Hussein (Florida Atlantic University); Cherry, Elizabeth (Rochester Institute of Technology); Pertsov, Arkady (SUNY Upstate Medical University); Ghorani, Behnaz* (Florida Atlantic University)

17:15-19:00  WePoS-26.6
Potentiometric Thread based Sensor Patch for Monitoring Ammonium and Ph in Sweat
Terse, Trupti (Tufts University); Matharu, Zimple (Tufts University); Lyu, Boyang (Tufts University); Punjya, Meera (Tufts University); Sonkusale, Sameer* (Tufts University)

17:15-19:00  WePoS-26.5
Successful Development of a Multi-Site Photoplethysmography Device for Fast Peripheral Arterial Disease Diagnosis in Primary Care
Allen, John* (Freeman Hospital); Stansby, Gerard (Newcastle Hospitals); Lacouturier, Jan (Newcastle Univ.); Wilkes, Scott (Sunderland Univ.); Vale, Luke (Newcastle Univ.); McCormack, Tony (Newcastle Hospitals); Sims, Andrew (Newcastle Univ.)

17:15-19:00  WePoS-26.4
Internet of Medical Things for Healthcare in Smart Monitoring
Estimation of Body Water using Wrist-Type Bioelectrical Impedance Analyzer
Lee, Yeolho (SAIT (Samsung Advanced Institute of Technology)); Namkoong, Kak* (Samsung Advanced Institute of Technology, Samsung Electronics Co., Ltd.)

17:15-19:00  WePoS-26.3
Micro Traces Detection
17:15-19:00  WePoS-26.2
Preparation of SU-8 to Build Nano-Gratings in QCM Surfaces for Micro Traces Detection
De Faria, Rubens Alexandre* (Syracuse Univ.); Abatti, Paulo J. (Federal Univ. of Technology of Parana); Spencer, James T. (Syracuse Univ.); Sponslor, Michael Bradley (Syracuse Univ.); De Faria, Rubens Alexandre (Federal Univ. of Technology of Parana)

17:15-19:00  WePoS-26.29
One-Point Calibration of Pulse Transit Time to Blood Pressure
Mousavi, Azin Sadat (University of Maryland); Zhu, Junxi (University of Maryland); Carek, Andrew (Georgia Institute of Technology); Inan, Omer (Georgia Institute of Technology); Hahn, Jin-Oh* (University of Maryland); Makkamala, Ramakrishna (Michigan State University)

17:15-19:00  WePoS-26.28
An Assessment Framework for Voice-Based Biometrics
Cocioceanu, A.N. (Dept. of Computational Physics and Information Technologies of Horia Hulubei National Institute for Physics and Nuclear Engineering); Raportaru, M.C. (Dept. of Computational Physics and Information Technologies of Horia Hulubei National Institute for Physics and Nuclear Engineering); Spanakis, Emmanouil G.* (Foundation for Research and Technology – Hellas (FORTH)); Markopoulos, Ioannis (FORTHNET S.A.); Inan, Omer (University of Maryland); Kesavadas, Thanekurussi* (UIUC/HCESC)

17:15-19:00  WePoS-26.27
Localization of Atrial Fibrillation Rotors in Fibrotic Tissue using Circular Diagnostic Catheters
Ganesan, Prasanth (Florida Atlantic University); Zilouchian, Hussein (Florida Atlantic University); Cherry, Elizabeth (Rochester Institute of Technology); Pertsov, Arkady (SUNY Upstate Medical University); Ghorani, Behnaz* (Florida Atlantic University)

17:15-19:00  WePoS-26.26
Potentiometric Thread based Sensor Patch for Monitoring Ammonium and Ph in Sweat
Terse, Trupti (Tufts University); Matharu, Zimple (Tufts University); Lyu, Boyang (Tufts University); Punjya, Meera (Tufts University); Sonkusale, Sameer* (Tufts University)

17:15-19:00  WePoS-26.25
Successful Development of a Multi-Site Photoplethysmography Device for Fast Peripheral Arterial Disease Diagnosis in Primary Care
Allen, John* (Freeman Hospital); Stansby, Gerard (Newcastle Hospitals); Lacouturier, Jan (Newcastle Univ.); Wilkes, Scott (Sunderland Univ.); Vale, Luke (Newcastle Univ.); McCormack, Tony (Newcastle Hospitals); Sims, Andrew (Newcastle Univ.)

17:15-19:00  WePoS-26.24
One-Point Calibration of Pulse Transit Time to Blood Pressure
Mousavi, Azin Sadat (University of Maryland); Zhu, Junxi (University of Maryland); Carek, Andrew (Georgia Institute of Technology); Inan, Omer (Georgia Institute of Technology); Hahn, Jin-Oh* (University of Maryland); Makkamala, Ramakrishna (Michigan State University)

17:15-19:00  WePoS-26.23
Estimation of Body Water using Wrist-Type Bioelectrical Impedance Analyzer
Lee, Yeolho (SAIT (Samsung Advanced Institute of Technology)); Namkoong, Kak* (Samsung Advanced Institute of Technology, Samsung Electronics Co., Ltd.)

17:15-19:00  WePoS-26.22
Modelling Valvular Diseases using a Virtual Physiology Engine
Ruales Rosero, Paul (University of Illinois at Urbana-Champaign); Rajeswaran, Pavithra (University of Illinois at Urbana Champaign); Webb, Jeffrey (Kitware, Inc.); Bray, Aaron (Kitware, Inc.); Kesavadas, Thanekurussi* (UIUC/HCESC)

17:15-19:00  WePoS-26.21
One-Point Calibration of Pulse Transit Time to Blood Pressure
Mousavi, Azin Sadat (University of Maryland); Zhu, Junxi (University of Maryland); Carek, Andrew (Georgia Institute of Technology); Inan, Omer (Georgia Institute of Technology); Hahn, Jin-Oh* (University of Maryland); Makkamala, Ramakrishna (Michigan State University)

17:15-19:00  WePoS-26.20
Cardiovascular Risk Predictors Tracking from Arm and Ankle Cuff Pulse Volume Waveform Information Fusion
Ghasemi, Zahra (Univ. of Maryland); Lee, Jongchan (Univ. of Maryland); Kim, Chang-Sei (Chonnam National Univ.); Cheng, Hao-min (Taipei Veterans General Hospital); Sung, Shih-Hsien (Taipei Veterans General Hospital); Chen, Chen-Huan (National Yang-Ming Univ.); Makkamala, Ramakrishna (Michigan State University); Hahn, Jin-Oh* (Univ. of Maryland)

17:15-19:00  WePoS-26.19
An Assessment Framework for Voice-Based Biometrics
Cocioceanu, A.N. (Dept. of Computational Physics and Information Technologies of Horia Hulubei National Institute for Physics and Nuclear Engineering); Raportaru, M.C. (Dept. of Computational Physics and Information Technologies of Horia Hulubei National Institute for Physics and Nuclear Engineering); Spanakis, Emmanouil G.* (Foundation for Research and Technology – Hellas (FORTH)); Markopoulos, Ioannis (FORTHNET S.A.); Inan, Omer (University of Maryland); Kesavadas, Thanekurussi* (UIUC/HCESC)

17:15-19:00  WePoS-26.18
Internet of Medical Things for Healthcare in Smart Monitoring and Diverse Networking Environments
Spanakis, Emmanouil G.* (Foundation for Research and Technology – Hellas (FORTH))

17:15-19:00  WePoS-26.17
Successful Development of a Multi-Site Photoplethysmography Device for Fast Peripheral Arterial Disease Diagnosis in Primary Care
Allen, John* (Freeman Hospital); Stansby, Gerard (Newcastle Hospitals); Lacouturier, Jan (Newcastle Univ.); Wilkes, Scott (Sunderland Univ.); Vale, Luke (Newcastle Univ.); McCormack, Tony (Newcastle Hospitals); Sims, Andrew (Newcastle Univ.)

17:15-19:00  WePoS-26.16
Deception Detection Algorithm based on Deep Neural Networks
Hwang, Layoung (Yonsei University); Kim, SeunGChan (Yonsei University); Shin, Taemin* (Yonsei University)
Wall Shear Stress Determination using Computed Tomography

Feature Quantities of EEG to Characterize Human Internal States of Concentration and Relaxation

Fabrication of PDMS Microchip for Bio Mechanochemical Study

Optimum Amplitude Ratios for Determination of Blood Pressure

Accuracy of Blood Pressure Estimation Models

Comparison of Fast Strategies in Calculating Fractional Flow Reserve from Computed Tomography Coronary Angiography

Wall Shear Stress Determination using Computed Tomography Coronary Angiography and Computational Fluid Dynamics Associated with High-Risk Plaque

17:15-19:00  WePoS-26.16
Feature Quantities of EEG to Characterize Human Internal States of Concentration and Relaxation
Sazuka, Naoya* (Sony Corp.); Komoriya, Yota (Sony Corp.);
Ezaki, Takayuki (Sony Corp.); Uruguchi, Maki (Nagoya University);
Ohira, Hideki (Nagoya University)

17:15-19:00  WePoS-26.17
Fabrication of PDMS Microchip for Bio Mechanochemical Study
Tang, Yu-Hsien (Instrument Technology Research Center, National Applied Research Labs); Huang, Tsung-Tao* (Instrument Technology Research Center, National Applied Research Labs)

17:15-19:00  WePoS-26.18
Optimum Amplitude Ratios for Determination of Blood Pressure
Alvarado Alvarez, Mariana* (Univ. of Alberta); Padwal, Raj (Univ. of Alberta); Sridar, Sangita (Univ. of Alberta); Jalali, Afroz (Univ. of Alberta); Ringrose, Jennifer S. (Univ. of Alberta); Kobryn, Alexander E. (NanoTechnology Research Center, National Research Council Canada); Hiebert, Wayne K. (NanoTechnology Research Center, National Research Council Canada)

17:15-19:00  WePoS-26.19
Accuracy of Blood Pressure Estimation Models
Alvarado Alvarez, Mariana* (Univ. of Alberta); Padwal, Raj (Univ. of Alberta); Sridar, Sangita (Univ. of Alberta); Jalali, Afroz (Univ. of Alberta); Ringrose, Jennifer S. (Univ. of Alberta); Kobryn, Alexander E. (NanoTechnology Research Center, National Research Council Canada); Hiebert, Wayne K. (NanoTechnology Research Center, National Research Council Canada)

17:15-19:00  WePoS-26.20
Comparison of Fast Strategies in Calculating Fractional Flow Reserve from Computed Tomography Coronary Angiography
Zhang, Jun-Mei (Natl. Heart Center); Shuang, Dongsi (Wuhan Asia Heart Hospital); Baskaran, Lodhendran (Natl. Heart Centre Singapore); Huang, Weimin (Inst. for Infocomm Research, Agency for Science Technology and Research); Teo, Soo Kng (Instit. of High Performance Computing, A*STAR); Allen Jr, John Canson (Duke-NUS Medical School Singapore); Tan, Ru San (Natl. Heart Center); Su, Xi (Wuhan Asia Heart Hospital); Ismail, Nasrul (Natl. Heart Centre Singapore); Zhou, Jiayin (Inst. for Infocomm Research); Fam, Jiang Ming (Natl. Heart Centre Singapore); Chon, Chee Yang (Natl. Heart Centre Singapore); Keng, Yung Jih Felix (Natl. Heart Centre Singapore); Wong, Aaron Sung Lung (Natl. Heart Centre Singapore); Tan, Jack Wei Chieh (Natl. Heart Centre Singapore); Yeo, Khun Keong (Natl. Heart Centre Singapore); Wong, Philip (Natl. Heart Centre Singapore); Chon, C.T. (Natl. Heart Centre Singapore); Ho, K.W. (Natl. Heart Centre Singapore); Yap, J. (Natl. Heart Centre Singapore); Kassab, G. (Purdue Univ.); Chua, T. (Natl. Heart Center); Koh, T.H. (Natl. Heart Centre Singapore); Tan, S.Y. (Natl. Heart Center)

17:15-19:00  WePoS-26.21
Wall Shear Stress Determination using Computed Tomography
Zhang, Jun-Mei (Natl. Heart Center); Shuang, Dongsi (Wuhan Asia Heart Hospital); Baskaran, Lodhendran (Natl. Heart Centre Singapore); Huang, Weimin (Inst. for Infocomm Research, Agency for Science Technology and Research); Teo, Soo Kng (Instit. of High Performance Computing, A*STAR); Allen Jr, John Canson (Duke-NUS Medical School Singapore); Tan, Ru San (Natl. Heart Center); Su, Xi (Wuhan Asia Heart Hospital); Ismail, Nasrul (Natl. Heart Centre Singapore); Zhou, Jiayin (Inst. for Infocomm Research); Fam, Jiang Ming (Natl. Heart Centre Singapore); Chon, Chee Yang (Natl. Heart Centre Singapore); Keng, Yung Jih Felix (Natl. Heart Centre Singapore); Wong, Aaron Sung Lung (Natl. Heart Centre Singapore); Tan, Jack Wei Chieh (Natl. Heart Centre Singapore); Yeo, Khun Keong (Natl. Heart Centre Singapore); Wong, Philip (Natl. Heart Centre Singapore); Chon, C.T. (Natl. Heart Centre Singapore); Ho, K.W. (Natl. Heart Centre Singapore); Yap, J. (Natl. Heart Centre Singapore); Kassab, G. (Purdue Univ.); Chua, T. (Natl. Heart Center); Koh, T.H. (Natl. Heart Centre Singapore); Tan, S.Y. (Natl. Heart Center)
July 18 Wednesday

17:15-19:00 WePoS-26.31
Electrophysiological Approach to Assess Spectral Resolution using Acoustic Change Complex
Kang, Soojin (University of Ulsan); Woo, Jiwhan (University of Ulsan); Seol, Hye Yoon (Hearing Research Lab, Samsung Medical Center); Hong, Sung Hwa (Samsung Medical Center); Moon, Il Joon* (Sungkyunkwan University School of Medicine)

17:15-19:00 WePoS-26.32
Identifying Patterns of Peripheral Vasoconstriction from the Photoplethysmogram in Sickle Cell Disease
Ji, Yunhua* (University of Southern California); Coates, Thomas (Children's Hospital Los Angeles, USC Keck School of Medicine); Chalacheva, Patjanaporn (University of Southern California); Khoo, Michael (University of Southern California)

17:15-19:00 WePoS-26.33
Personal Recognition using Geometric Features in the Phase Space of a Single Lead Electrocardiogram
Kim, Dohyun (Hanyang University); Kim, Sun I. (Osong Medical Innovation foundation); Lee, Jong-Shill* (Hanyang University); Yoo, Sunhyun (Hanyang University); Kim, Min Seong (Hanyang University); Lee, SeungJae (Hanyang University); Kim, Sunae (Dept. of BioMedical Engineering Hanyang University)

17:15-19:00 WePoS-26.34
Micro-Cast Agarose Devices for the Confinement and Alignment of Cells
Tanaka, Nobuyuki* (RIKEN); Tanaka, Yo (RIKEN)

17:15-19:00 WePoS-26.35
Proposal of a Zero Point Setting Method for Direct Contact Operation of High-Power Robots
Kawai, Masaki* (Meijo Univ.); Mukai, Toshiharu (Meijo Univ.)

17:15-19:00 WePoS-26.36
Effects of Shapes and Sizes of Permanent Magnets in Transcranial Static Magnetic Stimulation: A Numerical Simulation Study
Im, Chang-Hwan* (Hanyang University); Lee, Chany (Hanyang University); Lee, Sangjun (Hanyang University); Park, Jimin (Hanyang University)

17:15-19:00 WePoS-26.37
Development of Evaluation System for Von Willebrand Factor Degradation by Shear Stress of Mechanical Circulation
Inoue, Yusuke* (Institute of Development, Aging and Cancer, Tohoku Univ.); Hayakawa, Naoi (Tohoku Medical University); Matsumoto, Masanori (Nara Medical University); Horiiuchi, Hisanori (Tohoku University); Shiraishi, Yasuyuki (Tohoku University); Yamada, Akhiro (Tohoku University); Masato, Karube (Tohoku University); Genda, Tatsuya (Tohoku University); Yambe, Tomoyuki (Tohoku University)

17:15-19:00 WePoS-26.38
Modeling of Barlow’s Mitral Valve: Annular Dilation and Leaflet Thickening
Jeong, Soohwan (Sungkyunkwan Univ.); Hong, Woojae (Sungkyunkwan University); Kim, Hyunggun* (Sungkyunkwan University)

17:15-19:00 WePoS-26.39
High Rate Pulsatile Stimuli can Enhance the Detection of Sub-Threshold Signals in a Hippocampal CA1 Neuron Network Model
Mori, Ryosuke (Kanto Gakuin University); Mino, Hiyoriyu* (Kanto Gakuin University); Kawaguchi, Minato (Kanto Gakuin University); Durand, Dominique (Case Western Reserve University)

17:15-19:00 WePoS-26.40
Periodontitis Detection in Panoramic Radiographs using Deep Convolutional Neural Network (DCNN)
Kang, Se Ryong* (Seoul National University); Yi, WonJin (Seoul National University, School of Dentistry)

17:15-19:00 WePoS-26.41
The use of Third Order Derivative of Photoplethysmography for Better Vascular Age Estimation
Sakata, Kotomi (Hosei Univ.); Hirose, Kumi* (Hosei Univ.); Kaseda, Yuto (Hosei Univ.); Hama, Kengo (Hosei Univ.); Wakabayashi, Satoshi (Hosei Univ.); Yama, Kazuo (Hosei Univ.)

17:15-19:00 WePoS-26.42
Compressed Content Thresholding based 3D Segmentation for Coronary Artery Reconstruction from CT Coronary Angiography
Pengdong, Xiaor* (Natl. Heart Centre Singapore); Zhang, Jun-Mei (Natl. Heart Center); Baskaran, Lohendran (Natl. Heart Centre Singapore); Tan, Ru San (Natl. Heart Center); Ismael, Nasrul (Natl. Heart Centre Singapore); Fam, Jiang Ming (Natl. Heart Centre Singapore); Chin, Chee Yang (Natl. Heart Centre Singapore); Keng, Yung Jih Felix (Natl. Heart Centre Singapore); Wong, Aaron Sung Lung (Natl. Heart Centre Singapore); Tan, Jack Wei Chieh (Natl. Heart Centre Singapore); Yeo, Khung Keong (Natl. Heart Centre Singapore); Wong, Philip (Natl. Heart Centre Singapore); Chin, Chee Tang (Natl. Heart Centre Singapore); Ho, Kay Woon (Natl. Heart Centre Singapore); Yap, Jonathan (Natl. Heart Centre Singapore); Chua, Terrance (Natl. Heart Center); Koh, Tian Hai (Natl. Heart Centre Singapore); Tan, Swee Yaw (Natl. Heart Centre); Lim, Suo Teik (Natl. Heart Centre Singapore); Zhong, Liang (Natl. Heart Centre Singapore)

17:15-19:00 WePoS-26.43
Rattractor – Closed-Loop Rat Attractor by Deep Brain Stimulation
Fukuyama, Osamu* (University of Tokyo); Sudo, Naoki (University of Tokyo); Mabuchi, Kunihiko (University of Tokyo); Isoyama, Takashi (University of Tokyo)

17:15-19:00 WePoS-26.44
Kim, Sung-Woo (Dept. of Radiation Oncology, Asan Medical Center, Seoul, Korea); Jeong, Chiyoun (Dept. of Radiation Oncology, Asan Medical Center, Seoul, Korea); Cho, Byungchul (Dept. of Radiation Oncology, Asan Medical Center, Ulsan College of Medicine); Cho, Sangun (Division of Physics and Semiconductor Science, Dongguk University); Im, Hyunsik (Division of Physics and Semiconductor Science, Dongguk University); Hwang, Ui-Jung (Dept. of Radiation Oncology, Chungnam Natl. University Hospital); Lim, Young Kyung (Proton Therapy Center, Natl. Cancer Center, Goyang, Gyeonggi, Korea); Cha, Seung Nam (Dept. of Engineering Science, University of Oxford, United Kingdom); Kwak, Jun Won* (Dept. of Radiation Oncology, Asan Medical Center, Seoul, Korea)

17:15-19:00 WePoS-26.45
Extraction of Sitting Posture Feature by Postural Muscles’ EMG
Nakamura, Ayano* (Ritsumeikan University); Okada, Shina (Ritsumeikan University); Makikawa, Masaaki (Ritsumeikan University); Shiozawa, Naruhiko (Ritsumeikan University)

17:15-19:00 WePoS-26.46
Quantitative Accuracy of Cardiac Photon Counting Tomography
Juntunen, Mikael Asko Karlto* (University of Oulu); Inkinen, Saku Irene (University of Oulu); Ketola, Juuso Heikki Jalmari (University of Oulu); Nieminen, Mikka Tapio (University of Oulu)

17:15-19:00 WePoS-26.47
Evaluation of Longitudinal Wave Velocity in Bone of Diabetic Rats by a Micro-Brillouin Scattering Technique
Yasui, Hirokazu* (Doshisha University); Kawase, Mami (Doshisha University); Ichihashi, Hayato (Doshisha University); Kuzuhara, Yuki (Doshisha University); Ikegawa, Masaya (Doshisha University); Matsukawa, Mami (Doshisha University)
17:15-19:00 WePoS-26.48
Hand-Held Photometer
Rapid, On-Spot Analysis of Beta-Lactamase using a
17:15-19:00 WePoS-27.5
Koreans for Speech Rehabilitation

17:15-19:00 WePoS-26.49
Breast Cancer Histology Classification using Deep Residual
Networks
Ravi, Kamalakkannan (Indian Institute of Technology Madras); Selvaraj, Sakthivel (Healthcare Technology Innovation Centre, IIT Madras); J M, Poorneshwaran (Healthcare Technology Innovation Centre (HTIC), Indian Institute of Technology (IIT) Madras); Ram, Keerthi (IIT Madras); Sivaprakasam, Mohanansanka* (Indian Institute of Technology Madras)

17:15-19:00 WePoS-26.50
Intraoperative Rapid Quantification of Iron Accumulation in
Sentinel Lymph Nodes for Breast Cancer Patients
Kuwahata, Akhiro* (Univ. of Tokyo); Taruno, Kanae (Showa Univ. Hospital); Chikaki, Shinichi (Univ. of Tokyo); Kaneko, Miki (Kyushu Univ.); Saito, Itsuro (Univ. of Tokyo); Yoshibe, Akinobu (Univ. of Tokyo); Matsuda, Sachiko (Keio Univ.); Kurita, Tomoko (Nippon Medical School Hospital); Makita, Masujiro (Nippon Medical School Musashikosugi Hospital); Takei, Hiroaki (Nippon Medical School Hospital); Nakamura, Seigo (Showa Univ. Hospital); Kusakabe, Moriya (Univ. of Tokyo); Sekino, Masaki (Univ. of Tokyo)

17:15-19:00 WePoS-27.1
Cell Polarization Lag with Fast Input Frequency Shift in
Microfluidic Dielectrophoresis System
Lim, Jongwon* (Yonsei University)

17:15-19:00 WePoS-27.6
Highly Enhanced Photothermal Bacterial Activity of
rGO/CPT750 Assembly
Jeong, Geumri* (Korea Natl. University of Transportation); Park, Jongyeap (Korea Natl. University of Transportation); Choi, Cheong A. (Korea Natl. University of Transportation); Jeong, Do Hyeon (RAPHAS); Kim, Jung Dong (RAPHAS); Kim, Hong Kee (RAPHAS); In, Insik (Korea Natl. University of Transportation)

17:15-19:00 WePoS-26.51
Deep Residual Network based Automatic Image Grading for
Diabetic Macular Edema
Sukumar, Santhosh Kumar (Healthcare Tech. Innovation Centre, IIT Madras); Ravi, Kamalakkannan (Indian Institute of Tech. Madras); Mulay, Supriiti (Healthcare Tech. Innovation Centre, IIT Madras); Ram, Keerthi (IIT Madras); Sivaprakasam, Mohanansanka* (Indian Institute of Tech. Madras)

17:15-19:00 WePoS-27.2
Effects of Dynamic Emotional Expressions on
Face-Related Evoked Potentials
Ikai, Marie (Waseda Univ.); Kawashima, Issaku (Faculty of Human Sciences, Waseda Univ.); Morose, Keiko* (Waseda Univ.)

17:15-19:00 WePoS-26.52
Development of a Mental Care System for Patients Recuperating
in a Sterile Room after Hematopoietic Cell Transplantation
Joko, Shiko (Graduate School of Robotics and Design, Osaka Institute of Technology.); Ohsuga, Mieko* (Osaka Institute of Technology); Tada, Yuma (Dept. of Hematology, Osaka International Cancer Institute); Ito, Kumiko (Dept. of Rehabilitation, Osaka International Cancer Institute); Oshima, Kazuya (Dept. of Rehabilitation, Osaka International Cancer Institute); Ishihara, Jun (Dept. of Hematology, Osaka International Cancer Institute)

17:15-19:00 WePoS-27.3
Evaluation of Blood Phantom for Non-Invasive Blood-Glucose
Measurement based on Bioelectromagnetic Response
Muramatsu, Dairōku* (Tokyo University of Science); Kanamori, Nanami (Tokyo University of Science); Yamamoto, Takahiko (Tokyo University of Science)

17:15-19:00 WePoS-27.12
Electrical Conductivity of Gelatin for EEG Phantom
McBrearty, Michael* (DCS Corp.); Egland, Ian (DCS Corp.); Norte, Michael (DCS Corp.); Hairston, W. David (U.S. Army Research Lab)

17:15-19:00 WePoS-27.13
A Method of Determining the Pronunciation Quality of
Koreans for Speech Rehabilitation
Lee, Keonsoo (Soonchunhyang University); Nam, Yunyoung* (Soonchunhyang University)

17:15-19:00 WePoS-27.4
Rapid, On-Spot Analysis of Beta-Lactamase using a
Hand-Held Photometer
Li, Shihao* (NUS)

17:15-19:00 WePoS-27.5
Developing a Functional Capability Model for Patients
Undergoing Rehabilitation Therapy
Luo, Lincong (Institute of Automation, Chinese Academy of Sciences); Peng, Liang (Institute of Automation, Chinese Academy of Sciences); Wang, Chen (Institute of Automation, Chinese Academy of Sciences); Hou, Zeng-Guang* (Institute of Automation, Chinese Academy of Sciences); Wang, Wei (Chinese Academy of Sciences)

17:15-19:00 WePoS-27.6
Sentinel Lymph Nodes for Breast Cancer Patients
Reines March, Gabriel* (NHS Greater Glasgow and Clyde); Dick, Craig (NHS Greater Glasgow and Clyde); Harrow, Stephen (NHS Greater Glasgow and Clyde); Ju, Xiangyang (NHS Greater Glasgow and Clyde); Marshall, Stephen (Univ. of Strathclyde)

17:15-19:00 WePoS-27.10
Improving the Interpersonal Relationship of the Elderly with
Mild Cognitive Impairment by using Speaker Recognition and
Social Networks
Tan, Tan-Hsu* (National Taipei University of Technology); Liu, Shing-Hong (Chuo University of Technology, Taichung)

17:15-19:00 WePoS-27.11
Electrical Conductivity of Gelatin for EEG Phantom
Norton, Mark (Department of Electrical Engineering, Imperial College London); Bin, Seungsoo (Department of Electrical Engineering, KAIST); Park, Hyunwoo (Department of Electrical Engineering, KAIST)

17:15-19:00 WePoS-27.14
A Multi-Window Majority Voting Strategy to Classify Different
Wrist Motion using Forearm’s Electromyography Signal
Wahid, Md. Ferdous (Texas A&M Univ. at Qatar); Tafreshi, Reza* (Texas A&M Univ. at Qatar); Langari, Reza (Texas A&M Univ.)

17:15-19:00 WePoS-27.15
Detection of Functional Connectivity Dynamics in Intrinsic
Connectivity Networks from Resting-State EEG
Shou, Guofa* (University of Oklahoma); Mosconi, Matthew (University of Kansas); Ethridge, Lauren (University of Oklahoma Health Sciences Center; University of Oklahoma); Sweeney, John (University of Cincinnati); Ding, Lei (University of Oklahoma)
17:15-19:00 WePoS-27.17
Preliminary Study on Automated Staging of Cerebral Infarction in Head MR and CT Images using Machine Learning
Kudo, Kohei (Daido Hospital); Yamada, Ayumi (Fujita Health Univ.); Teramoto, Atsushi* (Fujita Health Univ.); Saito, Kuniaki (Fujita Health Univ.); Kamiya, Satoru (Daido Hospital); Hirofumi, Anno (Daido Hospital); Fujita, Hiroshi (Gifu Univ.)

17:15-19:00 WePoS-27.18
Phasic Electrodermal Responses Evoked by Instantaneous Longitudinal Accelerations for a Self-Driving Car Environment
Laubner, Dominic (Saarland Univ. of Applied Sciences Germany); Thines, David (Saarland Univ. of Applied Sciences Germany); Delarber, Philip (Saarland Univ. of Applied Sciences Germany); Dauth, Florian (ZF Friedrichshafen AG); Bagci, Ilker (ZF Friedrichshafen AG); Corona-Strauss, Farah I. (Saarland Univ.); Strauss, Daniel J.* (Saarland Univ., Medical Faculty)

17:15-19:00 WePoS-27.19
Autonomic Nervous System Correlates of Motion Sickness during Highly Automated Driving
Thines, David (Saarland Univ. of Applied Sciences Germany); Laubner, Dominic (Saarland Univ. of Applied Sciences Germany); Dauth, Florian (ZF Friedrichshafen AG); Bagci, Ilker (ZF Friedrichshafen AG); Strauss, Daniel J.* (Saarland Univ., Medical Faculty); Corona-Strauss, Farah I. (Saarland Univ.)

17:15-19:00 WePoS-27.20
In Silico Design of a Mesh-Based Worm-Inspired Organobot
Webster-Wood, Victoria* (Carnegie Mellon University)

17:15-19:00 WePoS-27.21
The Impact of Exercise Loads on Brain Hemodynamic Response Estimated by Functional Near-Infrared Spectroscopy Yongrong, Wang (Chongqing University); Yun, Zhao (Chongqing University); Jiang, Bin (Chongqing University); Hou, Wensheng (Bioengineering Inst of Chongqing University); Chen, Lin* (Chongqing University)

17:15-19:00 WePoS-27.22
3D Bioprinting Biomimetic Blood Vessels
Zhou, Xuan* (George Washington Univ.); Esworthy, Timothy (George Washington Univ.); Plesnias, Michael (George Washington Univ.); Zhang, Lijie Grace (George Washington Univ.)

17:15-19:00 WePoS-27.23
Multi-Class Malignancy Prediction with Oversampling Technique
Yung, Matthew (DePaul University); Brown, Eli (DePaul University); Rasin, Alexander (DePaul University); Furst, Jacob D. (DePaul University); Raicu, Daniela S.* (DePaul University)

17:15-19:00 WePoS-27.24
Anomaly Detection Method for Cystoscopic Diagnosis of Bladder Cancer based on Deep Learning
Hoshino, Yutarou* (Toho University); Sakanashi, Hidenori (National Institute of Advanced Industrial Science and Technology); Murakawa, Masahiro (National Institute of Advanced Industrial Science and Technology); Nosato, Hirokazu (National Institute of Advanced Industrial Science and Technology)

17:15-19:00 WePoS-27.25
Miniature High Resolution Multi-Axis Force Sensor for Haptic Robotic Surgery
Dai, Yuan* (University of California Los Angeles); Liu, Siyuan (University of California Los Angeles); Paydar, Omeed (University of California Los Angeles); Abirn, Ahmad (University of California Los Angeles); Sun, Songping (University of California Los Angeles); Tao, Anna (University of California Los Angeles); Dubson, Erik P. (UCLA); Grundfest, Warren S. (UCLA); Candler, Robert (University of California Los Angeles)

17:15-19:00 WePoS-27.26
Head-Mounted LED with a Magnetic Optical Rotary Connector
Kwon, Ki Yong* (Plexon); Gnade, Andrew (Plexon Inc.); Patten, Craig (Plexon Inc.); Wiggins, Harvey (Plexon)

17:15-19:00 WePoS-27.27
A Greedy Multiple Probe Placement Algorithm for Thermal Ablation Treatment Planning
Tokiouzi, Zo* (Philips Research and RWTH Aachen University); Grepl, Martin (RWTH Aachen University); Veroy, Karen (RWTH Aachen University); Baragona, Marco (Philips Research); Maessen, Ralph (Philips Research)

17:15-19:00 WePoS-27.28
Motion-Artifact Testing of Electrode Materials for Real-World Neuroimaging
Nonte, Michael* (DCS Corp.); McBrearty, Michael (DCS Corp.); Hainston, W. David (U.S. Army Research Lab)

17:15-19:00 WePoS-27.29
An Enhanced Sensitivity Hybrid NW-Planar FET Biosensor
Kalra, Sumeet* (Indian Institute of Technology Delhi); Kumar, Mamidala Jagadesh (Indian Institute of Technology Delhi); Dhawan, Anuj (Indian Institute of Technology Delhi)

17:15-19:00 WePoS-27.30
Design of a Brain-Computer Interface for Wheelchair Navigation
Yu, Yih-Choung* (Lafayette College); Smith, Brandon (Lafayette College); Du, Hongbo (Lafayette College); Gabel, Lisa A. (Lafayette College)

17:15-19:00 WePoS-27.31
Registration of Fluoroscopy and CT Images for Augmented Reality Assisted Percutaneous Cardiac Interventions
Liu, Jun* (Weill Cornell Medicine); Singh, Gurpreet (Weill Cornell Medicine); Alarefi, Subhi (Weill Cornell Medicine); Caprio, Alexandre (Weill Cornell Medical Center); Min, James (Weill Cornell Medical College); Dunham, Simon (Weill Cornell Medicine); Mosadegh, Bobak (Weill Cornell Medicine)

17:15-19:00 WePoS-27.32
Real Time Deformation of Virtual Organs using Finite Element Method
Wang, Kuocheng (UIUC/HCESC); Kesavadas, Thankurussi* (UIUC/HCESC)

17:15-19:00 WePoS-27.33
Effects of Adaptive Servo-Ventilation on Cardiac Efficiency and Autonomic Balance in CHF-CSR: A Computer Simulation Study
Hu, Wen-Hsin* (University of Southern California); Khoo, Michael (University of Southern California)

17:15-19:00 WePoS-27.34
Assessing Gait Impairment in Parkinson's Disease using a Single Lumbar Sensor
Czech, Matthew* (Pfizer); Demanuele, Charmaine (University of Southampton); Zhang, Hao (Pfizer); Ho, Bryan (Tufts Medical Center); Erb, Kelley (Pfizer); Patel, Shaymal (MC10, Inc.)

17:15-19:00 WePoS-27.35
Eye Movements in Schizophrenia during Facial Emotion Recognition using Hidden Markov Models
Kim, Taehyun* (Gongju National Hospital); Noh, Soo Rim (Chungnam National University); Kim, Sang-Ho (Engineering Center of Hyundai Engineering, co); Kim, Yohan (Dept. of Psychology, Chungnam National University)
Assessment of Patients with Negative Symptoms of Schizophrenia from Movement, and Prosodic and Conversational Speech Signals
Chakraborthy, Debsubhra* (Institute for Media Innovation, Nanyang Technological Univ.); Yang, Zixu (Institute of Mental Health); Tahir, Yasir (Institute for Media Innovation, Nanyang Technological Univ.); Dauweels, Justin (NTU); Magnenat-Thalmann, Nadia (Univ. of Geneva); Tan, Bhying-Leet (Health and Social Sciences, Singapore Institute of Technology); Lee, Jimmy (Institute of Mental Health)

Segmentation and Simplification of Images for Tactile Diagrams
Ferro, Tyler (Virginia Commonwealth University); Pawluk, Diane* (Virginia Commonwealth University)

Characterization of Calibration Nonlinearity for a Novel Smart Brace
Young, Calvin (University of Guelph); Oliver, Michele (University of Guelph); Gordon, Karen (School of Engineering, University of Guelph); Hamilton-Wright, Andrew* (Mount Allison University)

An Improvement of Meta-Database on MicroRNA Target Genes for Statistical Integrative Analysis of MicroRNA and mRNA
Matsubara, Megumi* (Kogakuin University); Umezu, Tomohiro (Tokyo Medical University); Ohyashiki, Junco H. (Tokyo Medical University); Fukuoka, Yutaka (Kogakuin University)

Fabrication of Micro-Electrode by Screen-Printing Method and Measurement of Sensing Response
Itagaki, Masayuki* (Tokyo Univ. of Science); Hoshi, Yoshinao (Tokyo Univ. of Science); Shitanda, Isao (Tokyo Univ. of Science)

How Deep can Hand-Crafted Features Be?
Khosravan, Naj* (Center for Research in Computer Vision-University of Central Florida); Richey, Winona L. (Center for Research in Computer Vision-University of Central Florida); Bagci, Ulas (University of Central Florida)

Calibration of Automated Transcranial Magnetic Stimulation Program
Westawski, Sean (Wilkes Univ.); Sabouni, Abas* (Wilkes Univ.)

Automatic Detection of Tonic-Clonic Seizures in Epilepsy based on Low-Complexity Video Analysis
Yazaki, Yoshinao* (Tokyo Univ. of Agriculture and Technology); Watanabe, Satsuki (SAITama Medical Univ. Hospital); Tanaka, Yuichi (Tokyo Univ. of Agriculture and Technology)

Robust Decoding Animal Forelimb Movement using Kernel Sliced Inverse Regression with Multimodal Neural Signals
Yeh, Chia-Jung (National Yang-Ming University); Chou, Yi-Ting (National Yang-Ming University); Yang, Shih-Hung (Feng Chia University); Lo, Yu-Chun (Taipei Medical University); Chen, You-Yin* (National Chiao-Tung University)

Flu-Related Tweet Classification using FastText
Alessa, Ali (1989); Faetzipour, Miad* (University of Bridgeport); Alhassan, Zakhriya (Durham University)

Development of a Real-Time and Automatic Pressure Reactivity Index Monitoring System for Diagnosis of Cerebral Autoregulation
Yang, Seungman (Seoul National Univ.); Ko, Sang-Bae (Seoul National Univ. Hospital); Cho, Won-Sang (Seoul National Univ. Hospital); Kim, Hee Chan* (Seoul National Univ.)

Availability of ICF for Utilization of Health Data
Sakurai, Risa* (National Cerebral and Cardiovascular Center Research Institute); Takemura, Tadamasu (University of Hyogo); Yamaguchi, Masakazu (Graduate School of Applied Informatics University of Hyogo, So-Hatsu.net); Motobani, Takayuki (University of Hyogo); Imazu, Takafumi (Graduate School of Applied Informatics, University of Hyogo); Asada, Tomomi (University of Hyogo); Uemura, Koji (National Cerebral and Cardiovascular Center Research Institute); Hiramatsu, Haruhiko (National Cerebral and Cardiovascular); Tsuyoshi, Yamamoto (University of Hyogo Graduate School of Applied Informatics); Narazaki, Hiroshi (University of Hyogo); Shishido, Toshiaki (National Cerebral and Cardiovascular Center Research Institute)

Effects of EEG-Based Closed-Loop Transcranial Alternating Current Stimulation on Theta Power during a Cognitive Task
Rampersad, Sumintra* (Northeastern University); Orhan, Umut (Northeastern University); Kos, Maciej Rafal (Northeastern University); Mansfield, Karen (University of Oxford); Marghi, Yeganeh M. (Northeastern University); Sheffield, James (University of Oxford); Dillard, Michael (Honeywell); Erdogmus, Deniz (Northeastern University); Pascual-Leone, Alvino (Harvard Medical School); Yeung, Nick (University of Oxford); Mathan, Santosh (Honeywell Labs); Cohen Kadosh, Roi (University of Oxford); Pavel, Misha (Northeastern University)

Pre-Eclampsia Screening in High-Risk Expectant Mothers by Daily Blood Pressure Measurements Modeled with the Viterbi Algorithm
Sohn, Erik* (Samsung Semiconductor, Inc.); Altini, Marco (Bloom Technologies, USA - ACTLab, University of Passau, DE); Lanssens, Dorien (Zol); Gyselaers, Wilfried (Zol); Penders, Julien (Bloomlife)

Reliability of Measurement of the Pectoralis Minor Muscle Thickness using Rehabilitative Ultrasound Imaging
Ji Young, Lim (Dept. of Physical Therapy, Konyang University College of Medical Sciences); Se Yeong, Lee (Dept. of Physical Therapy, Konyang University College of Medical Sciences); Chang-Hyun, Lee (Pusan National University Hospital, Rehabilitation Medicine); Park, Dae-Sung* (Konyang University, College of Medical Sciences)
A Rapid Cryptosporidium Biosensor based on the Electrochemical Detection of Polyguanine
Nze, Ugochukwu* (University of Utah); Lambert, Chris (University of Utah); Gale, Bruce Kent (University of Utah); Sant, Himanshu Jayant (University of Utah)

Effects of Aneurysms on the Pressure Wave Propagation in the Artificial Artery Model
Fumitake, Iwase* (Doshisha University); Shinya, Shimada (Doshisha University); Natsuko, Itai (Doshisha); Lagrée, Pierre-Yves (UPMC); Matsukawa, Mami (Doshisha University)

Estimation of Brain Activity using Sloreta and Evaluation of Emotion by Machine Learning
Minokawa, Ryo (Doshisha University); Okuya, Teruhisa (Panasonic Corp., Eco Solutions Company); Iwakawa, Mikio (Panasonic Corp., Eco Solutions Company); Sasabe, Kohji (Panasonic Corp.); Uegaki, Yuriko (Panasonic Corp., Eco Solutions Company); Watanabe, Yoshiaki (Doshisha University); Akiyama, Iwaki* (Doshisha University)

A Neural Network Model based on the Turtle Visual System
Anderson, Ronald* (Texas Tech University); Ghosh, Bijoy (Texas Tech University)

Blood Plasma Separation using a 3D Printed Disc for POCT Test
Chung, Kwang Hyo* (Electronics and Telecommunications Research Institute); Kim, Jin Tae (Electronics and Telecommunications Research Institute); Ahn, Chang-Geun (Electronics and Telecommunications Research Institute); Jeong, Eunju (Electronics and Telecommunications Research Institute); Noh, Hyung Wook (Electronics and Telecommunications Research Institute); Kim, Bong Kyu (Electronics and Telecommunications Research Institute)

Tuning-Free Bayesian Inference of Functional Brain Networks
Yu, Hang* (Nanyang Technological University); Wu, Songwei (Nanyang Technological University); Dauweils, Justin (NTU)

Effect of Rolling Exercise using Vibration Ball on Back for Viscoelastic Properties of Back in Healthy Adult: Preliminary Study
Lee, Seul (Dept. of Physical Therapy, Konyang Univ.); Lee, Jong Yeop (Dept. of Physical Therapy, Konyang Univ.); Lee, Chung Jae (Dept. of Physical Therapy, Konyang Univ.); Lee, Seong Joo (Graduate School of Physical Therapy, Konyang Univ.); Park, Daesung* (Konyang Univ., College of Medical Sciences)

Correlation of Subjective Motion Sickness Level with EEG Power Bands and Phase Amplitude Coupling
Schäfer, Patrick Johannes (Systems Neuroscience and Neurotechnology Unit, Neurocenter, Faculty of Medicine, Saarland Univ., Homburg/Saar, Germany); Delarber, Philipp (Saarland Univ. of Applied Sciences Germany); Laubner, Dominic (Saarland Univ. of Applied Sciences Germany); Thines, David (Saarland Univ. of Applied Sciences Germany); Flotho, Philipp (Saarland Univ. Faculty of Medicine); Dauth, Florian (ZF Friedrichshafen AG); Bagci, Ilker (ZF Friedrichshafen AG); Corona-Strass, Farah I. (Saarland Univ.); Strauss, Daniel J.* (Saarland Univ., Medical Faculty)

Utilize Round-Robin based Prediction Model to Distinguish Prognostic Grade Scale in Adenocarcinoma from Pulmonary Computed Tomographic Images
Chen, Bo-Wei* (Natl. Taiwan Univ.); Chang, Joseph (Natl. Taiwan Univ.); Chen, Li Wei (Natl. Taiwan Univ.); Yang, Shun-Mao (Natl. Taiwan Univ. Hospital and Natl. Taiwan Univ. College of Medicine); Wang, Hao-Jen (Natl. Taiwan Univ.); Lin, Mong-Wei (Natl. Taiwan Univ. Hospital and Natl. Taiwan Univ. College of Medicine); Chen, Leng-Jung (Natl. Taiwan Univ.); Hsu, Fu-Sheng (Natl. Taiwan Univ.); Li, Chia-Chen (Natl. Taiwan Univ.); Chen, Chung-Ming (Natl. Taiwan Univ.)

Neuromotor Incoordination Index as a Measure of Physical and Cognitive Fatigue
Palmer, Jeffrey (MIT Lincoln Lab); Williamson, James* (MIT Lincoln Lab); Lammert, Adam (MIT Lincoln Lab); McKindles, Ryan (MIT Lincoln Lab); Yu, Bea (MIT Lincoln Lab); Nolan, Michael (MIT Institute for Medical Engineering and Science); Perricone, Joey (MIT Lincoln Lab); Quateri, Thomas (MIT Lincoln Lab)

P3-Like Auditory Event-Related Potentials with Oddball Paradigm under Various Auditory Stimuli
Lee, Jee Won* (Ewha Womans Univ.); Lee, Youjin (Ewha Womans Univ.); Cho, Yoon Kyung (Ewha Womans Univ.); Kim, Soonyoung (Ewha Womans Univ.); Sung, Jee Eun (Dept. of Communication Disorders, Graduate School, Ewha Womans Univ.); Jun, Sang Beom (Ewha Womans Univ.)

Effect of pH on the Activity of Tissue Plasminogen Activator
Labra-Odde, Isidora (University of Auckland); Dodd, Joanna R (University of Auckland); Suresh, Vinod* (University of Auckland); Birch, Nigel (University of Auckland)

Optimized Cavity-Shaped Magnet of Handheld Magnetic Probe for Identifying Sentinel Lymph Nodes
Kuwahata, Akihiro* (Univ. of Tokyo); Kusakabe, Moriaki (Univ. of Tokyo); Chikaki, Shinichi (Univ. of Tokyo); Saito, Tsuro (Univ. of Tokyo); Sekino, Masaki (Univ. of Tokyo)

Precision of Peak Intervals between R Wave and Pulse Wave on Postural Changes
Tagawa, Munenori* (Osaoka Electro-Communication University); Fujie, Tatsuro (Osaka Electro-Communication University); Nakamura, Hideo (Osaka Electro-Communication University)

A Neuronal Network Approach to Analyze Cooling Effect against Epileptic Discharges
Regonia, Paul Rossener (Univ. of Chicago); Vaidya, Mukta (Univ. of Chicago); Zhong, Shuyue (Northwestern Univ.); Wang, Po T. (Univ. of California Irvine); Do, An H. (Univ. of California Irvine); Kamper, Derek (North Carolina State Univ.); Slutzky, Marc (Northwestern Univ.)
The Design of a Serious Game for Evaluation of Cognition Ability and Instrumental Activities of Daily Living in Elderly People
Hou, Chun-Ju (Southern Taiwan University of Science and Technology); Huang, Min-Wei (National Cheng Kung University); Huang, Shuo Bin (Dept. of Electrical Engineering, Southern Taiwan University of Science and Technology); Wang, You-Yu (Dept. of Psychiatry, Chiayi Branch Taichung Veterans General Hospital); Cheng, Li-Shun (Dept. of Psychiatry, Chiayi Branch Taichung Veterans General Hospital); Chen, Yen-Ting* (Southern Taiwan University of Science and Technology)

Autoregressive Model in LP (p<sub>51</sub>) Space by LAPPS for EEG Analysis
Bore, Joyce Chelangat (Univ. of Electronic, Science and Technology of China (UESTC, China); Yi, Chanlin (Univ. of Electronic Science and Technology of China); Li, Peiyang (Univ. of Electronic Science and Technology of China); Harmah, Dennis Joe (UESTC, China); Zhang, Yi (Univ. of Electronic Science and Technology of China); Yao, Dezong (Univ. of Electronic Science and Technology of China); Xu, Peng* (Univ. of Electronic, Science and Technology of China (UESTC, China))

Statistical Properties of Neural Spike Trains in Response to Rate-Amplitude-Modulated Pulsatile Electric Stimuli in an Auditory Nerve Fiber Model
Iwasaki, Mako (Kanto Gakuen University); Mino, Hiroyuki* (Kanto Gakuen University)

Study on Forceps-Mounted Measurement Device to Estimate Elasticity of Organ
Iwamoto, Yuki (Teikyo Heisei Univ.); Kamei, Shion (Teikyo Heisei Univ.); Kim, Daeyoung* (Teikyo Heisei Univ.); Hara, Kazuaki (Univ. of Tokyo); Kobayashi, Etsuko (Tokyo Women’s Medical Univ.); Sakuma, Ichiro (Univ. of Tokyo)

Influence of Medical Devices on Forceps-Mounted Measurement System
Kamei, Shion (Teikyo Heisei Univ.); Iwamoto, Yuki (Teikyo Heisei Univ.); Kim, Daeyoung* (Teikyo Heisei Univ.); Hara, Kazuaki (Univ. of Tokyo); Kobayashi, Etsuko (Tokyo Women’s Medical Univ.); Sakuma, Ichiro (Univ. of Tokyo)

Internal Pressure and Stress Changes of Pancreas While being Compressed
Kuroda, Kazusa (Teikyo Heisei University); Kim, Daeyoung* (Teikyo Heisei University); Kobayashi, Etsuko (Tokyo Women’s Medical University); Sakuma, Ichiro (University of Tokyo); Asano, Takehide (Clinical Research Center, National Hospital Organization Chiba-East-Hospital)

An Elasticity-Control of Tumor Model using Agar
Kobayashi, Ryu (Teikyo Heisei University); Kim, Daeyoung* (Teikyo Heisei University); Shao, Xiang (Hefei University of Technology); Li, Bing Nan (Hefei University of Technology); Kobayashi, Etsuko (Tokyo Women’s Medical University); Sakuma, Ichiro (University of Tokyo)

Longitudinal Registration of Breast DCE-MRI: A Point Set Approach
Shen, I-Ting* (National Taiwan University); Yang, Ai-Su (National Taiwan University); Chang, Yeun-Chung (Depts. of Medical Imaging National Taiwan University Hospital and College of Medicine); Chen, Chung-Ming (National Taiwan University)
WePoS-28.39
Estimation of Signal Source Position Inside the Human Muscle during Isometric Contraction using Switching Voltage Divider
Sakae, Yusuke* (Toray Engineering Co., Ltd.); Inaka, Chisa (Toray Engineering Co., Ltd.); Shiozawa, Naruhiro (Ritsumeikan University); Okada, Shima (Ritsumeikan University); Makikawa, Masaaki (Ritsumeikan University)

17:15-19:00
WePoS-28.40
Evaluation on the Microneedle Array as Biopotential Electrodes
Hong, Young-Jun* (Samsung Electronics Co., Ltd.); Ebejer, Neil (IBM Research - Zurich); Drechsler, Ute (IBM Research - Zurich); Ruch, Patrick (IBM Research - Zurich); Michel, Bruno (IBM Research - Zurich)

17:15-19:00
WePoS-28.41
An Adaptive Rehabilitation Intervention to Train Bimanual Coordination in TBI
Hoxha, Armand (Kessler Foundation); Yue, Guang (Kessler Foundation); Saleh, Soha* (Kessler Foundation)

17:15-19:00
WePoS-28.42
Estimating Voluntary Muscle Activity during Constant and Time-Varying Electrical Stimulation
Roloi, Vitor* (Case Western Reserve University); Tran, Hieu (University of Arizona); Makowski, Nathaniel (MetroHealth Medical Center); Crago, Patrick (Case Western Reserve University); Fu, Michael J (Case Western Reserve University)

17:15-19:00
WePoS-28.43
Training and Testing of Basic Gestures using Hidden Markov Model (HMM)
Contreras Alejo, Diana Aleksandra* (Instituto Politecnico Nacional (IPN)); Gallegos Funes, Francisco Javier (Instituto Politecnico Nacional (IPN))

17:15-19:00
WePoS-28.44
Applied Electric Fields Promote Human Neural Precursor Migration in a Substrate Dependent Manner
Ahmed, Umalhair* (University of Toronto); Popovic, Milos R. (University of Toronto); Ahlfors, Jan-Eric (New World Labs); Morshed, Cindi (University of Toronto)

17:15-19:00
WePoS-28.45
Social Media as a Networking Tool for Engineering Students
Ansari, Darius (University of Illinois at Chicago); Esmaileighi, Hananeh* (University of Illinois at Chicago (UIC))

17:15-19:00
WePoS-28.46
K-Nearest-Neighbor for Linking Clinical Data to Corneal Shape
Bouazziz, Haila* (University of Montreal); Brunette, Isabelle (University of Montreal); Meunier, Jean (Universite de Montreal)

17:15-19:00
WePoS-28.47
Spatial Auditory Attention Decoded by Means of Sustained Electromyographic Postauricular Muscle Activity
Corona-Strauss, Farah I.* (Saarland Univ.); Schroeder, Andreas (Saarland Univ. of Applied Sciences); Hannemann, Ronny (Siemens Audiologische Technik); Hackley, Steven Allen (Univ. of Missouri, Columbia); Strauss, Daniel J. (Saarland Univ., Medical Faculty)

17:15-19:00
WePoS-28.48
Wearable Ultrasound Sensor for Detection of Embolic Events
Celinski, Dmitrijs* (Brown Univ.); Nurmiikko, Arto (Brown Univ.)

17:15-19:00
WePoS-28.49
Modulation of Brain-Based Value Signals using Electrical Stimulation
Santacruz, Samantha R.* (University of California, Berkeley); Zippi, Ellen L. (University of California, Berkeley); Carmena, Jose M. (University of California, Berkeley)

17:15-19:00
WePoS-28.50
Evaluation of Language Proficiency based on EEG Response
Ihara, Aya* (National Institute of Information and Communications Technology); Matsumoto, Atsushi (National Institute of Information and Communications Technology); Katayama, Jun'ichi (Kwansei Gakuin University); Ojima, Shiro (Yokohama National University); Naruse, Yasushi (National Institute of Information and Communications Technology)

WePoS-29: 17:15-19:00
Exhibit Hall 2
Wednesday 1 Page Research Poster Paper (VI) (Poster Session)

17:15-19:00
WePoS-29.1
Non-Invasive Acoustic Device for Monitoring Low Pulsatility Blood Pressure Patients with Rotary Blood Pumps
Rao, Adam* (Univ. of California - San Francisco); Williams, Ryan (Univ. of California - Berkeley); Klein, Liviu (Univ. of California, San Francisco); Wieselthaler, Georg (Univ. of California - San Francisco); Roy, Shuvo (Univ. of California at San Francisco)

17:15-19:00
WePoS-29.2
Wireless InfrOx Ph Sensor for Quantitative Dental Caries Detection
Tabata, Miyuki* (Tokyo Medical and Dental University); Miyahara, Yui (Tokyo Medical and Dental University, Institute of Biomaterials and Bioengineering)

17:15-19:00
WePoS-29.3
A 15 Mbps Battery-Less Data Transmission Demonstration for Wireless Neural Recording System of BMI Applications
Ishizaki, Haruya (Medical School of Osaka Univ.); Ando, Hiroshi* (NICT); Takizawa, Kenichi (NICT); Suzuki, Takaufumi (National Institute of Information and Communications Technology)

17:15-19:00
WePoS-29.4
Regression based Automated Scoring Technique of Mild Cognitive Impairment (MCI) Severity using Single Channel EEG Measures with Auditory Stimulus
Khatun, Saleha* (Univ. of Memphis); Morshed, Bashir (Univ. of Memphis); Bidelman, Gavin M. (Univ. of Memphis)

17:15-19:00
WePoS-29.5
Development of a Tissue-Engineered Blood Vessel based Microphysiological System
Chen, Zaozao* (Southeast Univ.); Leong, Kam (Columbia Univ.)

17:15-19:00
WePoS-29.6
Biomechanical Analysis of Toe Extension after a Novel Tendon Transfer Surgery for Implantable Passive Mechanisms
Le, Anthony* (Oregon State Univ.); Balasubramanian, Ravi (Oregon State Univ.); Sweeney, James (Oregon State Univ.)

17:15-19:00
WePoS-29.7
Deep Learning Framework for Predicting Food Allergy from Longitudinal Microbiome Taxonomic Profiles
Metwally, Ahmed* (University of Illinois at Chicago); Dai, Yang (University of Illinois at Chicago)

17:15-19:00
WePoS-29.8
Fixed-Volume System for Automation of Urine Measurements
Xu, Colin (University of Illinois at Chicago); Xie, Katherine* (University of Illinois at Chicago); Berrum, Ernesto (University of Illinois at Chicago); Ansari, Darus (University of Illinois at Chicago); Sofer, Laurel (University of Illinois at Chicago); Niederberger, Craig (University of Illinois at Chicago)
Information Acquisition from a Communication Robot in Older Persons with Cognitive Impairments
Nakayama, Yui* (Ochanomizu University); Saito, Daisuke (Tokyo Denki University); Nishiura, Yuko (Research Institute of National Rehabilitation Center for Persons with Disabilities); Mizuno, Jumpei (National Rehabilitation Center for Persons with Disabilities); Ohnaka, Shinichi (NEC Corp.); Watabe, Koichi (Research Institute of National Rehabilitation Center for Persons with Disabilities); Sadohara, Ken (National Institute of Advanced Industrial Science and Technology); Hamada, Hiromi (France Bed Co., Ltd.); Nihei, Misato (University of Tokyo); Ohta, Yui (Graduate School of Humanities and Sciences, Ochanomizu University); Inoue, Takenobu (Research Institute of National Rehabilitation Center for Persons with Disabilities)

Depth Extraction System for Earlobe Crease to Support Diagnosis of Arteriosclerosis
Hirano, Harutoyo* (Shizuoka Univ.); Uematsu, Daichi (Shizuoka Univ.); Futagawa, Masato (Shizuoka Univ.); Tsuji, Toshio (Hiroshima Univ.); Hashimoto, Haruki (Graduate School of BioMedical and Health Sciences, Hiroshima Univ.); Kishimoto, Shinji (Hiroshima Univ.); Oda, Nozomu (Hiroshima Univ.); Kajikawa, Masato (Hiroshima Univ.); Maruhashi, Tatsuya (Hiroshima Univ.); Higashi, Yukihito (Hiroshima Univ.)

EEG Hyperscanning to Investigate Compassion and Altruistic Behavior
Toppo, Jelia (University of Rome "Sapienza"); Ciaramidaro, Angela (Dept. of Child and Adolescent Psychiatry, Psychosomatics, and Psychotherapy, Johann Wolfgang Goethe University); Freitag, Christine M. (Dept. of Child and Adolescent Psychiatry, Psychosomatics, and Psychotherapy, Goethe-University, Frankfurt); Sinitchkin, Michael (University of Kiel); Astolfi, Laura* (University of Rome Sapienza)

Hydrogel-Mediated Electrodeposition of Polymers with Incorporated Molecular Gradients for Biomedical Applications
Mirab, Ereshthesadat (University of Houston); Majd, Sheereen* (University of Houston)

Predicting Proteins with Adverse Effect by Machine Learning
Huang, Chih-Han* (National Taiwan University); Hwang, Ming-Jing (Academia Sinica)

Evaluation of Endoscopic Intestinal Suture Training by Time-Series Comparison with the Expert Model
Aoki, Seiya* (Chiba Univ.); Yamaguchi, Tomoko (Chiba Univ.); Uemura, Munenori (Kyushu Univ.); Hashizume, Makoto (Kyushu Univ.); Nakamura, Ryoochi (Chiba Univ.)

Learning from EHR to Predict ICU Mortality and Resuscitation
Villaroman, Andrea* (University of California, San Francisco); Singh, Narinder (University of California, Berkeley); Hu, Xiao (University of California, San Francisco)

Tactile Sensitivity to High-Frequency Vibratory Patterns in the Palm
Park, Jaeyoung* (Korea Institute of Science and Technology); Son, Bukan (Korea Institute of Science and Technology); Oh, Yonghwan (Korea Institute of Science and Technology)
### Thursday, 19 July 2018

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<td>08:00-09:30</td>
<td>ThAT1.1</td>
<td>Meeting Room 311</td>
<td>Single-Trial Detection of Semantic Anomalies from EEG during Listening to Spoken Sentences</td>
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<td>ThATA1.1: Tanaka, Hiroki* (Nara Institute of Science and Technology); Watanabe, Hiroki (Nara Institute of Science and Technology); Maki, Hayato (Nara Institute of Science and Technology); Sakriani, Sakti (Nara Institute of Science and Technology); Satoshi, Nakamura (Nara Institute of Science and Technology)</td>
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<tr>
<td>09:00-10:15</td>
<td>ThAT1.2</td>
<td>Meeting Room 311</td>
<td>Single Neuron Firing Rate Statistics in Motor Cortex during Execution and Observation of Movement</td>
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<td>ThATA1.2: Jiang, Xiuyan (University of California Los Angeles); Ryu, Stephen (Stanford University); Shenoy, Krishna V. (Stanford University); Kao, Jonathan* (Stanford University)</td>
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<tr>
<td>10:30-11:45</td>
<td>ThAT1.3</td>
<td>Meeting Room 311</td>
<td>Individual Classification of Single Trial EEG Traces to Discriminate Brain Responses to Speech with Different Signal-to-Noise Ratios</td>
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<td>ThATA1.3: Fuentes Cabrera, Alvaro Rodrigo* (UNEEG Medical); Petersen, Eline Borch (Technical University of Denmark); Graversen, Carina (Erksholm Research Centre); Thell Sørensen, Allan (UNEEG Medical); Lunner, Thomas (Erksholm Research Centre - Part of Oticon); Rank, Mike Lind (Widex A/S)</td>
</tr>
<tr>
<td>11:45-13:00</td>
<td>ThAT1.4</td>
<td>Meeting Room 311</td>
<td>Effect of Vigilance Changes on the Incidence of High Frequency Oscillations in the Epileptic Brain</td>
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<td>ThATA1.4: Al-Bakri, Amir (University of Kentucky); Yaghoubi, Farid (FDA); Besio, W. G. (University of Rhode Island); Ding, Lei (University of Oklahoma); Modur, Pradeep (University of Texas Southwestern Medical Center); Sunderam, Sridhar* (University of Kentucky)</td>
</tr>
<tr>
<td>08:00-09:30</td>
<td>ThAT2.1</td>
<td>Meeting Room 312</td>
<td>Tracking of Dynamic Functional Connectivity from MEG Data with Kalman Filtering</td>
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<td>ThATA2.1: Tronarp, Filip* (Aalto University); Puthanmadam Subramaniyam, Narayan (Aalto University); Särkkä, Simo (Aalto University); Parkkonen, Lauri (Aalto University)</td>
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<tr>
<td>09:00-10:15</td>
<td>ThAT2.2</td>
<td>Meeting Room 312</td>
<td>Does Independent Component Analysis Influence EEG Connectivity Analyses?</td>
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<td>ThATA2.2: Pester, Britta* (Jena Univ. Hospital; Friedrich Schiller Univ. Jena); Ligges, Carolin (Dept. of Child and Adolescent Psychiatry, Psychosomatic Medicine and Psychotherapy; Jena Univ. Hospital)</td>
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<td>08:30-09:45</td>
<td>ThAT2.3</td>
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<td>Increased Randomness of Functional Network Connectivity in Nicotine and Alcohol Consumers</td>
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<td>Vargara, Victor Manuel* (The Mind Research Network); Hutchison, Kent (University of Colorado Boulder); Calhoun, Vince (The Mind Research Network/University of New Mexico)</td>
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<tr>
<td>09:00-10:15</td>
<td>ThAT2.4</td>
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<td>EEG Hyperconnectivity Study on Saxophone Quartet Playing in Ensemble</td>
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<td>Greco, Alberto* (Univ. of Pisa); Spada, Danilo (Univ. of Pavia, and Le2i, Univ. de Bourgogne Franche-Comte); Rossi, Simone (Azienda Ospedaliera Univ. of Siena); Perani, Daniela (Scientific Institute San Raffaele, Milan); Valenza, Gaetano (Univ. of Pisa); Scilingo, Enzo Pasquale (Univ. of Pisa)</td>
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<td>10:30-11:45</td>
<td>ThAT2.5</td>
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<td>Investigation of Interaction between Physiological Signals and fMRI Dynamic Functional Connectivity using Independent Component Analysis</td>
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<td>Nikolasou, Foivia (University of Cyprus); Orphanidou, Christina (University of Cyprus); Murphy, Kevin (Cardiff University); Wise, Richard G. (Cardiff University Brain Research Imaging Center (CUBRIC), School of Psychology, Cardiff University, Cardiff); Mitsis, Georgios D.* (McGill University)</td>
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<td>11:45-13:00</td>
<td>ThAT2.6</td>
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<td>Identification of Time-Varying Cortico-Cortical and Cortico-Muscular Coherence during Motor Tasks with Multivariate Autoregressive Models</td>
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<td>Xifra-Porxas, Alba (McGill Univ.); Kostogiou, Kyriaki (McGill Univ.); Lantiviere, Sara (McGill Univ.); Niso, Guomar (McGill Univ.); Kassinopoulos, Michalis (McGill Univ.); Boudrias, Marie-Helene (McGill Univ.); Mitsis, Georgios D.* (McGill Univ.)</td>
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<td>08:00-09:30</td>
<td>ThAT3.1</td>
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<td>Test-Retest Reliability of Functional Connectivity and Graph Metrics in the Resting Brain Network</td>
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<td>Jin, Dan (University of Chinese Academy of Sciences, Institute of Automation, Chinese Academy of Sciences); Xu, Kaibin (National Lab of Pattern Recognition, Institute of Automation, Chinese Academy of Sciences); Liu, Bing (Institute of Automation, Chinese Academy of Sciences); Jiang, Tianzi (Institute of Automation); Liu, Yong* (Chinese Academy of Sciences)</td>
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<tr>
<td>09:00-10:15</td>
<td>ThAT3.2</td>
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<td>Implementation of High-Performance Correlation and Mapping Engine for Rapid Generation of Brain Connectivity Networks from Big fMRI Data</td>
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<td>Lusher, John* (Texas A&amp;M Univ.); Ji, Jinxuquan (Texas A&amp;M University)</td>
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<td>10:30-11:45</td>
<td>ThAT3.3</td>
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<td>Dynamic Influence of Ongoing Brain Stimulation on Resting State fMRI Connectivity: A Concurrent tDCS-fMRI Study</td>
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<td>Wang, Xin* (Chinese Univ. of Hong Kong); Wong, Wan-wa (Chinese Univ. of Hong Kong); Fang, Yuq (Chinese Univ. of Hong Kong); Chen, Winnie Chi-wen (Chinese Univ. of Hong Kong); Tong, Kai Yu, Raymond (Chinese Univ. of Hong Kong)</td>
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<td>11:45-13:00</td>
<td>ThAT3.4</td>
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<td>Characterizing the Effects of MR Image Quality Metrics on Intrinsic Connectivity Brain Networks: A Multivariate Approach</td>
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<td>Jarrahi, Behnaz* (Stanford University School of Medicine); Mackey, Sean (Stanford University School of Medicine)</td>
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</table>
09:00-09:15 ThAT3.5
Measuring the Influence of Physiological Noise Corrections on ICA Derived Intrinsic Connectivity
Brain Networks in Rest and Task fMRI
Jarrahi, Behnaz* (Stanford University School of Medicine); Mackey, Sean (Stanford University School of Medicine)

09:15-09:30 ThAT3.6
Differential Amplitude of Low-Frequency Fluctuations in Brain Networks after BCI Training with and without tDCS in Stroke
Hu, Mengjiao* (Nanyang Technological University)

ThAT4: 08:00-09:30 Meeting Room 315
Minisymposia: New Challenges in Neurorehabilitation (31nvq) (Minisymposium)
Chair: Lafranchi, Matteo (Fondazione Istituto Italiano di Tecnologia)
Co-Chair: Semprini, Marianna (Italian Institute of Technology)

08:00-08:15 ThAT4.1
A Novel Lower Limb Exoskeleton and New Neurorehabilitation-Based Application Scenarios
Lafranchi, Matteo* (Fondazione Istituto Italiano di Tecnologia); Semprini, Marianna (Italian Institute of Technology); Manzano, Emiliano (Fondazione Istituto Italiano di Tecnologia); Cerruti, Giulio (Fondazione Istituto Italiano di Tecnologia); Vassallo, Christian (Fondazione Istituto Italiano di Tecnologia); De Giuseppe, Samuele (Fondazione Istituto Italiano di Tecnologia); Maludruttu, Stefano (Fondazione Istituto Italiano di Tecnologia); Succi, Antonio (Fondazione Istituto Italiano di Tecnologia); Chiappalone, Michela (Istituto Italiano di Tecnologia); Grupioni, Emanuele (INAIL Centro Protesi Budrio); De Michieli, Lorenzo (Fondazione Istituto Italiano di Tecnologia)

08:15-08:30 ThAT4.2
A Platform to Evaluate Cortical Changes Induced by Rehabilitation with Non-Invasive Brain Stimulation
Semprini, Marianna* (Italian Institute of Technology); Bonassi, Gaia (Università di Genova); Pelosin, Elisa (Università di Genova); Martini, Dante (ETH); Avanzino, Laura (Università di Genova); Chiappalone, Michela (Istituto Italiano di Tecnologia)

08:30-08:45 ThAT4.3
Robotic Rehabilitation in Stroke and Parkinson’s Disease: Training Body Awareness to Improve Motor Function
Konczak, Juergen* (University of Minnesota); Elangovan, Naveen (University of Minnesota); Yeh, I-Ling (Singapore Institute of Technology); Cuppone, Anna Vera (Istituto Italiano di Tecnologia)

08:45-09:00 ThAT4.4
Body Machine Interfaces for Assistance and Rehabilitation
Rizzoglio, Fabio (University of Genova); Sciaccitano, Alessio (University of Pinerolo); Prier, Camilla (École Polytechnique Fédérale de Lausanne); Farshchiansadegh, Ali (Northwestern University); Mussa-Ivaldi, Ferdinando (Northwestern University); Casadio, Maura* (University of Genova)

09:00-09:15 ThAT4.5
Non-Invasive Brain Stimulation to Enhance Neuro-Recovery and Rehabilitation
Harris-Love, Michelle* (George Mason University); Harrington, Rachael (Georgia State University); Chan, Evan (Chi-Pang) (MedStar Health Research Institute)

ThAT5: 08:00-09:30 Meeting Room 316A
Minisymposia: Brain Computer Interface and Neurostimulation Technologies for Paralysis and Limb Prosthetic Applications (tpi95) (Minisymposium)
Chair: Bouton, Chad (Northwell Health/Feinstein Institute for Medical Research)

08:00-08:15 ThAT5.1
Progress in Brain-Computer Interfaces for Restoring Movement and Sensation in Paralysis: What have We Learned?
Bouton, Chad* (Northwell Health/Feinstein Inst. for Medical Research)

08:15-08:30 ThAT5.2
Effects of Stimulus Frequency on Tactile Perception in a Long-Term Human Brain-Computer Interface
Gaunt, Robert* (University of Pittsburgh); Hughes, Christopher (University of Pittsburgh); Flesher, Sharlene N (Stanford University); Collinger, Jennifer (University of Pittsburgh); Boninger, Michael (University of Pittsburgh)

08:30-08:45 ThAT5.3
Peripheral Systems for Sensorimotor Restoration for Limb Prosthetics and Paralysis
Tyler, Dustin* (Case Western Reserve University)

ThAT6: 08:00-09:30 Meeting Room 316B
Invited Session: Next Generation Neural Interfaces for Multimodal Recording and Stimulation (1e91b) (Invited Session)
Chair: Kuzum, Duygu (University of California San Diego)
Co-Chair: Chamanzar, Maysamreza (University of California Berkeley)

08:00-08:15 ThAT6.1
Towards High Density Parylene Neural Probe Arrays for Large Scale Recording
Meng, Ellis* (University of Southern California); Weltman Hirschberg, Ahuva (University of Southern California); Xu, Huijing (University of Southern California); Scholten, Kee (University of Southern California); Berger, Theodore (USC); Song, Dong (University of Southern California)

08:15-08:30 ThAT6.2
Strategies for Large-Scale Optogenetics in Non-Human Primates
Yazdan-Shahmorad, Azadeh* (University of Washington); Sabes, Philip N. (University of California, San Francisco)

08:30-08:45 ThAT6.3
Flexible Electronic/Optoelectronic Neural Interfaces
Rogers, John* (University of Illinois)

08:45-09:00 ThAT6.4
Recent Advances in Neural Dust: Towards a Neural Interface Platform
Maharbiz, Michel* (University of California, Berkeley)

ThAT7: 08:00-09:30 Meeting Room 316C
Invited Session: Fostering Healthcare Transformation through Wearable Sensors and Big Data at Work: Preventive, Pervasive and Personalized Care (35viy) (Invited Session)
Chair: Seoane, Fernando (Karolinska Institutet)

08:00-08:15 ThAT7.1
Smart Textiles Enabling Sustainable Health at Work
Lindercrantz, Kaj (Royal Institute of Technology); Diaz-Olivares, Jose Antonio* (Royal Institute of Technology (KTH)); Abtahi, Farhad (KTH Royal Institute of Technology)

08:15-08:30 ThAT7.2
Wearable Sensors Enabling Personalized Occupational Healthcare
Abtahi, Farhad (KTH Royal Institute of Technology); Diaz-Olivares, Jose Antonio* (Royal Institute of Technology (KTH)); Lu, Ke (School of Technology and Health, KTH Royal Institute of Technology); Forsman, Mikael (Karolinska Institutet); Lindercrantz, Kaj (Royal Institute of Technology)

08:30-08:45 ThAT7.3
We@Work: Wellbeing, Health and Safety at Work
Seoane, Fernando* (Karolinska Institutet); Medavilla Martinez, César (Atos Spain S.A.); Diaz-Olivares, Jose Antonio (Royal Institute of Technology (KTH)); Abtahi, Farhad (KTH Royal Institute of Technology)
08:45-09:00 ThAT7.4
Mobile Applications to Enhance Self-Healthcare and Wellbeing at Work
Rodríguez, Juan Mario (Atos Spain); Aso, Santiago (Atos Spain, S.A.); Cavero Barca, Carlos (Atos Spain); Vega-Barbas, Mario* (Karolinska Institutet); Quintero, Ana María (Atos Spain); Ramos Maia Martins, Ivo (Atos Spain); Perez, Manuel (Alhos Orín SA); Mediavilla Martínez, César (Atos Spain S.A.); Jordan Rodriguez, Blanca (ATOS, Madrid)

09:00-09:15 ThAT7.5
Prevention of Work-Related Ill-Health
Lind, Carl* (Institute of Environmental Medicine, Karolinska Institutet & Unit of Ergonomics, KTH Royal Institute of Technology); Eklund, Jörgen (KTH Royal Institute of Technology, Unit of Ergonomics); Yang, Liyun (KTH, Royal Institute of Technology); Forsman, Mikael (Karolinska Institutet)

09:15-09:30 ThAT7.6
The Need for Practical and Reliable Risk Assessment Methods for Prevention of Musculoskeletal Disorders
Forsman, Mikael* (Karolinska Institutet); Yang, Liyun (KTH, Royal Institute of Technology); Borgström, Dennis (Karolinska Institutet); Lind, Carl (Institute of Environmental Medicine, Karolinska Institutet & Unit of Ergonomics, KTH Royal Institute of Technology)

ThAT10: 08:00-09:30 Meeting Room 318A
Invited Session: Imaging Photoplethysmography and Remote Physiological Sensing (3cg25) (Invited Session)
Chair: Blackford, Ethan Brian (Ball Aerospace)
Co-Chair: McDuff, Daniel Jonathan (Microsoft)

08:00-08:15 ThAT8.1
Spectral Estimation Methods for Evaluating iPPG
Pulse Rate Variability
Mediavilla Martínez, César* (Ball Aerospace); Estepp, Justin Ronald (Air Force Research Lab)

08:15-08:30 ThAT8.2
On the Invariance of Remote SpO2 Measurements to the Pulsating Profile of the Skin in the Red-Infrared Diagnostic Window
Moco, Andrea* (Eindhoven University of Technology)

08:30-08:45 ThAT8.3
Assessment of Autonomic Response through Processing of Imaging Photo-Pletysmographic Signals in Psychophysiological Elicitation
Mainardi, Luca* (Politecnico di Milano); Iozzia, Luca (Politecnico di Milano); Valenza, Gaetano (University of Pisa); Cerina, Luca (Politecnico di Milano); Alberti, Chiara (Politecnico di Milano); Eleonora, Centanini (Politecnico di Milano); Coletta, Angela (Politecnico di Milano); Barbier, Riccardo (Politecnico di Milano)

08:45-09:00 ThAT8.4
Noncontact PPG Monitoring from the Patient’s Back during Dental Treatment
Teichmann, Daniel* (RWTH Aachen University); Teichmann, Maren (RWTH Aachen University); Hoog Antink, Christoph (RWTH Aachen University, Aachen, Germany); Wolfart, Stefan (University Hospital RWTH University); Leonhardt, Steffen (RWTH Aachen University); Walter, Marian (RWTH Aachen University)

09:00-09:15 ThAT8.5
High-Speed Multispectral Imaging Photoplethysmography
Blackford, Ethan Brian* (Ball Aerospace); Estepp, Justin Ronald (Air Force Research Lab); McDuff, Daniel Jonathan (Microsoft)

08:00-08:15 ThAT9.1
Microengineered Systems to Modulate the Fusion of Cancer Cells
Sun, Yubing* (University of Massachusetts Amherst); Peyton, Shelly (University of Massachusetts Amherst); Zhu, Peiran (University of Massachusetts Amherst); Tseng, Ning-Hsuan (University of Massachusetts Amherst)

08:15-08:30 ThAT9.2
Quantitative Assessment for the Regularity of Activity of Daily Living (ADL) using MEMS-Based Accelerometers and Its Potential Applications in Medical-Care
Verma, Vijay Kumar* (Chang Gung University); Lin, Wen-Yen (Chang Gung University); Lee, Ming-Yih (Chang Gung University)

08:30-08:45 ThAT9.3
Quantitative Assessment of the Growth of Tumor Spheroids
Huang, Chun-Hao (Chang Gung University); Lei, Kin Fong* (Chang Gung University)

08:45-09:00 ThAT9.4
Fertilization on a Chip
Huang, Yao-Hui (National Tsing Hua Univ.); Lai, Yun-Li (National Tsing Hua Univ.); Yao, Da-Jeng* (National Tsing Hua Univ.)

09:00-09:15 ThAT9.5
Whole-Cell Biosensing System for Detecting Organic Toxicants in Food
Kao, Wei-Chen (Academia Sinica Taiwan); Belkin, Shimshon (Hebrew Univ. of Jerusalem); Cheng, Ji-Yen* (Academia Sinica Taiwan)

ThAT10: 08:00-09:30 Meeting Room 319A
Invited Session: Simulation of Neurological Disorders and their Treatment with Neuromodulation (49pq6) (Invited Session)
Chair: Dokos, Socrates (University of New South Wales)
Co-Chair: Shils, Jay (Rush University Medical Center)

08:00-08:15 ThAT10.1
Neural Systems Modeling as Related to Intra-Operative Neuromonitoring
Shils, Jay* (Rush University Medical Center); Mei, Longzhi (BIDMC); Carlson, Kris (BIDMC/Harvard Medical School); Arle, Jeffrey (Beth Israel Deaconess Medical Center)

08:15-08:30 ThAT10.2
Computational Modelling of Retinal Electrical Stimulation
Dokos, Socrates* (University of New South Wales); Guo, Tianruo (University of New South Wales); Lovell, Nigel H. (University of New South Wales)

08:30-08:45 ThAT10.3
Computational Modeling Insights into Mechanisms of Action in Ultra High Frequency Spinal Cord Stimulation
Arle, Jeffrey* (Beth Israel Deaconess Medical Center); Carlson, Kris (BIDMC/Harvard Medical School); Mei, Longzhi (BIDMC); Shils, Jay (Rush University Medical Center)

08:45-09:00 ThAT10.4
Advancements from Multi-Scale Modeling and Computational Trials for Gliomas
Fathallah-Shaykh, Hassan* (UAB)

09:00-09:15 ThAT10.5
Simulation: A Critical Ingredient in the Electrocoagulation Paradigm
Carlson, Kris* (BIDMC/Harvard Medical School); Mei, Longzhi (BIDMC); Shils, Jay (Rush University Medical Center); Arle, Jeffrey (Beth Israel Deaconess Medical Center)
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<th>Time</th>
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<tr>
<td>08:00-08:15</td>
<td>ThAT11.1</td>
<td>The Confounding Effect of Continuously Varying Kinematics and Kinetics on Ankle Stiffness and Viscosity</td>
<td>Ludwig, Daniel*</td>
<td>Whitmore, Mariah (Northwestern University)</td>
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<tr>
<td>08:15-08:30</td>
<td>ThAT11.2</td>
<td>Conceptual Diversity in Leg Mechanics Inspires Biomimetic Prostheses for Walking and Running</td>
<td>Adamczyk, Peter Gabriel* (University of Wisconsin - Madison)</td>
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<tr>
<td>08:30-08:45</td>
<td>ThAT11.3</td>
<td>Accuracy and Precision of Ankle Joint Stiffness Regulation</td>
<td>Wind, Alexander</td>
<td>Rouse, Elliott (University of Michigan)</td>
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<tr>
<td>08:45-09:00</td>
<td>ThAT11.4</td>
<td>A Model of Muscle Excitations Applied to Predictive Robust Control of Wearable Robots</td>
<td>Pons, Jose Luis*</td>
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<tr>
<td>09:00-09:15</td>
<td>ThAT11.5</td>
<td>Mimicking Human Control of Stance Leg Improves Prosthetic Control</td>
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<td></td>
<td>ThAT11.6</td>
<td>Effereence Copy and Its Implications for Robotic Lower Limb Prostheses</td>
<td>Ferris, Daniel*</td>
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<tr>
<td>08:00-08:15</td>
<td>ThAT12.1</td>
<td>Circadian Rhythm of Multiscale Complexity of Short-Term Cardiac Control</td>
<td>Porta, Alberto*</td>
<td>De Maria, Beatrice (IRCCS Fondazione Salvatore Maugeri, Milano); Cairo, Beatrice (Università degli Studi di Milano); Bari, Vlsta (IRCCS PoliClinico San Donato)</td>
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<tr>
<td>08:15-08:30</td>
<td>ThAT12.2</td>
<td>Performance of Refined Multiscale Entropy in the Nociception Assessment, Implementing a Fuzzy Approach</td>
<td>Silva, Luiz Eduardo Virgilio (Hospital Clinic, Universidad de Barcelona)</td>
<td>Rodrigues, Fernanda L., Rodrigues, Fernanda L. (School of Medicine of Ribeirão Preto); Bari, Vlsta* (IRCCS PoliClinico San Donato); Oliveira, Mauro (School of Medicine of Ribeirão Preto); Fazan Jr. Rubens (School of Medicine of Ribeirão Preto); Porta, Alberto (Università degli Studi di Milano)</td>
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<td>08:30-08:45</td>
<td>ThAT12.3</td>
<td>Multiscale Entropy as a Tool for Complexity Analysis and Nonlinearity Detection in Cardiovascular Oscillations</td>
<td>Silva, Luiz Eduardo Virgilio (School of Medicine of Ribeirão Preto); Rodrigues, Fernanda L., Rodrigues, Fernanda L. (School of Medicine of Ribeirão Preto); Bari, Vlsta* (IRCCS PoliClinico San Donato); Oliveira, Mauro (School of Medicine of Ribeirão Preto); Fazan Jr. Rubens (School of Medicine of Ribeirão Preto); Porta, Alberto (Università degli Studi di Milano)</td>
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08:00-08:15  ThAT15.1

Applications of Multidimensional Motion Sensors in Cardiovascular Monitoring and Medical Imaging
Jafari Tadi, Mojtaba* (University of Turku); Lahdenpohja, Olli (Technology Research Center, University of Turku); Lehtonen, Eero Lennart (University of Turku); Humonen, Tero (Technology Research Center, University of Turku); Mehrang, Saeed (Tampere University of Technology); Päkkälä, Mikko (University of Turku); Koivisto, Tero (University of Turku)

08:15-08:30  ThAT15.2

Evaluation of Relative Goodness of Seismocardiography (SCG) to ECG for Multimodal Cardiac Quiescence Prediction
Yao, Jinqing (Georgia Institute of Technology); Trandapani, Srini (Emory University); Auffermann, William (University of Utah); Wick, Carson A (Camerad Technologies); Bhatti, Pamela* (Georgia Institute of Technology)

08:30-08:45  ThAT15.3

Caveats in the Analysis of Prolonged Seismocardiogram Recordings
Di Rienzo, Marco* (Fondazione Don Carlo Gnocchi); Valin, Emanuele (IRCCS PoliClinico San Donato); Lombardi, Prospero (Fondazione Don Carlo Gnocchi ONlus)

08:45-09:00  ThAT15.4

Gyrocardiography: A Preliminary Investigation of Cardiac Timings
Kheirkhah Dehkordi, Parastoo* (University of British Columbia); Tavakolian, Kourosh (Assistant Professor); Khosrow-khavar, Farzad (Simon Fraser University)

09:00-09:15  ThAT15.5

Longitudinal Ballistocardiogram and Electrocardiogram Measurements from Patients with Heart Failure at Home: Results from the Ongoing Studies and Lessons Learned
Shandhi, Md. Mobashir Hasan (Georgia Institute of Technology); Klein, Liviu (Univ. of California, San Francisco); Fan, Joanna (Univ. of California, San Francisco); Etemadi, Mozziyar (Northwestern Univ.); Inan, Omer* (Georgia Institute of Technology)

09:15-09:30  ThAT15.6

Comfortable and Safe Dry EEG Electrodes for Real-World Neuroimaging
Bradford, J. Cortney* (U.S. Army Research Lab); Bottomley, Summer (U.S. Army Research Lab); Slipher, Geoffrey A. (U.S. Army Research Lab); Hairston, W. David (U.S. Army Research Lab)

09:15-09:30  ThAT16.6

New Approaches in Validating EEG System and Electrode Performance
Hairston, W. David* (U.S. Army Research Lab); Yu, Alfred (U.S. Army Research Lab); Slipher, Geoffrey A. (U.S. Army Research Lab)

09:45-09:00  ThAT17.4

Printed Sensors on Flexible Substrates for Biomedical Applications
Descent, Philippe (École de Technologie Supérieure); Izquierdo, Ricardo* (École de Technologie Supérieure)

09:45-09:00  ThAT17.5

Towards an Optofluidic System for Neurotransmitter Detection
Niyonambaza, Shimwe Dominique (Université Laval); Boisselier, Elodie (Université Laval); Boukadoum, Mounir* (University of Quebec at Montréal); Miled, Amine* (Laval University)

09:15-09:30  ThAT18.1

Continued Evolution of Telemedicine and Personalised Care in Sleep and Respiratory Medicine
Armistead, Jeffrey Peter* (ResMed Ltd., University of Sydney); Javed, Faizan (University of New South Wales); Schindhelm, Klaus (University of New South Wales)
08:15-08:30 ThAT18.2
Loop Gain as a Biomarker of Ventilatory Instability and Its Utility in Predicting the Response to Therapies for Sleep-Disordered Breathing
Edwards, Bradley Allan* (Monash University); Terrill, Phillip Ian (University of Queensland); Landry, Shane (Monash University); Joosten, Simon (Monash Health and Monash University); Owens, Robert (Harvard Medical School); Malhotra, Atul (Brigham and Women's Hospital and Harvard Medical School); White, David P (Brigham and Women's Hospital and Harvard Medical School); Wellman, David Andrew (Harvard Medical School); Hamilton, Garun (Dept. of Respiratory and Sleep Medicine, Monash Medical Centre, Melbourne, Australia); Sands, Scott Aaron (Brigham and Women's Hospital and Harvard Medical School)

09:15-09:30 ThAT19.6
Application of Deep Learning in Low Dose CT Image Analysis
Jiang, Huiqin* (School of Information Engineering, Zhengzhou University); Gao, Jianbo (The First Affiliated Hospital of Zhengzhou University); Ma, Ling (Information Engineering Institute of Zhengzhou University); Yang, Huiqin (Hasso Plattner Institute for Digital Engineering gGmbH)

08:30-08:45 ThAT18.3
Revisiting Plant Gain: New Observations and Extended Models
Khoo, Michael* (University of Southern California); Nava-Guerra, Leonardo (University of Southern California)

09:15-09:30 ThAT19.6
Invited Session: Computational Human Models (III).
High-Frequency Simulations and Measurements (q6644) (Invited Session)

08:00-08:15 ThAT20.1
Electric-Field Probe for Field Measurements up to 300 KHz
Zolj, Adam* (Worcester Polytechnic Institute); Makarov, Sergey (Electrical and Computer Engineering, Worcester Polytechnic Institute); Navarro de Lara, Lucia Isabel (Martin, Center - MH); Nummenmaa, Aapo (Massachusetts General Hospital)

09:00-09:15 ThAT20.5
Efficient Computational Investigation of Implant RF Safety with Anatomical Human Models in MRI Systems
Prokop, Alexander* (CST - A Dassault Systèmes Company); Wittig, Tilmann (CST - A Dassault Systèmes Company); Levine, Steven (Dassault Systèmes Simulia)

08:15-08:30 ThAT20.2
Simulations of Electric-Field Strength in Different Tissues for a Full-Body Birdcage Resonator Operating at 100-200 KHz
Bogdanov, Gene (Worcester Polytechnic Institute); Appleyard, William (Worcester Polytechnic Institute); Noetscher, Gregory* (Worcester Polytechnic Institute); Deng, Zhi-De (National Institute of Mental Health); Nummenmaa, Aapo (Massachusetts General Hospital); Makarov, Sergey (Electrical and Computer Engineering, Worcester Polytechnic Institute)

08:00-08:15 ThAT18.2
Future Directions for Biomedical Image Analysis in the Broader Health Data Context
Maeder, Anthony John* (Flinders University, School of Nursing & Health Sciences)

09:00-09:15 ThAT20.4
RF Channel Modeling in Body Area Networks
Khrac, Katjana (University of Zagreb, Faculty of Electrical Engineering and Computing); Griffin, Wesley (National Institute of Standards and Technology); Sayrafian, Kamran* (NIST); Simunic, Dina (University of Zagreb)

08:15-08:30 ThAT20.2
RF Channel Modeling in Body Area Networks
Khrac, Katjana (University of Zagreb, Faculty of Electrical Engineering and Computing); Griffin, Wesley (National Institute of Standards and Technology); Sayrafian, Kamran* (NIST); Simunic, Dina (University of Zagreb)

08:30-08:45 ThAT19.3
Retinal Image Analysis using Convolutional Neural Network
Hatanaka, Yuji* (Univ. of Shiga Prefecture); Ikawa, Hlbiki (Univ. of Shiga Prefecture); Miyashita, Mitsuhiro (Univ. of Shiga Prefecture); Sunayama, Wataru (The Univ. of Shiga Prefecture); Oogohara, Kazuomi (Univ. of Shiga Prefecture); Muramatsu, Chisako* (Gift Univ.); Fujita, Hiroshi (Gift Univ.)

09:00-09:15 ThAT20.6
Dual-Applicator Microwave Ablation with Non-Parallel Antennas: Simulation and Experimental Evaluation
White, Austin (Kansas State University); Prakash, Punit* (Kansas State University)

08:45-09:00 ThAT19.4
Detection of Nerve Fiber Layer Defect on Retinal Fundus Images for Early Diagnosis of Glaucoma
Muramatsu, Chisako* (Gift University); Watanabe, Ryusuke (Gift University); Ishida, Kyoko (Toho University Ohashi Medical Center); Sawada, Akira (Gift University); Hatanaka, Yuji (University of Shiga Prefecture); Yamamoto, Tetsuya (Gift University); Fujita, Hiroshi (Gift University)

10:00-10:15 ThBT1.1
Electroencephalography Classification in Brain-Computer Interface with Manifold Constraints Transfer
Tan, Chuanqi (Tsinghua University); Sun, Fuchun* (Tsinghua University); Zhang, Wenchang (Tsinghua University); Kong, Tao (Tsinghua University)

09:00-09:15 ThAT19.5
Identification of Prognostic Imaging Biomarkers for Hepatocellular Carcinoma based on Radiogenomics and Multiregion Analysis
Xia, Wei (Suzhou Institute of BioMedical Engineering and Technology, Chinese Academy of Sciences); Chen, Ying (Suzhou Institute of BioMedical Engineering and Technology, Chinese Academy of Sciences); Zhang, Bo (Second Affiliated Hospital of Soochow University); Gao, Xin* (Suzhou Institute of BioMedical Engineering and Technology, Chinese Academy of Sciences)

10:15-10:30 ThBT1.2
Development of a Cognitive Brain-Machine Interface based on a Visual Imagery Method
Koizumi, Koji (University of Tokyo); Ueda, Kazutaka* (University of Tokyo); Nakao, Masayuki (University of Tokyo)
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<th>Time</th>
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<tr>
<td>10:00-10:15</td>
<td>SSVEP Transient Feature Extraction and Rapid Recognition</td>
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<td>Method based on Bistable Stochastic Resonance</td>
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<td>Yao, Pulin (Xi'an Jiao Tong University); Xu, Guanhua* (Xi'an Jiao Tong University); Han, Chengcheng (Xi'an Jiao Tong University); Zhang, Sicong (Xi'an Jiao Tong University); Luo, Ailing (Xi'an Jiao Tong University); Zhang, Qin (Xi'an Jiao Tong University)</td>
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<td>10:15-10:30</td>
<td>A Multi-Feature Fuzzy Index to Assess Stress Level from Bio-Signals</td>
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<td>Chartonnier, Sylvie* (Gipsa-Lab); Vila, Gael (CEA/LETI); Godin, Christelle (CEA/LETI); Lahy, Elene (CEA/LETI/CLINATEC); Sakri, Oumayma (CEA/LETI); Campagne, Aurelie (Laboratoire de Psychologie et Neurocognition, Grenoble)</td>
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<td>10:30-10:45</td>
<td>Automatic Detection of Hot Flash Occurrence and Timing from Skin Conductance Activity</td>
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<td>Forouzanfar, Mohamad* (Stanford University); de Zambotti, Massimiliano (SRI International); Goldstone, Aimée (SRI International); Baker, Fiona (SRI International)</td>
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<td>10:45-11:00</td>
<td>Gated Recurrent Neural Networks for EMG-Based Hand Gesture Classification: A Comparative Study</td>
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<td>Samadani, Ali* (Philips Research North America)</td>
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<td>11:00-11:15</td>
<td>Quantitative Assessment of Cerebellar Ataxia with Kinematic Sensing during Rhythmic Tapping</td>
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<td>Nguyen, Khoa D.* (Deakin Univ.); Pathirana, Pubudu N. (Deakin Univ.); Horne, Malcolm (Florey Institute of Neuroscience and Mental Health); Power, Laura (Royal Victorian Eye and Ear Hospital); Szmulewicz, David (Victorian Eye and Ear Hospital)</td>
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<td>11:15-11:30</td>
<td>Study of Compressed Sensing and Predictor Techniques for the Compression of Neural Signals under the Influence of Noise</td>
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<td>Pagin, Matteo* (Univ. of Ulm); Ortmanns, Maurits (Univ. of Ulm)</td>
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<td>10:00-10:15</td>
<td>Motion Tracking for Beating Heart based on Sparse Statistic Pose Modeling</td>
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<td>Yang, Bo* (University of Electronic Science and Technology of China); Cao, Tingting (University of Electronic Science and Technology of China); Zheng, Wenfeng (University of Electronic Science and Technology of China); Liu, Shan (University of Electronic Science and Technology of China)</td>
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<td>10:15-10:30</td>
<td>Image Data Analysis for Quantifying Scar Transmurality in MRI Rolls</td>
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<td>Karim, Rashed (King's College London); Panayiotou, Maria (King's College London); Chowdhury, Onik (School of Biomedical Engineering &amp; Imaging Sciences, King's College London); Housden, Richard James (King's College London); Hummady, Sana (Siemens Healthineers); Toth, Daniel* (King's College London, UK); Kurzendorfer, Tanja (Friedrich-Alexander University Erlangen-Nuremberg); Mountney, Peter (Siemens); Rhode, Kawai (King's College London)</td>
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<td>10:45-11:00</td>
<td>Comparison of Image Acquisition Techniques in Four-Dimensional Flow Cardiovascular MR on 3 Tesla in Volunteers and Tetralogy of Fallot Patients</td>
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<td>Zhang, Jun-Mei (National Heart Center); Tan, Ru San (National Heart Center); Zhang, Shuo (Philips); van der Geest, Rob (Leiden University Medical Center); Garg, Pankaj (University of Leeds); Leong, Yao (National Heart Centre Singapore); Bryant, Jennifer (National Heart Centre Singapore); Tangcharoen, Tarinee (Ramathibodi Hospital, Mahidol University); Zhao, Xiaodan (National Heart Centre Singapore); Tan, Ju Le (National Heart Centre Singapore); Westenberg, Jos (Leiden University Medical Center); Zhong, Liang* (National Heart Centre Singapore)</td>
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<tr>
<td>11:00-11:15</td>
<td>Multiview Sequential Learning and Dilated Residual Learning for a Fully Automatic Delineation of the Left Atrium and Pulmonary Veins from Late Gadolinium-Enhanced Cardiac MRI Images</td>
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<td>Yang, Guang* (Imperial College London); Shen, Jun (Shenzhen Inst. of Advanced Tech., Chinese Academy of Sciences); Gao, Zhifan (Shenzhen Inst. of Advanced Tech., Chinese Academy of Sciences); Zhang, Heye (Hong Kong Univ. of Science &amp; Tech); Ni, Hao (Univ. College London); Angelini, Elsa (Imperial NIHR BRC, Imperial College London); Mohiaddin, Raad (Imperial College London); Wong, Tom (Imperial College London); Keegan, Jennifer (Imperial College London); Firmin, David (Imperial College London)</td>
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<td>11:15-11:30</td>
<td>Improving Visual Detection of Wall Motion Abnormality with Echocardiographic Image Enhancing Methods</td>
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<td>Omar, Hasmila* (Oxford University); Domingos, Joao (University of Oxford); Patra, Arijit (Oxford University); Leeson, Paul (John Radcliffe Hospital); Noble, J Alison (University of Oxford)</td>
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ThBT4: 10:00-11:30 Meeting Room 315
Minisymposia: Recent Innovations and New Health-Related Applications of Electrical Bioimpedance (3662q) (Minisymposium)
Chair: Sanchez, Benjamin (Harvard Medical School)

10:00-10:15 ThBT4.1
Applying Localized Electrical Bioimpedance for Monitoring Exercise-Induced Fatigue
Freeborn, Todd* (University of Alabama)

10:15-10:30 ThBT4.2
Multimodal Electrical Impedance Tomography (EIT): Advances in EIT-Coupled Ultrasound Imaging
Halfer, Ryan* (Dartmouth College)

10:30-10:45 ThBT4.3
Clinical Applications of EIT in Pulmonary Medicine
Woo, Eung Je* (Kyung Hee University); Oh, Tong In (Kyung Hee University); Wi, Hun (Kyung Hee University)

10:45-11:00 ThBT4.4
Wearable Electrical Bioimpedance for Detecting Joint Edema
Herschel, John (Georgia Institute of Technology); Mabrouk, Sameer (Georgia Institute of Technology); Inan, Omer* (Georgia Institute of Technology)

Conf: ThBT4: 10:00-11:30 Meeting Room 315
Invited Session: Machine Learning / Deep Learning for Medical Image Analysis (85dkb) (Invited Session)
Chair: Schnabel, Julia (King’s College London)
Co-Chair: Schnabel, Julia (King’s College London)

10:00-10:15 ThBT5.1
Deep Learning for Image Reconstruction and Super-Resolution: Applications in Cardiac MR Imaging
Schlemper, Jo (Imperial College London); Oktay, Ozan (Imperial College London); Rueckert, Daniel* (Imperial College London)

10:15-10:30 ThBT5.2
Machine Learning for Cancer Imaging
Schnabel, Julia* (King’s College London); Bates, Russell (University of Oxford); Grau, Vicente (University of Oxford); Brady, Michael (University of Oxford)

10:30-10:45 ThBT5.3
Machine Learning for Medical Image Analysis and Decision Support in Cardiology, Neurodegenerative Diseases and Fetal Surgery
Gonzalez Ballester, Miguel Angel* (ICREA & Universitat Pompeu Fabra)

10:45-11:00 ThBT5.4
Deep Learning for Cardiovascular CT Analysis
Isgum, Ivana* (University Medical Center Utrecht); Wolterink, Jelmer Maarten (University Medical Center Utrecht); de Vos, Bob D. (UMCU); Lessmann, Nikolas (UMCU); Zneik, Majd (University Medical Center Utrecht); van Velzen, Sanne G. M. (University Medical Center Utrecht); de Jong, Pim A (University Medical Center Utrecht); Leiner, Tim (University Medical Center Utrecht); Viergever, Max A. (University Medical Center Utrecht)

11:00-11:15 ThBT5.5
Transfer Learning for Biomedical Image Analysis across Scanners
de Brujine, Marleen* (Erasmus MC – Univ. Medical Center Rotterdam)

ThBT6: 10:00-11:30 Meeting Room 316B
Invited Session: Artificial Vision: Latest Progress and Challenges Ahead (58q8k) (Invited Session)
Chair: Fried, Shelley (Massachusetts General Hospital / Harvard Medical School)
Co-Chair: Chan, Leanne LH (City University of Hong Kong)

10:00-10:15 ThBT6.1
Progress in Photovoltaic Restoration of Sight
Palanker, Daniel* (Stanford University); Lorach, Henri (Stanford University); Kamins, Ted (Stanford University); Mathieson, Keith (University of Strathclyde); Sher, Alexander (UC Santa Cruz); Flores, Thomas (Stanford University)

10:15-10:30 ThBT6.2
Visual and Electric Spiking Signatures of Seven Types of Rabbit Retinal Ganglion Cells
Wergnez, Paul* (Massachusetts General Hospital / Harvard Medical School); Im, Maesoon (Henry Ford Health System); Hadjinicolaou, Alex E. (Australian College of Optometry); Fried, Shelley (Massachusetts General Hospital / Harvard Medical School)

10:30-10:45 ThBT6.3
Optimizing the Performance of Retinal Neuroprostheses with High-Frequency Electrical Stimulation
Lovell, Nigel H.* (University of New South Wales); Guo, Tianrui (University of New South Wales); Dokos, Socrates (University of New South Wales); Suaning, Gregg (University of Sydney); Morley, John William (University of Western Sydney)

10:45-11:00 ThBT6.4
Selective Stimulation of the Retina for Improved Acuity
Weiland, James* (Univ. of Michigan); Chang, Yao-Chuan (Univ. of Southern California); Weitz, Andrew (Univ. of Southern California); Chow, Robert (Univ. of Southern California)

11:00-11:15 ThBT6.5
Voltage-Sensitive Dye Neural Imaging for Testing and Designing Stimuli in Visual Prostheses
Hayashida, Yuki* (Osaka University)

11:15-11:30 ThBT6.6
Retinal Neuromodulation and the Neural Code – Lost in Translation?
Suaning, Gregg* (University of Sydney); Morley, John William (University of Western Sydney); Lovell, Nigel H. (University of New South Wales); Guo, Tianrui (University of New South Wales); Dokos, Socrates (University of New South Wales); Barriga-Rivera, Alejandro (University Pablo de Olavide)

ThBT7: 10:00-11:30 Meeting Room 316C
Minisymposia: Robotic Neuorrehabilitation: The State-of-Science (m228a) (Minisymposium)
Chair: Patton, James (University Illinois at Chicago (UIC) & The Shirley Ryan AbilityLab (formerly RIC))

10:00-10:15 ThBT7.1
Rehabilitation, Personal Mobility and Recreation with Wearable Exoskeletons
Jayaraman, Arun* (Rehabilitation Institute of Chicago and Northwestern University); Rymer, William Zev (Northwestern & Rehab Inst of Chicago)

10:15-10:30 ThBT7.2
Using Technology to Alter Hand Activation Patterns after Stroke
Kamper, Derek* (North Carolina State University); Barry, Alexander (Shirley Ryan AbilityLab); Triandaflou, Kristen M. (Rehabilitation Institute of Chicago); Ghassemi, Mohammad (North Carolina State University); Roth, Elliot (Rehabilitation Institute of Chicago)
10:30-10:45 ThBT8.4
EEG and EMG Electronic-Tattoo for Neurological Evaluation
Shustak, Shiran* (Tel Aviv University); Steinberg, Stanislav (Tel Aviv University); Inzelberg, Lilah (Tel Aviv University); Hillel, Inbar (Tel Aviv Sourasky Medical Center); Rand, David (Tel Aviv University); David Pur, Moshe (Tel Aviv University); Fahoum, Firas (Tel Aviv Sourasky Medical Center); Mirelman, Anat (Tel Aviv Sourasky Medical Center); Hanein, Yael (Tel Aviv University)

11:00-11:15
A Correlation-Based Learning Approach to Determining Listening Attention from EEG Signals
Alickovic, Emina* (Linkoping University); Gustafsson, Fredrik (Dept. of Electrical Engineering, Linkoping University); Lunner, Thomas (Enskomol Research Centre - Part of Oticon)

11:15-11:30
Automated Analysis of Ear-EEG for Personalized Sleep Monitoring
Mikkelsen, Kaare (Univ. of Aarhus); Sterr, Annette (Univ. of Surrey); Debener, Stefan (Univ. of Oldenburg); Dijk, Derk-Jan (Univ. of Surrey); De Vos, Maarten* (Univ. of Oxford)

ThBT9: 10:00-11:30 Meeting Room 318A
Chair: Lepore, Natasha (USC / Children's Hospital Los Angeles)
Co-Chair: Linguraru, Marius George (Children's National Health System)

10:00-10:15 ThBT9.1
Pediatric Craniofacial Image Analysis: A Software Perspective
Paniagua, Beatriz* (Kitware, Inc.); Linguraru, Marius George (Children's National Health System); Cevidanes, Lucia (Univ. of Michigan, School of Dentistry, Dept. of Orthodontics); McCormick, Matt (Kitware, Inc.); Fillion-Robin, Jean-Christophe (Kitware, Inc.); Fishbaugh, James (NYU Tandon School of Eng.); Gerig, Guido (NYU Tandon School of Eng.); Enquobahrie, Andinet (Kitware, Inc.)

10:15-10:30 ThBT9.2
Fetal Skull Reconstruction using Deep Convolutional Autoencoders
Cerrolaza, Juan J.* (Imperial College London); Li, Yuanwei (Imperial College London); Biffi, Carlo (Imperial College London); Gomez, Alberto (King's College London); Matthew, Jacqueline (King's College London); Sinclair, Matthew (Imperial College London); Gupta, Chandini (King's College London); Knight, Caroline (King's College London); Rueckert, Daniel (Imperial College London)

10:30-10:45 ThBT9.3
Personalized, Quantitative and Automatic Treatment Planning of Craniosynostosis
Porras, Antonio R. (Children's National Medical Center); Tu, Liyun (Children's National Health System); Paniagua, Beatriz (Kitware, Inc.); Enquobahrie, Andinet (Kitware, Inc.); Keating, Robert (Children's National Health System); Rogers, Gary (Children's National Health System); Linguraru, Marius George* (Children's National Health System)

10:45-11:00 ThBT9.4
Cortical Surface-Based Baby Brain Mapping
Li, Gang* (University of North Carolina at Chapel Hill); Wang, Li (University of North Carolina at Chapel Hill); Lin, WeiLi (University of North Carolina at Chapel Hill); Shen, Dinggang (University of North Carolina at Chapel Hill)

11:00-11:15
Perinatal Imaging, Image Analysis, Machine Learning and Computer-Assisted Surgery
Gonzalez Ballester, Miguel Angel* (ICREA & Univ. Pompeu Fabra)

11:15-11:30 ThBT9.6
Human-Level Performance on Automatic Head Biometrics in Fetal Ultrasound using Fully Convolutional Neural Networks
Sinclair, Matthew* (Imperial College London); Bauml, Christian (ETH Zürich); Matthew, Jacqueline (King's College London); Bui, Wenjia (Imperial College London); Cerrolaza, Juan J. (Imperial College London); Li, Yuanwei (Imperial College London); Smith, Sandra (King's College London); Knight, Caroline (King's College London); Kainz, Bernhard (Imperial College London); Hajnal, Joseph V. (King's College London); King, Andrew Peter (King's College London); Rueckert, Daniel (Imperial College London)

ThBT10: 10:00-11:30 Meeting Room 319A
Invited Session: Sensors and Actuators for 3D Constructs of Living Cells (ke7r3) (Invited Session)
Chair: Wiest, Joachim (cellasys Gmbh)

10:00-10:15 ThBT10.1
A Microfluidic Bioreactor for a Physiologic Bone-on-a-Chip System
Schulze, Frank* (German Federal Institute for Risk Assessment)

10:15-10:30 ThBT10.2
Magnetic versus Electromagnetic-Fields and the Specific Low Frequent Application in Biophysics
Koch, Martin* (Feldkraft Ltd.); Wiest, Joachim (cellasys Gmbh)

July 19 Thursday
10:30-10:45 ThBT10.3
From Operating Heavy Duty Electric Machines to Application of Magnetic Particles Inside Living Cells/Cell-Spheres
Koch, Martin* (Feldkraft Ltd.); Wiest, Joachim (cellasys GmbH)

10:45-11:00 ThBT10.4
Systems Engineering for Microphysiometry
Wiest, Joachim* (cellasys GmbH)

ThBT11: 10:00-11:30 Meeting Room 319B
Invited Session: Signals and Systems for Hearing Study and Hearing Aids (m486w) (Invited Session)
Chair: Panahi, Issa (University of Texas at Dallas)

10:00-10:15 ThBT11.1
Why Noise Reduction is so Critical for the Impaired Auditory System
Yoho, Sarah* (Utah State Univ.); Healy, Eric (The Ohio State Univ.)

10:15-10:30 ThBT11.2
Mobile Research Platform for Hearing Research
Hansen, John H.L.* (University of Texas at Dallas); Ali, Hussnain (University of Texas at Dallas); Saba, Juliana (University of Texas at Dallas; CRSS - Cochlear Implant Processing Lab)

10:30-10:45 ThBT11.3
Speech Signal Processing for Hearing Aids using Smartphone
Panahi, Issa* (University of Texas at Dallas); Thibodeau, Linda (University of Texas at Dallas); Kehtarnavaz, Nasser (University of Texas at Dallas)

10:45-11:00 ThBT11.4
Multimodal Signal Processing and Machine Learning for Hearing Devices with Both Audio and Non-Audio Sensors: A New Frontier
Zhang, Tao* (Starkey Hearing Technologies)

ThBT12: 10:00-11:30 Meeting Room 321A
Invited Session: Progress in Fetal Monitoring Technologies (rm506) (Invited Session)
Chair: Khandoker, Ahsan H (Khulifa University of Science, Technology and Research)
Co-Chair: Alangari, Haitham M. (Khulifa University)

10:00-10:15 ThBT12.1
Fetal Congenital Heart Defects Change the Fetal-Maternal Heart Rate Coupling Strength
Alangari, Haitham M.* (Khulifa University); Khandoker, Ahsan H (Khulifa University of Science, Technology and Research)

10:15-10:30 ThBT12.2
Time-Variant Maternal-Fetal Cardiac Coupling
Schulz, Steffen (Univ. of Applied Sciences Jena); Khandoker, Ahsan (Khulifa University); Voss, Andreas* (Univ. of Applied Sciences Jena)

ThBT13: 10:00-11:30 Meeting Room 321B
MR Neuroimaging (Theme 2) (Oral Session)
Chair: de Brujne, Marleen (Erasmus MC - University Medical Center Rotterdam)
Co-Chair: Ma, Heather Ting (Harbin Institute of Technology Shenzhen Graduate School)

10:00-10:15 ThBT13.1
The Correlation Analysis between DTI Network Parameters and AVLT Scale Scores of Alzheimer’s Disease
Guo, Xin (Harbin Institute of Technology Shenzhen Graduate School); Gao, Na (Harbin Institute of Technology); Yang, Yanyu (Harbin Institute of Technology Shenzhen Graduate School); Guo, Xinwu (Harbin Institute of Technology Shenzhen Graduate School); Tang, Shensheng (Shenzhen Institute of Technology Shenzhen Graduate School); Wang, Wei (Shenzhen Institute of Technology Shenzhen Graduate School); Yang, Yangwu (Harbin Institute of Technology Shenzhen Graduate School); Ma, Heathert Ting* (Harbin Institute of Technology Shenzhen Graduate School)

10:15-10:30 ThBT13.2
Left Fimbria Atrophy is Associated with Hippocampal Metabolism in Female Major Depressive Disorder Patients
Xu, Jiale (Shanghai Jiao Tong University, School of BioMedical Engineering and Institute for Medical Imaging Technology); Tang, Yingying (Shanghai Mental Health Center, Shanghai Jiao Tong University School of Medicine); Baro, Cecilio (Shanghai Jiao Tong University, School of BioMedical Engineering); Zhang, Xiaoliu (Shanghai Jiao Tong University, School of BioMedical Engineering); Meng, Ziyu (Shanghai Jiao Tong University); Li, Yao* (Shanghai Jiao Tong University)

10:30-10:45 ThBT13.3
Multivariate Analysis of White Matter Structural Networks of Alzheimer’s Disease
Ye, Chenfui (Harbin Institute of Technology Shenzhen Graduate School); Wang, Xiaoni (XuanWu Hospital of Capital Medical University); Han, Ying (XuanWu Hospital of Capital Medical University); Ma, Heather Ting* (Harbin Institute of Technology Shenzhen Graduate School); Yang, Yanwu (Harbin Institute of Technology Shenzhen Graduate School)

10:45-11:00 ThBT13.4
Altered Fractional Amplitude of Low Frequency Fluctuations in Unmedicated Female Patients with Obsessive-Compulsive Disorder
Meng, Ziyu (Shanghai Jiao Tong University); Zhang, Zongfeng (Shanghai Mental Health Center, Shanghai Jiao Tong University School of Medicine); Fan, Qing (Shanghai Mental Health Center, Shanghai Jiao Tong University School of Medicine); Li, Yao* (Shanghai Jiao Tong University)

11:00-11:15 ThBT13.5
Diagnostic Classification of Autism using Resting-State fMRI Data and Conditional Random Forest
A.R., Jac Fredo* (San Diego State University); Jahedi, Afroz (San Diego State University); Reiter, Maya (San Diego State University); Müller, Ralph-Axel (San Diego State University)

11:15-11:30 ThBT13.6
Biomarkers for Adolescent MDD from Anatomical Connectivity and Network Topology using Diffusion MRI
Chu, Shu-Hsien* (University of Minnesota); Lenglet, Christophe (University of Minnesota); Westlund Schreiner, Melinda (University of Minnesota); Klimes-Dougan, Bonnie (University of Minnesota); Cullen, Kathryn R. (University of Minnesota); Parhi, Keshav (University of Minnesota)

ThBT14: 10:00-11:30 Meeting Room 322AB
Minisymposia: Non-Contact and Remote Measurement of Blood Pressure and Perfusion Based on Video Pulse Waves (119sv) (Minisymposium)
Chair: Yoshizawa, Makoto (Tohoku University)
Co-Chair: Tanaka, Akira (Fukushuma University)

10:00-10:15 ThBT14.1
A Basic Study on Noncontact Pulse Transit Time Estimation using Camera and Microwave Sensor
Yoshioka, Motokata* (Panasonic Corp.); Bounyong, Souksakone (Panasonic Corp.)

10:15-10:30 ThBT14.2
Extraction of Blood Pressure Information from Video Pletysmography
Sugita, Norihiro* (Tohoku Univ.); Yoshizawa, Makoto (Tohoku Univ.); Tanaka, Akira (Fukushuma Univ.); Abe, Makoto (Shinsyu Univ.); Homma, Noryasu (Tohoku Univ. Graduate School of Medicine); Yambe, Tomoyuki (Tohoku Univ.)

10:30-10:45 ThBT14.3
Application of Non-Contact Video Pletysmography to Analysis of Local Vascular Regulation
Tanaka, Akira* (Fukushuma University); Yamada, Yuya (Graduate School of Symbiotic System Science and Technology, Fukushuma University); Yoshizawa, Makoto (Tohoku University)
### ThBT15: 10:00-11:30  Meeting Room 323A
Invited Session: Recent Advances in System, Algorithm and Applications of Diagnostic Ultrasound Imaging

**Modality (mrn47) (Invited Session)**
**Chair:** Managuli, Ravi* (Hitachi Aloka Medical America, Inc.)
**Co-Chair:** Kim, Hyung Ham (Pohang Univ. of Science and Technology)

<table>
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<tr>
<th>Time</th>
<th>Session</th>
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<tbody>
<tr>
<td>10:00-10:15</td>
<td>Single Cell Mechanics Study using Single-Beam Acoustic Tweezers Kim, Hyung Ham* (Pohang Univ. of Science and Technology); Lim, Hae Gyun (Pohang Univ. of Science and Technology)</td>
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<tr>
<td>10:15-10:30</td>
<td>Recent Advances in Ultrasound Imaging: Breast, Liver and Contrast Managuli, Ravi* (Hitachi Aloka Medical America, Inc.)</td>
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<tr>
<td>10:30-10:45</td>
<td>Development of 3D Photoacoustic Imaging System and Its Clinical Translation Shina, Tsuyoshi* (Kyoto University)</td>
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<td>10:45-11:00</td>
<td>A New Surgical Approach to Treat the Resistant Hypertension Park, Sung-Min* (POSTECH); Baik, Jinhwan (POSTECH)</td>
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<td>11:00-11:15</td>
<td>Introducing Diagnostic Ultrasound Course in Undergraduate BME Programs Krishnan, Shankar* (WIT)</td>
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**ThBT16: 10:00-11:30  Meeting Room 323B**
Invited Session: Biologically Inspired Regenerative Systems (r5h4u) (Invited Session)
**Chair:** Jabbari, Esmaiel (University of South Carolina)
**Co-Chair:** Varghese, Shyni (University of California - San Diego)

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<tr>
<th>Time</th>
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<tr>
<td>10:00-10:15</td>
<td>Paper-Based Biomaterials for Personalized Medicine and Regenerative Engineering Camci-Unal, Gulden* (University of Massachusetts Lowell)</td>
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<tr>
<td>10:15-10:30</td>
<td>Functionally Graded Biomaterials for Tissue Regeneration Yang, Yunzhi* (Stanford University)</td>
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<tr>
<td>10:30-10:45</td>
<td>Biomineralized Materials as Bone ECM Mimetics: From Understanding Molecular Mechanisms to New Therapeutic Interventions Varghese, Shyni* (University of California - San Diego)</td>
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<tr>
<td>10:45-11:00</td>
<td>Zonal Regeneration of Articular Cartilage Jabbari, Esmaiel* (University of South Carolina)</td>
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**ThBT17: 10:00-11:30  Meeting Room 323C**
Physiological Modeling and Analysis (Theme 7) (Oral Session)

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<th>Time</th>
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<tr>
<td>10:00-10:15</td>
<td>Investigation of Key Variables Impacting ICM Sensing using Computer Simulations Sun, Stephanie* (Abbott); Min, Xiaoyi (St. Jude Medical, Inc.); Healey, Glenn (University of California, Irvine)</td>
</tr>
<tr>
<td>10:15-10:30</td>
<td>Monitoring Lung Mechanics during Mechanical Ventilation using Machine Learning Algorithms Hezjarjari, Niloofar* (Washington State University); Dutta, Rabijit (University of Idaho); Tao, Xing (University of Idaho); Gordon, Murdoch (University of Idaho); Mazrouee, Sepideh (University of California San Diego); Mortazavi, Bobak (Texas A&amp;M University); Ghashemzadeh, Hassan (Washington State University)</td>
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### ThBT18: 10:00-11:30  Meeting Room 324
Wearable Systems (Theme 7) (Oral Session)
**Chair:** Samadani, Ali (Philips Research North America)

<table>
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<tr>
<th>Time</th>
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<tr>
<td>10:00-10:15</td>
<td>Efficient Design of Real Time Bio-Signal Preprocessing for Wearable Devices Yoon, Seung Keun* (Samsung Advanced Institute of Tech.); Lee, Jongwook (Samsung Electronics); Kwon, Uikun (Samsung Electronics); Ko, Byung-Hoon (Samsung Advanced Institute of Tech.); Kim, Youn Ho (Samsung Advanced Institute of Tech.)</td>
</tr>
<tr>
<td>10:15-10:30</td>
<td>Optimizing Energy Harvesting for Foot based Wearable Sensors Beach, Christopher* (Univ. of Manchester); Green, Peter R (Univ. of Manchester); Casson, Alexander James (Univ. of Manchester)</td>
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<tr>
<td>10:30-10:45</td>
<td>A Spinal Motion Measurement Protocol Utilizing Inertial Sensors without Magnetometers Samadani, Ali* (Philips Research North America); Lee, Alex (Motion Signature Analysis); Kulic, Dana (University of Waterloo)</td>
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<tr>
<td>10:45-11:00</td>
<td>Personalized Human Activity Recognition using Wearables: A Manifold Learning-Based Knowledge Transfer Saeedi, Ramyar* (Washington State University); Sasani, Keyvan (Washington State University); Norgaard, Skyler (Kalamazoo College); Gebremedhin, Assefaw* (Washington State University)</td>
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<td>11:00-11:15</td>
<td>Tracking Kinematic and Kinetic Measures of Sit to Stand using an Instrumented Spine Orthosis Matthew, Robert Peter* (UC Berkeley); Seko, Sarah (UC Berkeley); Bailey, Jeannie (University of California at San Francisco); Bajcsy, Ruzena (UC Berkeley, CITRIS); Lotz, Jeffrey (Orthopaedic Surgery, University of California at Berkeley)</td>
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11:15-11:30
A Machine Learning Approach to Targeted Balance Rehabilitation in People with Parkinson’s Disease using a Sparse Sensor Set
Pickle, Nathaniel (University of Texas at Dallas); Shearin, Staci (The University of Texas Southwestern Medical Center); Fey, Nicholas* (University of Texas at Dallas)

ThBT19: 10:00-11:30
Minisymposia: Emerging Methods in Medical Image Analysis (II) (1agah) (Minisymposium)
Chair: Lee, Gobert (Flinders University)
Co-Chair: Fujita, Hiroshi (Gifu University)

10:00-10:15 Deep Convolutional Neural Network for Medical Image Analysis – A Few Issues
Lee, Gobert* (Flinders University)

10:15-10:30 Deep Learning for Pulmonary Image Analysis: Classification, Detection, and Segmentation
Kido, Shoji* (Graduate School of Science and Technology for Innovation, Yamaguchi University); Hirano, Yasushi (Yamaguchi University); Hashimoto, Noriaki (Yamaguchi University); Mabu, Shingo (Yamaguchi University)

10:30-10:45 Automatic Segmentation of Multiple Organs on 3D CT Images by using a Deep Learning Approach
Zhou, Xiangrong* (Gifu University); Hara, Takeshi (Gifu University Graduate School of Medicine); Fujita, Hiroshi (Gifu University)

10:45-11:00 Skeletal Feature Recognition and Skeletal Muscle Modeling for Skeletal Muscle Analysis in Whole-Body CT Images
Kamiya, Naoki* (Aichi Prefectural Univ.); Zheng, Guoyan (Univ. of Bern); Zhou, Xiangrong (Gifu Univ.); Muramatsu, Chisako (Gifu Univ.); Hara, Takeshi (Gifu Univ. Graduate School of Medicine); Fujita, Hiroshi (Gifu Univ.)

11:00-11:15 Image Registration for Detection of Sclerotic Bone Metastasis in CT Images
Kim, Hyungsang* (Kyushu Institute of Technology); Lu, Huimin (Kyushu Institute of Technology); Tan, Joo Kooi (Kyushu Institute of Technology); Murakami, Seiichi (University of Occupational & Environmental Health); Aoki, Takatoshi (University of Occupational and Environmental Health)

11:15-11:30 Decision Support System for Lung Cancer using PET/CT and Microscopic Images
Teramoto, Atsushi* (Fujita Health University); Yamada, Ayumi (Fujita Health University); Tsukamoto, Tetsuya (Fujita Health University); Kiriyama, Yuka (Fujita Health University); Tsujimoto, Masakazu (Fujita Health University); Inoue, Takahiro (Fujita Health University); Imaiizumi, Kazuyoshi (Fujita Health University); Toyama, Hiroshi (Fujita Health University); Saito, Kuniaki (Fujita Health University); Fujita, Hiroshi (Gifu University)

11:15-11:30 Learning Sample Generation for Detecting Liver Cancer using 3D-CNN
Mekada, Yoshito* (Chukyo Univ.); Doman, Keisuke (Chukyo Univ.)

11:30-11:45 Fast Multiple Method for Rapid Modeling of Transcranial Brain Stimulation Problems
Makarov, Sergey* (Electrical and Computer Engineering, Worcester Polytechnic Institute); Noetscher, Gregory (Worcester Polytechnic Institute); Raj, Tommi (Northwestern University Institute of Neurosciences); Nummenmaa, Aapo (Massachusetts General Hospital)

10:30-10:45 Electric Field Induced by Electroconvulsive Therapy in Patients with Major Depression
Deng, Zhi-De* (National Institute of Mental Health); Fridjonsson, Egill (Dept. of Psychiatry, Academic Medical Center, Amsterdam); Lilien, Joseph (Duke University); van Wingen, Guido (Academic Medical Center Amsterdam); Van Waarde, Jeroen Antonius (Rijnstate Hospital)

10:45-11:00 Head Models for Computing Brain Electrical Fields in Transcranial Stimulation
Bai, Siwei (Technical University of Munich); Loo, Colleen (School of Psychiatry, University of New South Wales); Martin, Donel (School of Psychiatry, University of New South Wales); Dokos, Socrates* (University of New South Wales)

11:00-11:15 Integrating Accurate Neuronal Models with Electric Field Simulations of Transcranial Brain Stimulation
Aberra, Aman* (Duke University); Grill, Warren (Duke University); Peterchev, Angel V (Duke University)

11:15-11:30 Electric Field Induced by Repetitive Transcranial Magnetic Stimulation in Patients with Major Depression
Deng, Zhi-De* (National Institute of Mental Health); Liston, Conor (Weill Cornell Medicine); Gunning, Faith (Weill Cornell Medicine); Dubin, Marc (Weill Cornell Medical College)

Watkins, Gregory Douglas* (Sydney University); Swanson, Brett Anthony (Cochlear Ltd.); Suanning, Gregg (University of Sydney)
13:00-14:15 ThCT5.3
Structural Variant Prediction in Extended Pedigrees through Sparse Negative Binomial Genome Signal Recovery
Banuelos, Mario (University of California, Merced); Sindi, Suzanne (University of California, Merced); Marcia, Roummel* (University of California, Merced)

14:15-14:30 ThCT5.4
Unsupervised Fuzzy Binning of Metagenomic Sequence Fragments on Three-Dimensional Barnes-Hut t-Stochastic Neighbor Embeddings
Ariza-Jiménez, Leandro (Univ. EAFIT); Quintero Montoya, Olga Lucia* (Univ. EAFIT); Pinel, Nicolas (Univ. EAFIT)

14:30-14:45 ThCT5.5
Identification of Primary and Metastatic Melanoma based on Copy Number Variation
Seo, Hyein (Korea Advanced Institute of Science and Technology (KAIST)); Cho, Dong-Ho* (Korea Advanced Institute of Science and Technology (KAIST))

14:45-15:00 ThCT5.6
Micro-Inversions in Human Cancer Genomes
Qu, Li* (Peking Univ./GaTech/Emory Univ.); Zhu, Huaqiu (Peking Univ.); Wang, May D. (Georgia Tech and Emory Univ.)

ThCT6: 13:30-15:00 Meeting Room 316B
Aneurysma (Theme 5) (Oral Session)
Chair: Heldt, Thomas (Massachusetts Institute of Technology)

13:30-13:45 ThCT6.1
3DRA Reconstruction of Intracranial Aneurysms – How Does Voxel Size Influences Morphologic and Hemodynamic Parameters
Berg, Phillip* (University of Magdeburg); Radtke, Livia (University of Magdeburg); Voß, Samuel (University of Magdeburg); Serowy, Steffen (University Hospital Magdeburg); Janiga, Gabor (University of Magdeburg); Preim, Bernhard (University of Magdeburg); Beuing, Oliver (University Hospital Magdeburg); Saalfeld, Sylvia (University of Magdeburg)

13:45-14:00 ThCT6.2
Blood Flow Analysis in Coil Embolized Aneurysms: Difference between Porous Media and Real Coil Geometry Model
Fujimura, Soichiro* (Tokyo Univ. of Science); Takao, Hiroyuki (Jikei Univ. School of Medicine); Suzuki, Takashi (Tokyo Univ. of Science); Uchiyama, Yuya (Tokyo Univ. of Science); Takao, Hiroyuki* (Jikei Univ. School of Medicine, Dept. of Neurosurgery); Fukudome, Koji (Tokyo Univ. of Science); Mamori, Hiroya (Tokyo Univ. of Science); Yamamoto, Makoto (Tokyo Univ. of Science); Murayama, Yuichi (Jikei Univ. School of Medicine)

14:00-14:15 ThCT6.3
Comparison of Hemodynamic Parameters that can Predict an Aneurysmal Rupture: 20 Patient-Specific Models Experiment
Fujita, Ryosuke (Tokyo Univ. of Science); Kawakami, Takumi (Tokyo Univ. of Science); Ichikawa, Chihiro (Tokyo Univ. of Science); Yamamoto, Ken (Tokyo Univ. of Science); Takao, Hiroyuki (Jikei Univ. School of Medicine); Murayama, Yuichi (Jikei Univ. School of Medicine); Motosuke, Masahiro* (Tokyo Univ. of Science)

14:15-14:30 ThCT6.4
Multivariate Analysis for Predicting Internal Carotid (IC) and Middle Cerebral (MC) Aneurysmal Rupture by Hemodynamic Parameters
Suzuki, Takashi (Tokyo Univ. of Science); Takao, Hiroyuki* (Jikei Univ. School of Medicine); Fujimura, Soichiro (Tokyo Univ. of Science); Otani, Katharina (Siemens Healthcare K.K.); Ishibashi, Toshihiro (Jikei Univ. School of Medicine, Dept. of Neurosurgery); Mamori, Hiroya (Tokyo Univ. of Science); Murayama, Yuichi (Jikei Univ. School of Medicine); Yamamoto, Makoto (Tokyo Univ. of Science)
14:00-14:15 ThCT7.3
Effect of Incident Field Magnitude and Phase Distribution on RF-Induced Heating Due to Hip Implants
Kozlov, Mikhail* (Max Planck Institute for Human Cognitive and Brain Sciences); Horner, Marc (ANSYS, Inc.); Kainz, Wolfgang (Food and Drug Administration); Angelone, Leonardo M. (US Food and Drug Administration, Center for Devices and Radiological Health)

14:15-14:30 ThCT7.4
Double-Tuned Cable Traps for Multinuclear MRI and MRS
Wilcox, Matthew* (Texas A&M University); McDougall, Mary (Texas A&M University)

14:30-14:45 ThCT7.5
Flexible RF Filtering Front-End for Simultaneous Multinuclear MR Spectroscopy
Huang, Chung-Huan* (Texas A&M University); Ogier, Stephen (Texas A&M University); Gu, Minju (Texas A&M University); Wright, Steven M. (Texas A&M University)

14:45-15:00 ThCT7.6
4D Dual-Venc Spiral Flow
Callahan, Sean* (University of Louisville); Henn, Alexander (University of Louisville); Kendrick, Michael (Veteran's Affairs Medical Center); Wang, Hui (Philips Medical Systems); Negahdar, MJ (University of Louisville); Kheradvar, Arash (University of California, Irvine); Stoddard, Marcus (University of Louisville); Amini, Amir (University of Louisville)

13:30-13:45 ThCT8.1
Auditory Steady-State Responses across Chip Repetition Rates for Ear-EEG and Scalp EEG
Christensen, Christian Bech* (Aarhus University); Kappel, Simon Lind (Aarhus University, Denmark); Kidmose, Preben (Aarhus University, Denmark)

14:00-14:15 ThCT8.3
Decoding Movement States in Stepping Cycles based on Subthalamic LFPs in Parkinsonian Patients
Tan, Huling (University Research Lecturer in Nuffield Dept. of Clinical NeuroSciences, University of Oxford); Fischer, Petra (University of Oxford); Shah, Syed Ahmna* (Postdoctoral Scientist, University of Oxford); Vidaurre, Diego (University of Oxford); Woolrich, Mark (Oxford University); Brown, Peter (Director of the Medical Research Council Brain Network Dynamics Unit at the University of Oxford, and Professor of Experimental)

14:15-14:30 ThCT8.4
A Closed-Loop Multi-Channel Asynchronous Neurostimulator to Mimic Neural Code for Cognitive Prosthesis
Elyahoodayan, Sahar* (University of Southern California); Berger, Theodore (USC); Song, Dong (University of Southern California)

14:30-14:45 ThCT8.5
Sleep Depth Enhancement through Ambient Temperature Manipulation in Mice
Ajwad, Asmaa (Univ. of Kentucky); Huffman, Dillon (Univ. of Kentucky); Yaghoubi, Farid (FDA); O'Hara, Bruce (Univ. of Kentucky); Sunderam, Sridhar* (Univ. of Kentucky)

14:45-15:00 ThCT8.6
Cholinergic Modulation of CA1 Pyramidal Cells via M1 Muscarinic Receptor Activation: A Computational Study under Physiological and Hyperactive Levels
Mergenthal, Adam* (University of Southern California); Bouteiller, Jean-Marie Charles (University of Southern California); Berger, Theodore (USC)

13:30-13:45 ThCT9.1
Comparison of Cough, Wheeze and Sustained Phonations for Automatic Classification between Healthy Subjects and Asthmatic Patients
Yadav, Shivani* (IISc); Ghosh, Prasanta (Indian Institute of Science); Krishnaswamy, Uma maheswari (M.S.Ramaiah Medical College); NK, Kausthubh (IISc); Gope, Dipanjan (IISc)
Study of the Automatic Detection of Parkinson’s Disease based on Speaker Recognition Technologies and Allophonic Distillation
Moro Velazquez, Laureano (Johns Hopkins Univ.); Gómez-García, Jorge Andrés (Univ. Nacional de Colombia Sede Manizales); Godino-Llortente, Juan Ignacio (Univ. Politécnica de Madrid); Rusz, Jan (Czech Technical Univ. in Prague); Skodda, Sabine (Univ. Knappschaftskrankenhaus Bochum GmbH); Grandas-Pérez, Francisco (Hospital General Univ. Gregorio Marañón); Velazquez, José-Miguel (Hospital General Univ. Gregorio Marañón); Nöth, Elmar (Univ. of Erlangen-Nuremberg); Orozco-Arroyave, Juan-Rafael (Univ. de Antioquia); Dehaj, Najam* (Johns Hopkins Univ.)

14:00-14:15

Non-Invasive Multi-Electrode Nerve Stimulation
Learning Front-End Filter-Bank Parameters using Convolutional Neural Networks for Abnormal Heart Sound Detection
Humayun, Ahmed Imtiaz (mHealth Lab, Bangladesh Univ. of Engineering and Technology (BUET)); Ghaffarzadegan, Shahnam* (Robert Bosch LLC); Feng, Zhe (Robert Bosch LLC); Hasan, Tauqif (Bangladesh Univ. of Engineering and Technology)
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<tbody>
<tr>
<td>13:30-13:45</td>
<td>In Vivo Relationship between Joint Stiffness, Joint-Based Estimates of Muscle Stiffness, and Shear-Wave Velocity</td>
<td>ThCT12.1</td>
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<td>Vigotsky, Andrew* (Northwestern University); Rouse, Elliott (University of Michigan); Lee, Sabrina (Northwestern University)</td>
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<tr>
<td>13:45-14:00</td>
<td>Elbow Joint Angle Estimation with Surface Electromyography and Autoregressive Moving Average Models</td>
<td>ThCT12.2</td>
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<td>Fisch Sommer, Leonardo (University of São Paulo); Barreira, Cauê (University of São Paulo); López Noriega, Carlos (University of São Paulo); Camargo-Juńior, Franklin (University of São Paulo); Moura, Rafael Traldi (Polytechnic School. University of São Paulo); Forner-Cordero, Arturo* (Escola Politécnica da Universidade de São Paulo)</td>
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<tr>
<td>14:00-14:15</td>
<td>A New Algorithm to Estimate Glenohumeral Joint Location based on Scapula Rhythm</td>
<td>ThCT12.3</td>
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<tr>
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<td>Heidari, Omid* (Idaho State University); Pourgharibshahi, Vahid (Idaho State University); Perez Gracia, Alba (Idaho State University)</td>
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<tr>
<td>14:15-14:30</td>
<td>Shoulder Glenohumeral Elevation Estimation based on Upper Arm Orientation</td>
<td>ThCT12.4</td>
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<tr>
<td></td>
<td>Hamdan, Sara* (Ozyegin University); Oztop, Erhan (Ozyegin University); Furukawa, Jun-ichiro (ATR Computational Neuroscience Labs); Morimoto, Jun (ATR Computational Neuroscience Labs); Ugurlu, Barkan (Ozyegin University)</td>
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<td>14:30-14:45</td>
<td>A Functional Method for Generating Individualized Spine Models from Motion-Capture Data</td>
<td>ThCT12.5</td>
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<td>Seko, Sarah* (UC Berkeley); Matthew, Robert Peter (UC Berkeley); Bajcsy, Ruzena (UC Berkeley, CITRIS); Lotz, Jeffrey (Orthopaedic Surgery, University of California at Berkeley)</td>
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<tr>
<td>14:45-15:00</td>
<td>Generalized Lower Limb Joint Angular Phase Space Analysis of Subject Specific Normal and Modified Gait</td>
<td>ThCT12.6</td>
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<tr>
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<td>Rodrigues, Carlos M. B.* (INESCTEC - Technology &amp; Science Associate Lab); Correia, Miguel (Universidade do Porto), Faculdade de Engenharia); Abrantes, João M. C. S. (MovLab - ULHT); Rodrigues, Marco Aurélio Benedetti (Federal Univ. of Pernambuco); Nadal, Jurandir (Federal Univ. of Rio de Janeiro)</td>
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<td>14:00-14:15</td>
<td>Preliminary Study of Palatal Implant for Sleep Apnea Control</td>
<td>ThCT13.2</td>
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<td>Seo, Jungmin (Seoul National University); Kim, Jeong-Whun (Seoul National University College of Medicine); Cho, Sung Woo (Dept. of Otorhinolaryngology, Seoul National University Hospital College of Medicine); Shim, Shinyong (Seoul National University); Choi, Jin-Woo (Louisiana State University); Kim, Sung June* (Seoul National University)</td>
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<tr>
<td>14:00-14:15</td>
<td>Performance Assessment of a Dedicated Reflectance Pulse Oximeter in a Neonatal Intensive Care Unit</td>
<td>ThCT13.3</td>
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<td>Proença, Martin* (CSEM SA); Grossenbacher, Olivier (CSEM SA); Dasen, Stephan (CSEM); Moser, Virginie (CSEM); Ostojic, Daniel (University of Zurich); Lemkaddem, Alia (CSEM); Ferrario, Damien (CSEM); Lemay, Mathieu (CSEM); Wolf, Martin (University of Zurich); Fauchère, Jean-Claude (University of Zurich); Karen, Tanja (University of Zurich)</td>
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<td>14:15-14:30</td>
<td>Basic Performance Tests of the MILL Intravascular CO2 Removal Catheter</td>
<td>ThCT13.4</td>
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<td>Janecek, Christoph (Vienna University of Technology); Lukitsch, Benjamin (Vienna University of Technology); Huber-Dangi, Florentine (Vienna University of Technology); Karabegov, Aten (Vienna University of Technology); Jordan, Christian (Vienna University of Technology); Haddadi, Bahram (Vienna University of Technology); Ullrich, Roman (CCore Technology GmbH); Krenn, Claus Georg (CCore Technology GmbH); Gfoehler, Margit (TU Wien); Harasek, Michael* (Vienna University of Technology)</td>
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<td>14:30-14:45</td>
<td>Design, Development, and Characterization of Breathforce: A Respiratory Training System for Patients with Spinal Cord Injuries</td>
<td>ThCT13.5</td>
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<td>Tran, Kevin* (Univ. of Louisville); Chen, Yangsheng (Kentucky Spinal Cord Injury Research Center); Ovechkin, Alexander (Univ. of Louisville); Roussel, Thomas (Univ. of Louisville)</td>
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<td>14:45-15:00</td>
<td>Feasibility of a Post-Auricle Wireless Power System for Pediatric Mechanical Circulatory Support Pumps</td>
<td>ThCT13.6</td>
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<td>Valdivovinos, John* (California State University Northridge); Nagra, Simerjit (California State University Northridge); Hussain, Fatima (California State University Northridge); Alvarez, Isabel (CSUN)</td>
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**July 19 Thursday**

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<td>13:30-13:45</td>
<td>Estimating Mini Mental State Examination Scores using Game-Specific Performance Values: A Preliminary Study</td>
<td>ThCT14.1</td>
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<td>Jung, Hee-Tae (Univ. of Massachusetts Amherst); Lee, Hyunsuk (WoonSoft); Kim, Kwangwook (WoonSoft); Kim, Byeongil (WoonSoft); Park, Sung Ji (Hee yeon Hospital); Ryu, Taekyeong (Hee yeon Hospital); Kim, Yangsoo (Hee yeon Hospital); Lee, Sunghoon Ivan* (Univ. of Massachusetts Amherst)</td>
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<tr>
<td>14:00-14:15</td>
<td>Optimizing Mental Workload by Functional Near-Infrared Spectroscopy based Dynamic Difficulty Adjustment</td>
<td>ThCT14.2</td>
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<td>Ung, Wei Chun (Univestis Teknologi Petronas); Meriaudeau, Fabrice (Universite de Bourgogne); Tang, Tong Boon* (Univestis Teknologi Petronas)</td>
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<tr>
<td>14:30-13:45</td>
<td>Automated Measurement and Subtask Analysis of the Timed Up-and-Go Test in the Field of Geriatrics</td>
<td>ThCT14.3</td>
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<td>Ziegler, Andreas (AIT Austrian Institute of Technology GmbH); Kastner, Peter (AIT Austrian Institute of Technology); Modre, Robert (ARC Seibersdorf Research GmbH); Schreier, Guenter* (AIT Austrian Institute of Technology GmbH)</td>
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<td>14:45-14:00</td>
<td>Mobile Fall Risk Assessment Solution for Daily-Life Settings</td>
<td>ThCT14.4</td>
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<td>Similä, Heidi* (VTT Technical Research Centre of Finland Ltd.); Immonen, Milla Sinikka (VTT Technical Research Centre of Finland); Niemirepo, Timo (VTT Technical Research Centre of Finland Ltd.)</td>
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14:30-14:45 ThCT14.5
A New Smart Balance Rehabilitation System Technology
Platform: Development and Preliminary Assessment of the Smarter Balance System for Home-Based Balance Rehabilitation for Individuals with Parkinson’s Disease
Alberto, Fung (Univ. of Houston); Lai, Eugene (Houston Methodist Neurological Institute); Lee, Beom-Chan* (Univ. of Houston)

14:45-15:00 ThCT14.6
Functional Near Infrared Spectroscopy in the Noninvasive Assessment of Brain Death
Li, Ting* (Chinese Acad. of Medical Science & Peking Union Medical College); Pan, B. (Univ. of Electronic Science & Tech. of China)

ThCT15: 13:30-15:00 Meeting Room 323A
Health Technologies (Theme 9) (Oral Session)
Chair: Holmes, David (Mayo Clinic)
Co-Chair: Bomzon, Ze’ev (NovoCure)

13:30-13:45 ThCT15.1
Non-Invasive Method to Monitor Molecular Changes in Human Stratum Corneum during Acute Barrier Disruption using Reflectance NIR Spectroscopy
Shin, Eui Seok* (Samsung Advanced Institute of Tech.); Lee, June-Young (Samsung Advanced Institute of Tech.); Lee, Seung Jun (Samsung Advanced Institute of Tech.); Nam, Sung Hyun (Samsung Advanced Institute of Tech., Samsung Electronics)

13:45-14:15 ThCT15.2
On the Fly Reporting of Human Body Movement based on Kinect V2
Rodrigues, Joana (Faculty of Engineering (FEUP), University of Porto, Porto); Maia, Paulo (Faculty of Engineering (FEUP), University of Porto, Porto); Choupina, Hugo Miguel Pereira (University of Porto); Cunha, Joao Paulo Silva* (INESC TEC)

14:00-14:15 ThCT15.3
Physiological Responses of the Youth Viewing a Japanese Garden
Zhang, Yawen* (Hong Kong Univ. of Science and Technology); Liu, Congcong (Hong Kong Univ. of Science and Technology); Herrup, Karl (Hong Kong Univ. of Science and Technology); Shi, Bertram E. (Hong Kong Univ. of Science and Technology)

14:15-14:30 ThCT15.4
Knee Extensor Muscular Activity Estimation during Different Walking Patterns: Flat Normal and Brisk Walking, Stair Climbing
Cosentino, Sarah* (Waseda University); Kasai, Ritaro (Waseda University); Gu, Zixi (Waseda University); Sessa, Salvatore (Waseda University); Kawakami, Yasuo (Waseda University); Takanishi, Atsuo (Waseda University)

14:30-14:45 ThCT15.5
Long Distance Vital Signs Monitoring with Person Identification for Smart Home Solutions
Szankin, Maciej* (Intel Corp.); Kwasniewska, Alicja (Gdansk Univ. of Technology); Sirlapu, Tejaswini (Intel); Wang, Mingshan (Intel Corp.); Rumiński, Jacek (Gdansk Univ. of Technology); Nicolas, Rey (Intel Corp.); Bartoscher, Marko (Intel Corp.)

14:45-15:00 ThCT15.6
Elevation Measurement of Laryngeal Prominence from Depth Images for Evaluating Swallowing Function
Sugimoto, Chika* (Yokohama National University); Masuyama, Yuto (Yokohama National University)

ThCT16: 13:30-15:00 Meeting Room 323B
Health Informatics – eHealth (Theme 10) (Oral Session)
Chair: Caon, Maurizio (University of Applied Sciences and Arts Western Switzerland)

13:30-13:45 ThCT16.1
Improved Sparse Adaptive Algorithms for Accurate Non-Contact Heartbeat Detection using Time-Window-Variation Technique
Ye, Chen* (Keio University); Toyoda, Kentaroh (Keio University); Ohtsuki, Tomoaki (Keio University)

13:45-14:00 ThCT16.2
Co-Saliency-Enhanced Deep Recurrent Convolutional Networks for Human Fall Detection in E-Healthcare
Ge, Chenjie* (Chalmers Univ. of Technology); Gu, Irene Y.H. (Chalmers Univ. of Technology); Yang, Jie (Shanghai Jiao Tong Univ.)

14:00-14:15 ThCT16.3
Teenagers’ Usage of a Mobile-Wearable-Cloud Platform to Promote Healthy Lifestyles
Caon, Maurizio* (University of Applied Sciences and Arts Western Switzerland); Carrino, Stefano (University of Applied Sciences and Arts Western Switzerland); Angelini, Leonardo (University of Applied Sciences and Arts Western Switzerland); Abou Khaled, Omar (University of Applied Sciences and Arts Western Switzerland); Mugellini, Elena (University of Applied Sciences and Arts Western Switzerland); Velickevski, Filip (EURECAT); Andreoni, Giuseppe (Politecnico di Milano)

14:15-14:30 ThCT16.4
Seasonal Variation in an At-Home Telemetry Trial
Rogha, Ahmadreza* (University of New South Wales); Celler, Branko George (University of New South Wales)

14:30-14:45 ThCT16.5
Increasing Health Care Adherence through Gamification, Video Feedback, and Real-World Rewards
Saric, Kevin (CSIRO); Redd, Christian Brandt* (Commonwealth Scientific and Industrial Research Organization); Varnfield, Marlien (CSIRO); O’Dwyer, John (CSIRO); Karunanithi, Mohanraj (CSIRO Digital Productivity Flagship)

ThCT17: 13:30-15:00 Meeting Room 323C
Sensing / Animal Models (Theme 7) (Oral Session)

13:30-13:45 ThCT17.1
Imaging of IR700DX Labeled Mouse Breast Tumor using a Custom Angle-Selective Fluorescence Contact Imaging System
Papageorgiou, Efthymios Philip* (UC Berkeley); Giverts, Simeon (UC Berkeley); Zhang, Hui (UCSF); Park, Catherine (UCSF); Boser, Bernhard (UC Berkeley); Anwar, Mekhail (UCSF)

13:45-14:00 ThCT17.2
A Conductance-Based Sensor to Estimate Bladder Volume in Felines
McAdams, Ian* (Cleveland Clinic); Majerus, Steve (APT Center, Cleveland VAMC); Zorman, Christian (Case Western Reserve University); Damaser, Margot S. (Lerner Research Institute, The Cleveland Clinic Foundation); Bourbeau, Dennis (FES Center, Cleveland VAMC)

14:00-14:15 ThCT17.3
Towards an Untethered Ultrasound Beamforming System for Brain Stimulation in Behaving Animals
Seok, Chunkyun* (North Carolina State University); Ali, Ziad (North Carolina State University); Yamaner, Feysel Yalcin (North Carolina State University); Sahin, Mesut (New Jersey Institute of Technology); Oralkan, Omer (North Carolina State University)

14:15-14:30 ThCT17.4
Evaluation of Bone Conduction Vibration System using Photoacoustic Effect
Wadomori, Naoki* (Nagaoka University of Technology)

14:30-14:45 ThCT17.5
Unobtrusive Heartbeat Detection from Mice using Sensors Embedded in the Nest
Gurel, Nil Zeynep* (Georgia Institute of Technology); Jeong, Hyeon Ki (Georgia Institute of Technology); Kloeckorn, Heidi (Emory University); Swan, Hochman (Emory University); Inan, Omer (Georgia Institute of Technology)
14:45-15:00  ThCT17.6
A Wireless Optoelectronic Neuroscience Platform for Chronic
Fluorescence Sensing in Freely Behaving Rodents
Noormohammadi Khiarai, Mehdi* (Laval Univ.); Gagnon-Turcotte, Gabriel (Université Laval); Mariani, Ekaterina (Laval Univ.); Bories, Cyril (Laval Univ.); Martel, Sylvain (École Polytechnique de Montréal); C. Proulx, Christophe (Laval Univ.); De Koninc, Yves (Laval Univ.); Gosselin, Benoit (Laval Univ.)

Meeting Room 324

ThCT18: 13:30-15:00
Wearable Sensors (Theme 7) (Oral Session)
Chair: Selvaraj, Nandakumar (VitalConnect, Inc.)
Co-Chair: Nallathambi, Gabriel (VitalConnect, Inc.)

13:30-13:45  ThCT18.1
An Novel Environment-Invariant Core Body Temperature
Estimation for High Sensitivity and Specificity Fever Screening
Silawan, Nawatt (Panasonic Corp.; Automotive & Industrial Systems Company, Engineering Division); Kusukame, Koichi (Panasonic Industrial Devices Singapore Technology Centre); Kek, Khal Jun* (Panasonic Industrial Devices Singapore); Kuan, Win Sen (National University Hospital)

13:45-14:00  ThCT18.2
Polymer-Coated Fiber Optic Probe for the Monitoring of
Breathing Pattern and Respiratory Rate
Iacoponi, Sara (Università Campus Bio-Medico di Roma); Massaroni, Carlo* (Università Campus Bio-Medico di Roma); Lo Presti, Daniela (Campus Bio-Medico di Roma University); Saccomandi, Paola (University Campus Bio-Medico of Rome); Caponero, Michele Arturo (Enea Centro Ricerche Frascati); D’Amato, Rosaria (Enea Centro Ricerche Frascati); Schena, Emiliano (Università Campus Bio-Medico di Roma)

14:00-14:15  ThCT18.3
Detection of Respiratory Crackle Sounds via an Android
Smartphone-Based System
Olvera-Montes, Nemecio Carlos (Univ. Autónoma Metropolitana); Reyes, Bersain Alexander* (Universidad Autonoma De San Luis Potosi (UASLP)); Charleston-Villalobos, Sonia (Universidad Autonoma Metropolitana); Gonzalez-Camarena, Ramon (Universidad Autonoma Metropolitana); Mejia Avila, Mayra (Instituto Nacional de Enfermedades Respiratorias); Dorantes Mendoza, Guadalupe (Universidad Autonoma De San Luis Potosi); Reulecke, Sina (Universidad Autónoma Metropolitana); Aljama-Corrales, Tomas (Universidad Autonoma Metropolitana)

14:15-14:30  ThCT18.4
A 3D-Printed, Adjustable-Stiffness Knee Brace with
Embedded Magnetic Angle Sensor
Bolus, Nicholas* (Georgia Institute of Technology); Ganti, Venu (Georgia Institute of Technology); Inan, Omer (Georgia Institute of Technology)

14:30-14:45  ThCT18.5
Clinical Validation of a Wearable Respiratory Rate Device for
Neonatal Monitoring
Raj, Antony* (HTIC IIT Madras); SP, Preejith (Healthcare Technology Innovation Center - IIT Madras); Raja, Vijal Shankar (Helyxon HealthCare Technologies PL); Joseph, Jayara (HTIC, Indian Institute of Technology Madras); Sivaparakasam, Mohanakumar (Indian Institute of Technology Madras)

14:45-15:00  ThCT18.6
Fully Disposable Wireless Patch Sensor for Continuous Remote
Patient Monitoring
Selvaraj, Nandakumar* (VitalConnect, Inc.); Nallathambi, Gabriel (VitalConnect, Inc.); Moghadam, Rod (VitalConnect, Inc.); Aga, Arshan (VitalConnect, Inc.)

13:30-13:45  ThCT19.1
Designing a Hybrid Engineering Course Combining
Case-Based and Lecture-Based Teaching
Bassir Kazemni, Neda, Mélanie (Columbia University); Laboy, Andre (Columbia University); Hess, Henry* (Columbia University)

13:45-14:00  ThCT19.2
Engineering, Physical Therapy and the Community: A Service
Learning Course
Aceros, Juan* (Univ. of North Florida); Rodriguez, Ayshka (Univ. of North Florida)

14:00-14:15  ThCT19.3
Proposal for a New Training Exercise for Single Port
Laparoscopic Cholecystectomy
Amado, Lusvin* (Centro Industrial de Mantenimiento Integral and Pontificia Bolivariana Univ.); Salinas, Sergio Alexander (Universidad Bolivariana-Seccional Bucaramanga); Pimentel, Anibal (Pontificia Bolivariana - Clinica Chiamoaca S.A.)

14:15-14:30  ThCT19.4
Activities to Invigorate a Student Chapter of the IEEE
Engineering in Medicine and Biology Society
Carlson, Charles* (Kansas State University); Lyle, Alexandra (Kansas State University); Phillips, Gabrielle Johannah (Kansas State University); Chappell, Jacob (Kansas State University); Brown, Mariah (Kansas State University); Fallahi, Hojisattal (Kansas State University); Wang, Shangxian (Kansas State University); Sullivan, Ahmad (Kansas State University); Warren, Steve (Kansas State University)

14:30-14:45  ThCT19.5
How to Invent New Medical Devices
Webster, John G* (University of Wisconsin-Madison)

14:45-15:00  ThCT19.6
Integrated Information Rich Engineering Course Design
Nizami, Shermeen* (Carleton Univ.); Renon, Flavia (Carleton Univ.)

Meeting Room 325B

ThCT20: 13:30-15:00
Tumor Treating Fields (cd91k) (Invited Session)

13:30-13:45  ThCT20.1
Advanced Multiparametric Imaging for Response Assessment
to TTFields in Patients with Glioblastoma
Mohan, Suyash* (University of Pennsylvania)

13:45-14:00  ThCT20.2
Electroconductive Properties of Microtubules, Actin and Kinesin
Tuszyński, Jack Adam* (University of Alberta)

14:00-14:15  ThCT20.3
Estimating the Intensity and Anisotropy of Tumor Treating
Fields using Matrix Decomposition. Towards a More
Comprehensive Estimation of Anti-Tumor Efficacy
Korschiej, Anders R. (Aarhus University Hospital); Thielscher, Axel* (Copenhagen University Hospital Hvidovre, Denmark & BioMedical Engineering Section)

14:15-14:30  ThCT20.4
Insights from Computer Modeling: Analysis of
Physical Characteristics of Glioblastoma in
Patients Treated with TTFields
Lok, Edwin (Beth Israel Deaconess Medical Center); San, Pyay (Beth Israel Deaconess Medical Center); Wong, Eric T* (Beth Israel Deaconess Medical Center)
17:15-19:00 ThPoS-01.8 Development of an Integrated Actuated Hand Orthosis and Virtual Reality System for Home-Based Rehabilitation
Ghassemi, Mohammad* (North Carolina State Univ.); Ochoa, Jose Mauricio (Rehabilitation Institute of Chicago); Yuan, Ning (Illinois Institute of technology); Tsoupikova, Daria (Univ. of Illinois at Chicago); Kamper, Derek (North Carolina State Univ.)

17:15-19:00 ThPoS-02.1 Evidence of a “Clock” Determining Human Locomotion
Tiseo, Carlo* (Nanyang Technological University); Veluvolu, Kalyana C. (Kyungpook National University); Ang, Wei Tech (Nanyang Technological University)

17:15-19:00 ThPoS-02.2 Comparing Physical Human-Robot Interaction with Spring- and Elastomer-Based Series Elastic Actuators
Jarrett, Chris (University of Auckland); McDaid, Andrew* (University of Auckland)

17:15-19:00 ThPoS-02.3 Asymmetric Dual Arm Approach for Post Stroke Recovery of Motor Functions Utilizing the EXO-UL8 Exoskeleton System: A Pilot Study
Shen, Yang* (University of California Los Angeles); Ma, Ji (University of California Los Angeles); Dobkin, Bruce (UCLA); Rosen, Jacob (University of California Los Angeles (UCLA))

17:15-19:00 ThPoS-02.4 Observations and Experiments for the Definition of a New Robotic Device Dedicated to CT, CBCT and MRI-Guided Percutaneous Procedures
Pfeil, Antoine (INSA Strasbourg, ICube Lab); Barbé, Laurent (University of Strasbourg, CNRS, ICube); Wach, Benoît (University of Strasbourg, CNRS, ICube); Cazzato, Roberto Luigi (University Hospital of Strasbourg); Gangi, Afsin (University Hospital of Strasbourg); Renaud, Pierre* (INSA Strasbourg)

17:15-19:00 ThPoS-02.5 Functional Tasks Performed by People with Severe Muscular Atrophy using an eEMG Controlled Robotic Manipulator
Hagengruber, Annette* (German Aerospace Center, DLR); Vogel, Jörn (German Aerospace Center, DLR)

17:15-19:00 ThPoS-02.6 Modified Computed Torque Control of a Robotic Orthosis for Gait Rehabilitation
Dao, Quy Thin* (Shibaura Institute of Technology); Yamamoto, Shin-ichi* (Shibaura Institute of Technology)

17:15-19:00 ThPoS-02.7 Autonomous Positioning of Eye Surgical Robot using the Tool Shadow and Kalman Filtering
Tayama, Takashi (University of Tokyo); Kurose, Yusuke (University of Tokyo); Marques Mariño, Murilo (University of Tokyo); Koyama, Yuki (University of Tokyo); Harada, Kanako* (University of Tokyo); Omata, Seiji (Nagoya University); Arai, Fumihito (Nagoya University); Sugimoto, Koichiro (University of Tokyo Hospital); Araki, Fumiyuki (University of Tokyo Hospital); Totsuka, Kiyohito (University of Tokyo Hospital); Taka, Muneyuki (University of Tokyo Hospital); Aihara, Makoto (University of Tokyo Hospital); Mitsuji, Mamoru (University of Tokyo)

17:15-19:00 ThPoS-02.8 Reference Trajectory Adaptation to Improve Human-Robot Interaction: A Database-Driven Approach
Haufe, Florian Leander* (ETH Zurich); Maggioni, Serena (ETH Zurich); Melendez-Calderon, Alejandro (cereneo Advanced Rehabilitation Institute)
Modeling Space Radiation Induced Bone Changes in Rat Femurs through Finite Element Analysis

Johnson, Dale* (The College of New Jersey); Lawrence, Summer (University of North Carolina at Chapel Hill); Livingston, Eric; Wilson (University of North Carolina at Chapel Hill); Robert, Hienz (Johns Hopkins University School of Medicine); Davis, Catherine (Johns Hopkins University School of Medicine); Lau, Anthony (The College of New Jersey)

Model-Free Control of Movement in a Tendon-Driven Limb via a Modified Genetic Algorithm

Marjaninejad, Ali* (University of Southern California); Annigeri, Rohit (University of Southern California); Valero-Cuevas, Francisco (University of Southern California)

Increasing the Learning Capacity of BCI Systems via CNN-HMM Models

Saidutta, Yashas Malur* (Georgia Institute of Technology); Fekri, Faramarz (Georgia Institute of Technology)

Design and Pilot Evaluation of a Reconfigurable Spinal Exoskeleton

Johnson, Alwyn Patrice (Livify Technologies); Gorsic, Maja (University of Wyoming); Regmi, Yubi (University of Wyoming); Dai, Boyi (University of Wyoming); Davidson, Bradley (University of Denver); Novak, Domen* (University of Wyoming)

An Investigation of the Sensing Capabilities of Magnetotactic Bacteria

Serag El Din, Nermeen (German Univ. in Cairo); Ewis, Mohamed (Mr); Yousry, Noura (German Univ. in Cairo); Ahmed, Ola (Miss); Gomaa, Iman (Nilo Univ.); Klingner, Anke (German Univ. in Cairo); Hageman, Tijmen (Korea Institute of Science and Technology); Pichet, Marc (Mr); Mitwally, Mohamed (German Univ. in Cairo (GUC)); Abelmann, Leon (MESA+, Univ. of Twente); Khalil, Islam S. M.* (German Univ. in Cairo)

Load Exposure of Osseointegrated Implants for Transfemoral Limb Prosthesis during Running

Theisaff, Alexander* (Chalmers Univ. of Technology); Ludvigsson, Sofie (Lunds Tekniska Högskola); Öhr, Emilia (Lunds Tekniska Högskola); Ortiz-Catalan, Max (Chalmers Univ. of Technology)

The Effects of Hip or Ankle Movement Strategies on the Magnitude of Sensory Noise and Stiffness during Running

Kaminishi, Kohei* (Univ. of Tokyo); Jiang, Ping (Univ. of Tokyo); Chiba, Ryosuke (Asahikawa Medical Univ.); Takakusaki, Kaoru (Asahikawa Medical Univ.); Ota, Jun (Univ. of Tokyo)

An Estimation of the Operating Force from the Human Motion

Ding, Ming* (Nara Institute of Science and Tech.); Baba, Ryuzo (Nara Institute of Science and Tech.); Masantha, Kritsada (Kasetsart University); Garcia Ricardez, Gustavo Alfonso (Nara Institute of Science and Tech.); Takamatsu, Jun (Nara Institute of Science and Tech.); Ogasawara, Tsukasa (Nara Institute of Science and Tech.)

A Biomechatronic EPP Upper-Limb Prosthesis Controller and Its Performance Comparison to Other Topologies

Bertos, Georgios* (National Technical University of Athens); Kontogiannopoulos, Spyridon (National Technical University of Athens); Vangelatos, Zacharias (UC Berkeley); Papadopoulos, Evangelos (National Technical University of Athens)

A Biomechatronic EPP Upper-Limb Prosthesis Teleoperation System Implementation using Bluetooth Low Energy

Bertos, Georgios* (National Technical University of Athens); Koukoulas, Nikolaos (NTUA); Papadopoulos, Evangelos (National Technical University of Athens); Mablekos-Alexiou, Anestis (University College London)
Development of 6-Axis Orthodontic Force and Moment Sensing Device for Decreasing Accident of Orthodontic Treatment

Shimoda, Kunio* (Tokyo University of Science); Takemura, Hiroshi (Tokyo University of Science); Obara, Yuuya (Tokyo University of Science); Shigeta, Masahiro (Tokyo University of Science); Soga, Kohei (Tokyo University of Science); Suga, Kazuhiko (Kogakuin University); Lai, Wei-jen (Tokyo Medical and Dental University); Kim, Sumin (Tokyo Medical and Dental University); Kanno, Zuiisei (Tokyo Medical and Dental University); Uo, Motohiro (Tokyo Medical and Dental University)

An Assistive Robotic Arm for People with Physical Disabilities of the Extremities: HOG based Food Detection

Gushi, Shotaro (University of the Ryukyus); Higa, Hiroki* (University of the Ryukyus)

Impedance Model of the Interaction between Environment and Human Body and Its Modification Design

Murai, Akihiko* (National Institute of Advanced Industrial Science and Technology (AIST))

Bone Drilling Breakthrough Detection via Energy-Based Signal

Ho, Danny* (Chinese University of Hong Kong); Li, Tingguang (Chinese University of Hong Kong); Meng, Max Q.-H. (Chinese University of Hong Kong)

Gaze-Controlled Laser Pointer Platform for People with Severe Motor Impairments: Preliminary Test in Telepresence

Petrushin, Alexey* (Italian Institute of Technology); Barresi, Giacinto (Istituto Italiano di Tecnologia); Mattos, Leonardo* (Istituto Italiano di Tecnologia)

Visual Terrain Identification and Surface Inclination Estimation for Improving Human Locomotion with a Lower-Limb Prosthetic

Luiz (North Carolina State University); Zhong, Boxuan (North Carolina State University); Huang, He (North Carolina State University and University of North Carolina at Chapel Hill); Lobaton, Edgar (North Carolina State University)

Preliminary Analysis of Positive Knee Energy Injection in a Transfemoral Amputee Walking with a Powered Prosthesis

Hood, Sarah* (Univ. of Utah); Lenzi, Tommaso (Univ. of Utah)

Assessment of Robot Interventions in a Task-Based Rehabilitation: A Case Study

MajidiRad, AmirHossein (Wichita State Univ.); Adhikari, Visharath (Wichita State Univ.); Yihun, Yimesker* (Wichita State Univ.)

Automatic Surgical Skill Rating using Stylistic Behavior Components

Ershad, Marzieh* (University of Texas at Dallas); Rege, Robert (University of Texas Southwestern Medical Center); Majewicz, Ann (University of Texas Dallas)

A Postural Model for Tracking the Base of Support

Tiseo, Carlo* (Nanyang Technological Univ.); Foo, Ming Jeat (Nanyang Technological Univ.); Veluvolu, Kalyana C. (Kyungpook National Univ.); Ang, Wei Tech (Nanyang Technological Univ.)

Design of a Handheld Trocar Insertion Device for Laparoscopic Surgery to Avoid Overshooting

Sun, Junpeng* (Tokyo Institute of Technology); Tadano, Kotaro (Tokyo Institute of Technology)

Assessment and Comparison of Target Registration Accuracy in Surgical Instrument Tracking Technologies

Tealini, Andrea* (Univ. of Oslo - Dept. of Informatics, The Intervention Centre - Oslo Univ. Hospital); Perez de Frutos, Javier (SINTEF, Technology and Society); Langa, Thomas (SINTEF); Edmund, Bjorn (Oslo Univ. Hospital, Dept. of Hepato-Pancreatic-Biliary surgery, Oslo, Norway, Dept. of Health Research, SINTEF A); Elle, Ole Jacob (The Intervention Centre, Oslo Univ. Hospital and Dept. of Informatics, Univ. of Oslo)

Consistent Manufacturing Device for Coiled Polymer Actuators

Horton, Sarah* (University of Ottawa); Dumond, Patrick (University of Ottawa)

Testing of Coiled Nylon Actuators for use in Spastic Hand Exoskeletons

Bahrami, Sanaz* (University of Ottawa); Dumond, Patrick (University of Ottawa)

Assessing the Role of Teleoperated Robotic Systems in Biomanipulations – A Case Study on Blastocyst Microinjection

Matsos, Leonardo* (Istituto Italiano di Tecnologia); Caldwell, Darwin G. (Italian Institute of Technology); Grant, Edward (NC State University)

Surgical Robot with Environment Reconstruction and Force Feedback

Li, Xiao* (University of Illinois at Urbana Champaign); Kesavadas, Thennkurussi (UIUC/HCESC)

A Soft Wearable Robotic Suit for Ankle and Hip Assistance: A Preliminary Study

Jin, Shanhai* (Yanbian University); Guo, Shijie (Hebei University of Technology); Kazunobu, Hashimoto (Ningbo Institute of Intelligent Manufacturing Industry); Xiaogang, Xiong (Harbin Institute of Technology Shenzhen Graduate School); Yamamoto, Motoji (Kyushu University)
17:15-19:00  ThPoS-07.2
Locomotion Control of Pigeons using Polymer-Based Deep Brain Electrodes
Choi, Gwang Jin (Seoul National Univ.); Jang, Jungwoo (Seoul National Univ.); Kang, Seonmi (College of Veterinary Medicine and Research Institute for Veterinary Science, Seoul National Univ.); Shim, Shinyoung (Seoul National Univ.); Baek, Changhoon (Seoul National Univ.); Kim, Boyoon (College of Veterinary Medicine and Research Institute for Veterinary Science, Seoul National Univ.); Park, Yoonji (College of Veterinary Medicine and Research Institute for Veterinary Science, Seoul National Univ.); Jung, Youngjin (Brain Functional Imaging – Poster (Theme 6) (Poster Session) November 2022 National Academies Press)

17:15-19:00  ThPoS-07.3
A Force Augmenting Exoskeleton for the Human Hand Designed for Pinching and Grasping
Triolo, Emily (College of New Jersey); Stella, Martha (College of New Jersey); BuSha, Brett* (College of New Jersey)

17:15-19:00  ThPoS-07.4
High-Performance Polymer Dry Adhesives based on Ethylene Vinyl Acetate Copolymer and High-Adhesion Mechanism
Yuan, Lifang (Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences); Wu, Tianzhun* (Shenzhen Institutes of Advanced Technology (SIAT), Chinese Academy of Sciences (CAS)); Wang, Zhiwei (Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences)

17:15-19:00  ThPoS-07.5
Residual Limb Revision Surgery Alters Velocity-Curvature Coupling during Stepping and Turning of a Transfemoral Amputee
Levy, Emily (University of Texas at Dallas); Gordon, Keith (Feinberg School of Medicine, Northwestern University); Fey, Nicholas* (University of Texas at Dallas)

17:15-19:00  ThPoS-07.6
Virtual-Reality Cataract Surgery Simulator using Haptic Sensory Substitution in Continuous Circular Capsulorhexis
Kim, Yunjoo* (KAIST); Jeong, Hwayeong (KAIST); Park, Hyunkyu (KAIST); Kim, Jh Ah (Seoul National University Bundang Hospital); Kim, Taewoo (Seoul National University Bundang Hospital); Kim, Jung (Korea Advanced Institute of Science and Technology)

17:15-19:00  ThPoS-07.7
Evaluation of Compensatory Movement by Shoulder Joint Torque during Gain Adjustment of a Powered Prosthetic Wrist Joint
Kato, Akira* (Waseda Univ.); Nagumo, Haruno (Waseda Univ.); Miyake, Tamon (Waseda Univ.); Fujie, Masakatsu G. (Waseda Univ.); Sugano, Shigeki (Waseda Univ.)

17:15-19:00  ThPoS-07.8
Verification of Computed Muscle Control and Static Optimization for Isokinetic, Isometric and Isotonic Exercise of Upper Limb
Choi, Wiha (DGIST); Oh, Sehoon* (DGIST)

17:15-19:00  ThPoS-07.9
Improving EEG-Based Motor Imagery Classification via Spatial and Temporal Recurrent Neural Networks
Ma, Xuelin (Institute of Automation, Chinese Academy of Sciences); Qiu, Shuang (Tianjin University); Du, Changde (Institute of Automation, Chinese Academy of Sciences); He, Huiguang* (Institute of Automation, Chinese Academy of Sciences)

17:15-19:00  ThPoS-08.2
Effect of Emotion States on the Updating Function of Working Memory
Liu, Xiaoya (Tianjin University); Liu, Shuang* (Tianjin University); Guo Dongyue, Dongyue (Tianjin University); Sheng Yue, Yue (Tianjin University); Ke, Yufeng (Tianjin University); An, Xingwei (Tianjin University); Xu, Minpeng (Tianjin University); He, Feng (Tianjin University); Cheng, Xiaoman (Tianjin University of Technology); Ming, Dong (Tianjin University)

17:15-19:00  ThPoS-08.3
Relationship between Kinesthetic/Visual Motor Imagery Difficulty and Event-Related Desynchronization/Synchronization
Igasaki, Tomohiko* (Kumamoto Univ.); Takamoto, Junya (Kumamoto Univ.); Sakamoto, Katsuya (Kumamoto Univ.)

17:15-19:00  ThPoS-08.4
Resting-State Gamma-Band EEG Abnormalities in Autism
Shou, Guo* (University of Oklahoma); Mosconi, Matthew (University of Kansas); Ethridge, Lauren (University of Oklahoma Health Sciences Center; University of Oklahoma); Sweeney, John (University of Cincinnati); Ding, Lei (University of Oklahoma)

17:15-19:00  ThPoS-08.5
Single-Trial EEG Classification of Similar Errors
Wirth, Christopher* (University of Sheffield); Lacey, Eric (Trinity College Dublin); Dockree, Paul (Trinity College Dublin); Arvaneth, Mahnaz (University of Sheffield)

17:15-19:00  ThPoS-08.6
On the Spatiotemporal Characteristics of Class-Discriminating Functional Networks
Haddad, Ali (Rutgers University); Shamsi, Foroogh (Rutgers University); Najafizadeh, Laleh* (Rutgers University)

17:15-19:00  ThPoS-08.7
Frequency Band Variations Predict EEG Single-Trial Classification Performance in Disorder of Consciousness Patients
Finke, Andrea* (Bielefeld University, Bielefeld, Germany); Steppacher, Inga (Bielefeld University); Kissler, Johanna (Bielefeld University); Ritter, Helge (CITEC, CoR-Lab, Bielefeld University, Bielefeld, Germany)

17:15-19:00  ThPoS-08.8
Effect of Body Positions on EEG Signals in Mal De Debarquement Syndrome
Chen, Yafen (Institute of Automation, Chinese Academy of Sciences); Shou, Guo* (University of Oklahoma); Chen, Bo (Laureate Institute for Brain Research); Besio, W. G. (Institute of Rhode Island; Cha, Yoon-Hee (Laureate Institute of Brain Research); Ding, Lei (University of Oklahoma); Yuan, Han (University of Oklahoma)

17:15-19:00  ThPoS-08.9
Does a Subject Independent Dynamic Stopping Model for P300 Speller Work on Different Flash Durations and Inter Stimulus Intervals?
Xue, Yuqi* (Tianjin University); Tang, Jiabei (Tianjin University); Zhou, Peng (Tianjin University); Xu, Minpeng (Tianjin University); Ming, Dong (Tianjin University); Qi, Hongzhi (Tianjin University)
17:15-19:00 ThPoS-09.2
**Different Feedback Methods for an SSVEP-Based BCI**
Benda, Mihaly (Rhine-Waals University of Applied Sciences); Stawicki, Piotr (Rhine-Waals University of Applied Sciences); Gembler, Felix (Rhine-Waals University of Applied Sciences); Grichnik, Roland (Rhine-Waals University of Applied Sciences); Rezeika, Aya (Rhine-Waals University of Applied Sciences); Saboor, Abdul (Rhine-Waals University of Applied Sciences); Volosyak, Ivan* (Rhine-Waals University of Applied Sciences)

17:15-19:00 ThPoS-09.3
**Decoding Hindlimb Kinematics from Primate Motor Cortex using Long Short-Term Memory Recurrent Neural Networks**
Wang, Yinhong (Brown University); Truccolo, Wilson* (Brown University); Borton, David (Brown University)

17:15-19:00 ThPoS-09.4
**Ensemble Convoluted Feature Extraction for Affective Auditory P300 Brain-Computer Interfaces**
Onishi, Akina* (Chiba Univ.); Nakagawa, Seiji (Chiba Univ.)

17:15-19:00 ThPoS-09.5
**Discriminating between Imagined Speech and Non-Speech Tasks using EEG**
Alsaeih, Mashael* (University of Sheffield); Moore, Roger (University of Sheffield); Christensen, Heidi (University of Sheffield); Arvaneh, Mahnaz (University of Sheffield)

17:15-19:00 ThPoS-09.6
**Using Robust Principal Component Analysis to Reduce EEG Intra-Trial Variability**
Jao, Ping-Keng* (Ecole Polytechnique Federale de Lausanne); Chavarriaga, Ricardo (Ecole Polytechnique Federale de Lausanne); Milian, Jose del R. (Ecole Polytechnique Federale de Lausanne)

17:15-19:00 ThPoS-09.7
**Motor Imagery based Brain Computer Interface Paradigm for Upper Limb Stroke Rehabilitation**
Petersen, Jacob* (Rigshospitalet, Denmark); Iversen, Helle K. (Apoplexy Unit, Dept. of Neurology, Glostrup Hospital); Puthusserypady, Sadasivan (Technical University of Denmark)

17:15-19:00 ThPoS-09.8
**Hierarchical Graphical Models for Context-Aware Hybrid Brain-Machine Interfaces**
Ozdenizci, Ozan* (Northeastern Univ.); Gunay, Sezen Yagmur (Northeastern Univ.); Quivira, Fernando (Northeastern Univ.); Ergodgan, Deniz (Northeastern Univ.)

17:15-19:00 ThPoS-09.9
**Improvement in Classification of Tactile Event-Related Potentials using Random-interval Tasks**
Hori, Junichi* (Niigata Univ.); Akagawa, Rei (Niigata Univ.)

17:15-19:00 ThPoS-09.10
**Evaluating the Performance of Non-Hair SSVEP-Based BCIs Featuring Template-Based Decoding Methods**
Chan, Wen-Hsuan (University of California San Diego); Chiang, Kuan-Jung (University of California San Diego); Nakanishi, Masaki (University of California San Diego); Wang, Yu-Ta* (University of California San Diego); Jung, Tzuy-Ping (University of California San Diego)

17:15-19:00 ThPoS-09.11
**P300 Latency Estimation using Least Mean Squares Filter**
Mowla, Md Rakibul* (Kansas State University); Huggins, Jane E. (University of Michigan); Natarajan, Balasubramaniem (Kansas State University); Thompson, David (Kansas State University)

17:15-19:00 ThPoS-09.12
**Mental Fatigue Estimation using EEG in a Vigilance Task and Resting States**
Tian, Sen (Hebei University of Technology); Wang, Yijun* (Institute of Semiconductors, Chinese Academy of Sciences); Dong, Guoyu (Hebei University of Technology); Pei, Weihua (Institute of Semiconductors, CAS); Chen, Hongda (Institute of Semiconductors, CAS)

17:15-19:00 ThPoS-09.13
**EEG-Based Discrimination of Different Cognitive Workload Levels from Mental Arithmetic**
Chin, Zheng Yang* (Institute for Infocomm Research); Zhang, Xin (Temasek Junior College); Wang, Chuanchu (Institute for Infocomm Research); Ang, Kai Keng (Institute for Infocomm Research)

17:15-19:00 ThPoS-09.14
**Modeling EEG-Based Motor Imagery with Session to Session Online Adaptation**
Zhang, Zhuo* (A*STAR); Foong, Ruyi (Agency for Science, Technology and Research (A*Star); Nanyang Technological University (NTU)); Phua, Kok Soon (Institute for Infocomm Research); Wang, Chuanchu (Institute for Infocomm Research); Ang, Kai Keng (Institute for Infocomm Research)

17:15-19:00 ThPoS-09.15
**Robust Local Field Potential-Based Neural Decoding by Actively Selecting Discriminative Channels**
Yang, Huijuan* (Institute for Infocomm Research, Agency for Science, Technology and Research (A*Star)); Ang, Kai Keng (Institute for Infocomm Research, Agency for Science, Technology and Research (A*Star)); Toh, Valerie (National Neuroscience Institute); Ng, Wai Hoe (National Neuroscience Institute); Ng, Wai Hoe (National Neuroscience Institute)

17:15-19:00 ThPoS-09.16
**EEG Channel Selection based on Correlation Coefficient for Motor Imagery Classification: A Study on Healthy Subjects and ALS Patient**
Yang, Tao* (Institute of Infocomm Research); Ang, Kai Keng (Institute for Infocomm Research); Phua, Kok Soon (Institute for Infocomm Research); Yu, Juanhong (Institute for Infocomm Research, Agency for Science, Technology and Research (A*STAR)); Toh, Valerie (National Neuroscience Institute); Ng, Wai Hoe (National Neuroscience Institute); Ng, Wai Hoe (National Neuroscience Institute)

17:15-19:00 ThPoS-09.17
**A Hybrid EEG-EMG BMI Improves the Detection of Movement Intention in Cortical Stroke Patients with Complete Hand Paralysis**
Lopez-Larraz, Eduardo* (University of Tubingen); Birbaumer, Niels (Eberhard-Karls-University); Ramos-Murgialday, Ander (Eberhard Karls University of Tbingen/Tecnalia)

17:15-19:00 ThPoS-09.18
**Data Space Adaptation for Multiclass Motor Imagery-Based BCI**
Giles, Joshua* (The Univ. of Sheffield); Ang, Kai Keng (Institute for Infocomm Research); Mihaylova, Lyudmila (Univ. of Sheffield); Arvaneh, Mahnaz (Univ. of Sheffield)

17:15-19:00 ThPoS-09.19
**Convolutional Neural Network for Target Face Detection using Single-Trial EEG Signal**
Wang, Haofei* (Hong Kong Univ. of Science and Technology); Shi, Bertram E. (Hong Kong Univ. of Science and Technology); Wang, Yiwen (Hong Kong Univ. of Science and Technology)

17:15-19:00 ThPoS-09.20
**Decoding Spike Trains from Neurons with Spatio-Temporal Receptive Fields**
Sadras, Nilin* (University of Southern California); Shanechi, Maryam (University of Southern California)
Non-Contact Wearable EEG Sensors for SSVEP-Based Brain Computer Interface Applications

Kim, Insoo* (University of Connecticut Health Center); Soleymanjour, Rahim (University of Connecticut); Patel, Charni (University of Connecticut)

Covert Speech vs. Motor Imagery: A Comparative Study of Class Separability in Identical Environments

Jahangiri, Amir* (University of Essex); Chau, Juan M. (Pontificia Universidad Católica del Perú); Achanccaray, David (Tohoku University); Sepulveda, Francisco (University of Essex)

Upper Limb Prosthesis Control: A Hybrid EEG-EMG Scheme for Motion Estimation in Transhumeral Subjects

Bakshi, Koushik* (Indian Institute of Technology Kharagpur); Pramanik, Rajesh (IPGMER SSKM Kolkata); Mahadevappa, Manjunatha (Indian Institute of Technology Kharagpur); Kumar, Cheruvu Siva (Indian Institute of Technology, Kharagpur)

Brain Computer Interface using Modulation of Auditory Steady-State Response with Help of Stochastic Resonance

Nishifuji, Seiji* (Yamaguchi Univ.); Hirotaka, Nakamura (Yamaguchi Univ.); Matsubara, Atsushi (Yamaguchi Univ.)

Implication of N400 and P600 Waves in the Linguistic Code Change in Monolinguals and Bilinguals

Achanccaray, David* (Tohoku Univ.); Astucuri, Jhonatan Roberto (Univ. Peruana Cayetano Heredia); Hayashibe, Mitsuhiro (INRIA); Pirca, Jairo (Pontificia Univ. Católica del Perú); Espinoza Valverde, Vilma (Univ. Peruana Cayetano Heredia)

Module Differences of Glucose Metabolic Brain Network among Alzheimer’s Disease, Parkinson’s Disease Dementia, Lewy Body Dementia and Health Control

Chen, Danyan (Shanghai Institute for Advanced Communication and Data Science, Shanghai University); Jiang, Jiehui* (Shanghai University); Ping, Wu (PET Center, Huashan Hospital, Fudan University); Guo, Qihao (Huashan Hospital); Zuo, Chuanfeng (PET Center, Huashan Hospital)

EEG Neural Correlates of Self-Paced Left and Right-Hand Movement Intention during a Reaching Task

Yang, Lingling* (Sun Yat-Sen Univ.); Lu, Yao (Sun Yat-Sen Univ.)

Neuro-Glial Network Model of Postictal Generalized EEG Suppression (PGES)

Grigorovsky, Vasily* (University of Toronto); Bardakjian, Berj Luther (University of Toronto)

Transfer Functions of a Spinal Cord Stimulation System in Mixed Media and Homogeneous Media for Estimation of RF Heating during MRI Scans

Min, Xiaoyi* (St. Jude Medical, Inc.); Sison, Shiloh (St. Jude Medical, Inc.)
Optimizing Stimulus Waveforms for Suppressing Epileptic Activity Reveals a Counterbalancing Mechanism
Chang, Joshua* (Dell Medical School, Univ. of Texas at Austin); Paydarfar, David (Univ. of Texas at Austin, Dell Medical School)

Micro-Solenoid Inductors with Magnetic Core for Neural Stimulation
Zaeimbash, Mohsen (Northeastern University); Wang, Zhiguang (Northeastern University); Lee, Seung Woo (Massachusetts General Hospital and Harvard Medical School); Cash, Sydney (Massachusetts General Hospital); Fried, Shelley (Massachusetts General Hospital / Harvard Medical School); Sun, Nian* (Northeastern University)

Electrical Weapon Charge Delivery with Arcing
Chiles, Bryan (Axon Enterprise, Inc.); Nerheim, Max (TASER International); Brave, Michael (LAAW International, LLC); Panescu, Dorin (Advanced Cardiac Therapeutics); Kroll, Mark William* (University of Minnesota)

Neurovascular Electrical Stimulation with Kilohertz Frequency Alternating Current to Enhance Sensorimotor Cortical Excitability
Yun, Zhao (Chongqing University); Hou, Wensheng* (Bioengineering Inst of Chongqing University); Wang, Xing (Chongqing University)

Estimating Voluntary Activation of the Elbow and Wrist Muscles in Chronic Hemiparetic Stroke using Twitch Interpolation Methodology
Garmirian, Lindsay* (Northwestern University); Acosta, Anamaria (Northwestern University); Hill, Nayo Marel (Northwestern University); Dewald, Julius P. A. (Northwestern University)

Computational Models and Tools for Developing Sophisticated Stimulation Strategies for Retinal Neuropathoses
Guo, Tianruo (University of New South Wales); Tsai, David (Columbia University); Muralidharan, Madhuvarthi (GSBME UNSW); Li, Liming (Shanghai Jiao Tong University); Suaning, Gregg (University of Sydney); Morley, John William (University of Western Sydney); Dokos, Socrates (University of New South Wales); Lovell, Nigel H.* (University of New South Wales)

Electric Fields Induced by Transcutaneous and Intracranial Current Injections in the Rat Brain
Asan, Ahmet (New Jersey Institute of Technology); Gok, Sinan (New Jersey Institute of Technology); Sahin, Mesut* (New Jersey Institute of Technology)

Experimental Study on Nerve Signals Block for Spasticity based on Antimissile Strategy
Wang, Zhigong* (Southeast University); Lü, Xiaoying (Southeast University); Gao, Yujie (Southeast University); Zhang, Jianjun (Southeast University); Wang, Boshuo (Duke University)

Using Interictal HFOs to Improve the Identification of Epileptogenic Zones in Preparation for Epilepsy Surgery
Farahmand, Sina* (Illinois Institute of Technology); Sobayo, Tiwalade (Illinois Institute of Technology); Mogul, David (Illinois Institute of Technology)

Hardware Implementation of a Performance and Energy-Optimized Convolutional Neural Network for Seizure Detection
Heller, Simon* (Dept. of Microsystems Engineering - Univ. of Freiburg); Huegle, Maria (Univ. of Freiburg); Nematollahi, Iman (Univ. of Freiburg); Manzouri, Farrokh (Univ. of Freiburg); Dümppelmann, Matthias (Univ. Medical Center Freiburg); Schulze-Bonhage, Andreas (Univ. Hospital Freiburg); Boedecker, Joschka (Univ. of Freiburg); Wolias, Peter (Univ.)

Neural Modulation by Repetitive Transcranial Magnetic Stimulation (rTMS) for BCI Enhancement in Stroke Patients
Shu, Xiaokang* (Shanghai Jiao Tong Univ.); Chen, Shugeng (Huashan Hospital, Fudan Univ.); Chai, Guohong (Shanghai Jiao Tong Univ.); Sheng, Xinjun (Shanghai Jiao Tong Univ.); Jia, Jie (Fudan Univ.); Zhu, Xiangyang (Shanghai Jiao Tong Univ.)

Ultra Broad Band Neural Activity Portends Seizure Onset in a Rat Model of Epilepsy
Ehrens, Daniel* (Johns Hopkins University); Assaf, Fadi (Rappaport Faculty of Medicine and Research Institute, Technion - Israel Institute of Technology); Cowan, Noah (Johns Hopkins University); Sarma, Sridevi V. (Johns Hopkins University); Schiller, Yitzhak (Rappaport Faculty of Medicine and Research Institute, Technion - Israel Institute of Technology)

Development of a Method to Quantify Abnormal Kinetic and Kinematic Coupling Patterns during Functional Movements in the Paretic Arm and Hand of Individuals with Pediatric Hemiplegia
Hill, Nayo Marel* (Northwestern University); Dewald, Julius P. A. (Northwestern University)

Challenges of Stride Segmentation and Their Implementation for Impaired Gait
Bobič, Vladislava* (Innovation Center of School of Electrical Engineering, Univ. of Belgrade); Djurić-Jovičić, Milica (Innovation Center of School of Electrical Engineering, Univ. of Belgrade); Radovanović, Saša (Institute for Medical Research, Univ. of Belgrade, Serbia); Dragušević, Nataša (Neurology Clinic, Clinical Center of Serbia, Medical Faculty, Univ. of Belgrade, Serbia); Kostić, Vladimir (Neurology Clinic, Clinical Center of Serbia, Medical Faculty, Univ. of Belgrade, Serbia); Popović, Mirjana (Institute for Medical Research, Univ. of Belgrade, Serbia)

Temporal Pattern of Ripple Events in Temporal Lobe Epilepsy: Towards a Pattern-Based Localization of the Seizure Onset Zone
Sumsky, Stefan (University of Connecticut); Santaniello, Sabato* (University of Connecticut)
17:15-19:00  ThPoS-15.10
Frequency Dependence of Shear Wave Velocity in Stroke-
Affected Muscles during Isometric Contraction Preliminary Data
Saadat, Fatemeh*(Shirley Ryan AbilityLab (formerly
Rehabilitation Institute of Chicago)); Son, Jong-sang (Shirley Ryan
AbilityLab (formerly Rehabilitation Institute of Chicago); Rymer,
William Zev (Northwestern & Rehab Inst of Chicago); Lee,
Sabrina (Northwestern Univ., Rehabilitation Institute of Chicago)

17:15-19:00  ThPoS-15.11
Neural Correlation between Evoked Tactile Sensation and
Central Activities in the Somatosensory Cortex
Yin, Pengyu (School of BioMedical Engineering, Shanghai Jiao
Tong Univ.); Hao, Manzhao (School of BioMedical Engineering,
Shanghai Jiao Tong Univ.); Liu, Xiaodong (Shanghai Jiao Tong
Univ.); Cao, chunchun (Dept. of Functional Neurosurgery, Ruijin
Hospital Shanghai Jiao Tong Univ, School of Medicine); Niu,
Chuanxin M. (Ruijin Hospital, School of Medicine, Shanghai Jiao
Tong Univ.); Lan, Ning*(Shanghai Jiao Tong Univ.)

17:15-19:00  ThPoS-16: 17:15-19:00
Neuromuscular Systems – Poster (Theme 6) (Poster Session)

17:15-19:00  ThPoS-16.1
Gait Symmetry can Reduce Dependence on the Intact Limb
during Walking with Constraint of Unilateral
Metatarsophalangeal Joints
Liu, Yixiang (Harbin Institute of Technology); Zang, Xizhe* (Harbin
Institute of Technology); Zhang, Niansong (Nanjing Institute of
Science and Technology); Wu, Ming (Rehab. Institute of Chicago)

17:15-19:00  ThPoS-16.2
Towards Enhancement of Patients’ Engagement: Online
Modification of Rehabilitation Training Modes using Facial
Expression and Muscle Fatigue
Wang, Jiaxing (Institute of Automation, Chinese Academy of
Sciences); Wang, Weiqun* (Chinese Academy of Sciences); Hou,
Zeng-Guang (Institute of Automation, Chinese Academy of
Sciences); Liang, Xu (Institute of Automation, Chinese Academy of
Sciences); Ren, Shixin (Chinese Academy of Sciences); Peng,
Liang (Institute of Automation, Chinese Academy of Sciences)

17:15-19:00  ThPoS-16.3
Prediction Method of Walking Speed at Swing Phase using
Soleus Electromyogram Signal at Previous Stance Phase
Choi, Taejin (Korea Institute of Science and Technology); Im,
Chang-Hwan (Hanyang University); Kim, Seung-Jong (Korea
Institute of Science and Technology); Kim, Hyungmin (Korea
Institute of Science and Technology); Lee, Jong Min* (Korea
Institute of Science and Technology)

17:15-19:00  ThPoS-16.4
Application of an LDA Classifier for Determining User-Intent in
Multi-DOF Quasi-Static Shoulder Tasks in Individuals with
Chronic Stroke: Preliminary Analysis
Kopke, Joseph V* (Northwestern Univ.); Hargrove, Levi (Rehab.
Institute of Chicago); Ellis, Michael (Northwestern Univ.)

17:15-19:00  ThPoS-16.5
Designing Feedback Controllers for Human-Prosthetic Systems
using H-Infinity Model Matching
Costacurta, Julia* (Johns Hopkins University); Osborn, Luke
(Johns Hopkins University); Thakor, Nitish (Johns Hopkins
University); Sarma, Sridevi V. (Johns Hopkins University)

17:15-19:00  ThPoS-16.6
Parkinsonian Tremor Detection from Subthalamic Nucleus
Local Field Potentials for Closed-Loop Deep Brain Stimulation
Shah, Syed Ahmar* (Postdoctoral Scientist, Univ. of Oxford);
Tinkhauser, Gerd (Univ. of Oxford); Chen, Ching-Chu (Chang
Gung Univ.); Little, Simon (Institute of Neurology, Faculty of Brain
Sciences, Univ. College London); Brown, Peter (Director of the
Medical Research Council Brain Network Dynamics Unit at the
Univ. of Oxford, and Professor of Experimental)

17:15-19:00  ThPoS-16.7
Identifying Noisy Electrodes in High Density Surface
Electromyography Recordings Through Analysis
of Spatial Similarities
Bingham, Adrian* (RMIT University Melbourne); Jelfs, Beth (RMIT
University); Poosapadi Anjanu, Sridhar (SRM Institute of Science
and Technology); Kant Kumar, Dinesh (RMIT University)

17:15-19:00  ThPoS-16.8
Interference of Visual Conditions and Stance Postures on
Center of Pressure Sway in Patients with Schizophrenia with
History of Fall
Chern, Jen-Suh (National Taiwan Normal University); Wang, San-
Ping (Yu-Li Hospital); Chang, Jer-Hao (National Chung Kung
University); Yu, Sung-Nien* (National Chung Cheng University);
Lin, Yu-Zhe (National Chung Cheng University)

17:15-19:00  ThPoS-16.9
Combined Visual Feedback with Pelvic Assistance Force
Improves Step Length during Treadmill Walking in Individuals
with Post-Stroke Hemiparesis
Hsu, Chao-Jung (Shirley Ryan AbilityLab); Kim, Janis
(Rehabilitation Institute of Chicago); Wu, Ming* (Rehabilitation
Institute of Chicago)

17:15-19:00  ThPoS-16.10
Design of Functional Electrical Stimulation Cycling System for
Lower-Limb Rehabilitation of Stroke Patients
Wang, Xiaojun (Chinese University of Hong Kong); Leung, Wing
Cheong (Chinese University of Hong Kong); Fang, Yuqi (Chinese
University of Hong Kong); Chen, Sai (Chinese University of Hong
Kong); Mehra, Prabhat (Locus.sh); Tong, Kai Yu, Raymond* (Chinese
University of Hong Kong)

17:15-19:00  ThPoS-16.11
Exploration of the Effect of Race on Cortical Current Flow Due
to Transcranial Direct Current Stimulation: Comparison across
Caucasian, Chinese, and Indian Standard Brains
Datta, Abhishek (Soterix Medical, Inc.); Thomas, Chris* (Soterix
Medical, Inc.); Huang, Yu (City College of New York);
Venkatasubramanian, Ganesan (National Institute of Mental
Health And NeuroSciences)

17:15-19:00  ThPoS-16.12
Development and Evaluation of a Kinect-Based Rapid
Movement Therapy Training Platform for Balance Rehabilitation
Junata, Melissa* (Chinese Univ. of Hong Kong); Cheng, Kenneth
Chik-Chi (Chinese Univ. of Hong Kong); Man, Hok Sum (Chinese
Univ. of Hong Kong); Wang, Xin (Chinese Univ. of Hong Kong);
Tong, Kai Yu, Raymond (Chinese Univ. of Hong Kong)

17:15-19:00  ThPoS-17: 17:15-19:00
Parameter Estimation in Biomedical Models –
Poster (Theme 4) (Poster Session)

17:15-19:00  ThPoS-17.1
Studying the Sensitivity of Coronary Blood Flow using
Nondimensional Analysis
Alwan, Ghazwan* (University of Missouri); Manning, Noah
(University of Missouri); Emter, Craig (University of Missouri);
Delafortaine, Patrick (University of Missouri); Leary, Emily
(University of Missouri)

17:15-19:00  ThPoS-17.2
Modelling of Fasting Glucose-Insulin Dynamics from Sparse Data
Aradöttlir, Tinna Björk* (Technical University of Denmark); Boiroux,
Dimitri (Technical University of Denmark); Bengtsson, Henrik
(Novo Nordisk A/S); Kjelstad Poulsen, Niels (Technical University
of Denmark)
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<th>17:15-19:00</th>
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<tr>
<td>An Application of Conditional Robust Calibration (CRC) to the Lotka-Volterra Predator-Prey Model in Computational Systems Biology: A Comparison of Two Sampling Strategies</td>
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<tr>
<td>Bianconi, Fortunato* (ICT4life Srl); Antonini, Chiara (Univ. of Perugia, Dept. of Engineering); Tomassoni, Lorenzo (Univ. of Perugia, Dept. of Engineering); Valigi, Paolo (Univ. of Perugia)</td>
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<th>17:15-19:00</th>
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<td>Parameter Estimation in Synchronous Coupling Model using a Point Process Modeling Framework</td>
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<tr>
<td>Amidi, Yalda* (Isfahan University of Technology); Nazari, Behzad (Isfahan University of Technology); Sadri, Saeed (Isfahan University of Technology); Eden, Uri (Boston University); Yousefi, Ali (Massachusetts General Hospital and Harvard Medical School)</td>
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<tr>
<td>A Mean Field Model of Acute Hepatic Encephalopathy</td>
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<tr>
<td>Song, Jiangling (Massachusetts General Hospital); Sun, Haoqi (Massachusetts General Hospital); Jing, Jin (Massachusetts General Hospital); Carlos, Luis (Massachusetts General Hospital); Chao, Lingya (Massachusetts General Hospital); Zhang, Rui (The Medical Big Data Research Center of School Mathematics, Northwest Univ., China); Cash, Sydney (Massachusetts General Hospital); Westover, Brandon* (MGH / Harvard Medical School)</td>
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<td>A Novel Bi-Level Framework for Fitting the Parameters in Cardiac Cellular Models</td>
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<tr>
<td>Pouraranbarani, Elanaz* (University of Calgary); Nygren, Anders (University of Calgary)</td>
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<td>Microbiota of Inflammatory Bowel Disease Models</td>
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<td>Gao, Ziyan (Duke University); Chen, Kai-Yuan (Duke University); Mueller, Olaf (Duke University); Zhang, Han (Johns Hopkins University); Rakhlin, Nikolai (School of Electrical and Computer Engineering, Cornell University); Chen, Jiaonde (Johns Hopkins University); Shen, Xiling* (Duke University)</td>
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<tr>
<td>Single-Cell Transcriptomics Reveals Heterogeneity and Drug Response of Human Colorectal Cancer Organoids</td>
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<tr>
<td>Chen, Kai-Yuan (Duke Univ.); Srinivasan, Tara (Cornell Univ.); Lin, Christopher (Duke Univ.); Tung, Kuei-Ling (Dept. of Biological and Environmental Engineering, Cornell Univ.); Hsu, David (Duke Univ.); Lipkin, Steven (Cornell Weill Medicine); Shen, Xiling* (Duke Univ.); Gao, Ziyang (Duke Univ.)</td>
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<tr>
<td>In Silico Model of Vitamin D3 Dependent NADPH Oxidase Complex Activation during Mycobacterium Infection</td>
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<td>Gough, Maya* (Univ. of Houston); May, Elebeoba (Univ. of Houston)</td>
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<td>Modeling HPV Late Promoter Regulation</td>
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<tr>
<td>Giarotta, Alberto* (University of Padova, Dept. of Information Engineering); Toffolo, Gianna (University of Padova)</td>
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<td>Spatiotemporal Analysis of Mycobacterium-Dependent Macrophage Response</td>
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<td>Stolley, Danielle* (University of Houston); May, Elebeoba (University of Houston)</td>
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<td>Deep-2'-O-Me: Predicting 2'-O-Methylation Sites by Convolutional Neural Networks</td>
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<td>Mostavi, Milad (University of Texas at San Antonio); Salekin, Sirajul (University of Texas at San Antonio); Huang, Yufei* (University of Texas at San Antonio)</td>
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<tr>
<td>Offline Lower-Limb Kinematic Decodification by Segments of EEG Signals</td>
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<td>Mercado, Luis* (Universidad Autónoma de Nuevo León); Azorin, Jose M. (Universidad Miguel Hernandez de Elche); Platass-Garra, Miguel Angel (Universidad Autónoma de Nuevo León); Ubeda, Andres (University of Alicante); Quiroz, Griselda (Universidad Autónoma de Nuevo León)</td>
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<tr>
<td>Eigen Decomposition of Cardiac Synchronous EEGs for Investigation of Neural Effects of Tempo and Cognition of Songs</td>
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<tr>
<td>Mollakazemi, Mohammad Javad* (University of Kentucky); Biswal, Dibyajyoti (University of Kentucky); Evans, Joyce (University of Kentucky); Patwardhan, Abhiit (University of Kentucky)</td>
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<tr>
<td>Cross-Recurrence Quantification Analysis for Inter-Muscular Coordination during Power Grip at Different Force Levels</td>
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<td>Zhang, Na (Shandong University); Wei, Na (Qilu Hospital, Shandong University); Yue, Shouwei (Dept. of Physical Medicine and Rehabilitation, Qilu Hospital, Shandong University); Tian, Xincheng (Shandong University); Li, Ke* (Shandong University)</td>
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<tr>
<td>EMD-Based, Mean-Phase Coherence Analysis to Assess Instantaneous Phase-Synchrony Dynamics in Epilepsy Patients</td>
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<td>Farahmand, Sina* (Illinois Institute of Technology); Sobayo, Tiwalade (Illinois Institute of Technology); Mogul, David (Illinois Institute of Technology)</td>
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<tr>
<td>Weighted Network Density Predicts Range of Latent Variable Model Accuracy</td>
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<tr>
<td>Palmerston, Jeremiah Bradley* (City University of Hong Kong); She, Qi (City University of Hong Kong); Chan, Rosa H. M. (City University of Hong Kong)</td>
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<td>Short-Term Fourier Transform based Spike Detection of Spontaneous Peripheral Nerve Activity</td>
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<tr>
<td>Shafer, Benjamin (Food and Drug Admin.); Yaghoub, Farid (FDA); Vasudevan, Srikanth* (Food and Drug Admin.)</td>
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<tr>
<td>Noninvasive Seizure Prediction using Autonomic Measurements in Patients with Refractory Epilepsy</td>
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<td>Al-Bakri, Amir (University of Kentucky); Villamar, Mauricio (University of Kentucky); Haddix, Chase (University of Kentucky); Bensalem-Owen, Meriem (University of Kentucky Hospital); Sunderam, Sridhar* (University of Kentucky)</td>
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<tr>
<td>Subspace-Based Suppression of Cortical Stimulation Artifacts</td>
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<td>Wang, Po T. (University of California Irvine); McCrimmon, Colin M (University of California, Irvine); Heydari, Payam (University of California Irvine); Do, An H. (University of California Irvine); Nenadic, Zoran* (University of California Irvine)</td>
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ThPoS-20: 17:15-19:00

Sensory Neuroprostheses – Poster (Theme 6) (Poster Session)

17:15-19:00

ThPoS-20.1 Positioning the Nerve Cuff Distally on the Sciatic Nerve Improves the Classification of Ankle-Movement Proprioceptive ENG Signals Silveira, Carolina* (Newcastle University); Brunton, Emma Kate (Newcastle University); Spendigg, Sally (Newcastle University); Nazarpour, Kianoush (Newcastle University)

17:15-19:00

ThPoS-20.2 Visual and Electric Spiking Responses of Seven Types of Rabbit Retinal Ganglion Cells Werginz, Paul* (Massachusetts General Hospital / Harvard Medical School); Im, Maesoon (Henry Ford Health System); Hadjinicolaou, Alex E. (Australian College of Optometry); Fried, Shelley (Massachusetts General Hospital / Harvard Medical School)

17:15-19:00

ThPoS-20.3 Evaluation of Time-Domain Features of Sensory ENG Signals Silveira, Carolina* (Newcastle University); Brunton, Emma Kate (Newcastle University); Khushaba, Rami N. (Univ. of Technology, Sydney (UTS)); Nazarpour, Kianoush (Newcastle University)

17:15-19:00

ThPoS-20.4 An ERP Study on the Combined-Stimulation Advantage in Vocoder Simulations Xu, Danying (Southern Univ. of Science and Technology); Wang, Lei (South Univ. of Science and Technology of China); Chen, Fei* (Southern University of Science and Technology)

17:15-19:00

ThPoS-20.5 Congruent Visual Stimulation Facilitates Auditory Frequency Change Detection: An ERP Study Wang, Lei* (South University of Science and Technology of China); Tsao, Yu (Academia Sinica); Chen, Fei (Southern University of Science and Technology)

17:15-19:00

ThPoS-20.6 Neural Representation of Harmonic Single Sideband Encoder in Inferior Colliculus of Guinea Pigs Wang, Xing* (Chongqing University); Xiong, Wei (Chongqing University); Jiang, Bin (Chongqing University); Hou, Wensheng (Bioengineering Inst of Chongqing University); Peng, Fei (Chongqing University); Hu, ning (Chongqing University)

17:15-19:00

ThPoS-20.7 Using Muscle Synergy to Evaluate the Neck Muscular Activities during Normal Swallowing Zhu, Mingxing (Shenzhen Institutes of Advanced Technology Chinese Academy of Sciences); Samuel, Oluwarotimi Williams (Shenzhen Institutes of Advanced Technology); Yang, Zijian (Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences); Lin, Wan-Hua (Shenzhen Institutes of Advanced Technology); Huang, Zhen (Panyu Central Hospital, China); Fang, Peng (Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences); Tan, Jingjian (The Third Affiliated Hospital, Sun Yat-Sen Univ.); Li, Peng (The Third Affiliated Hospital of Sun Yat-Sen Univ.); Tong, Michael C. F. (Chinese Univ. of Hong Kong); Leung, Ka Yang Karman (Dept. of Otorhinolaryngology, Head and Neck Surgery (ENT) Chinese Univ. of Hong Kong); Chen, Shixiong* (Shenzhen Institutes of Advanced Technology); Li, Guanglin (Shenzhen Institutes of Advanced Technology)

17:15-19:00

ThPoS-20.8 Comparison of Responses of Visual Cortical Neurons in the Mouse to Intracortical and Extracortical Electric Stimulation of the Retina Ryu, Sang Baek (Massachusetts General Hospital and Harvard Medical School); Fried, Shelley* (Massachusetts General Hospital / Harvard Medical School)

ThPoS-21: 17:15-19:00

Exhibit Hall 2

Neurorehabilitation – Poster (Theme 6) (Poster Session)

17:15-19:00

ThPoS-21.1 Feasibility of using the RAPEAL Smart Board for Upper Limb Therapy in Stroke Survivors: A Pilot Controlled Trial Joon Woo, Park (Daegu Univ.); Jung, Hee-Tae (Univ. of Massachusetts Amherst); Daneault, Jean-Francois (Harvard Medical School); Park, Sung Ji (Heeyeon Hospital); Ryu, Taekyong (Heeyeon Hospital); Kim, Yangsoo (Heeyeon Hospital); Lee, Sunghoon Ivan* (Univ. of Massachusetts Amherst)

17:15-19:00

ThPoS-21.2 Effect of Arm Deweighting using End-Effecter based Robotic Devices on Muscle Activity Fong, Justin* (Univ. of Melbourne); Crocher, Vincent (Univ. of Melbourne); Haddara, Raneem (Univ. of Melbourne); Ackland, David (Univ. of Melbourne); Galea, Mary P. (Dept. of Medicine (Royal Melbourne Hospital)); Tan, Ying (Univ. of Melbourne); Oetomo, Denny (Univ. of Melbourne)

17:15-19:00

ThPoS-21.3 Effect of Pelvic Movement on Healthy Subjects during Gait Training using a Gait Rehabilitation System Son, Choonghyun (Korea Institute of Science and Technology); Moon, Hyunsik (Korea Institute of Science and Technology); Kim, Daeun (Yonsei University); Chun, Min Ho (Asan Medical Center, University of Ulsan); Kim, Seung-Jong (Korea Institute of Science and Technology); Choi, Junho* (Korea Institute of Science and Technology)

17:15-19:00

ThPoS-21.4 The Effect of Myoelectric Computer Interface Training on Arm Kinematics and Function after Stroke Son, Choonghyun (Korea Institute of Science and Technology); Moon, Hyunsik (Korea Institute of Science and Technology); Kim, Daeun (Yonsei University); Chun, Min Ho (Asan Medical Center, University of Ulsan); Kim, Seung-Jong (Korea Institute of Science and Technology); Choi, Junho* (Korea Institute of Science and Technology)

17:15-19:00

ThPoS-21.5 Speaking Ability While using an Inductive Tongue-Computer Interface for Individuals with Tetraplegia: Talking and Driving a Powered Wheelchair – A Case Study Andreeasen Strijuk, Lotte N. S. (Aalborg Univ.); Bentsen, Bo (Center for Sensory Motor Interaction, Aalborg Univ.); Gaihede, Michael (Aalborg Hospital, Dept. of Otorhinolaryngology and Head and Neck Surgery); Lontis, Eugen Romulus* (Aalborg Univ.)

17:15-19:00

ThPoS-21.6 Effects of Lower Body Positive Pressure Treadmill Training on Dynamic Balance of Children with Cerebral Palsy Dadashi, Farnoosh (Tehran University of Medical Sciences); Kharazi, Mohamad Reza (Dept. of Training and Movement Sciences, Humboldt-Universität zu Berlin, Berlin, Germany); Lotfi, Mahboube (Tehran University of Medical Sciences); Shahrokh, Amin (Noorafshar Hospital); Mirbagheri, Alireza (Tehran University of Medical Sciences (TUMS)); Mirbagheri, Mehdi* (Northwestern University/RIC)
17:15-19:00  ThPoS-21.7  The Effects of Low Frequency Repetitive Transcranial Magnetic Stimulation on White Matter Structural Connectivity in Children with Cerebral Palsy  Marzbani, Hengameh (Tehran Univ. of Medical Sciences); Shahrokhi, Amin (Noorafshar Hospital); Irani, Ashkan (Dept. of Occupational Therapy, Faculty of Rehabilitation, Shahid Beheshti University of Medical Sciences Health Services); Mehdinezhad, Mina (Mina Mehdinezhad is Occupational Therapist, Noorafshar Hospital); Kohanpour, Mohsen (Dept. of Neuroimaging and Analysis Group (NIAG), Tehran Univ. of Medical Sciences, Imam Khomeini Hospital); Mirbagheri, Mehdi* (Northwestern University/RIC)

17:15-19:00  ThPoS-21.8  Assessment of Neuroplasticity of Corticospinal Tract Induced by Antigravity Treadmill (AlterG) in Cerebral Palsy Children  Azizi, Shahila (Dept. of Medical Physics and BioMedical Engineering, Tehran University of Medical Sciences); Moradi Birgani, Parmida (Tehran University of Medical Sciences); Marzbani, Hengameh (Tehran University of Medical Sciences); Irani, Ashkan (Dept. of Occupational Therapy, Faculty of Rehabilitation, Shahid Beheshti University of Medical Sciences Health Services); Kohanpour, Mohsen (Dept. of Neuroimaging and Analysis Group (NIAG), Tehran University of Medical Sciences, Imam Khomeini Hospital); Mirbagheri, Mehdi* (Northwestern University/RIC)

17:15-19:00  ThPoS-21.9  The Impact of AlterG Training on Balance and Structure of Vestibulospinal Tract in Cerebral Palsy Children  Azizi, Shahila (Dept. of Medical Physics and BioMedical Engineering, Tehran University of Medical Sciences); Rasooli, Amirhossein (Tehran Univ. of Medical Sciences); Soleiman, Maryam (Dept. of Medical Basic Sciences, Univ. of Social Welfare and Rehabilitation Sciences); Irani, Ashkan (Dept. of Occupational Therapy, Faculty of Rehabilitation, Shahid Beheshti University of Medical Sciences Health Services); Shahrokhi, Amin (Noorafshar Hospital); Mirbagheri, Mehdi* (Northwestern University/RIC)

17:15-19:00  ThPoS-21.10  Relative Efficacy of Sensor Modalities for Estimating Post–Stroke Motor Impairment  Nelson, Zachariah (University of Tennessee, Knoxville); Wade, Eric* (University of Tennessee)

17:15-19:00  ThPoS-21.11  Energetics during Robot-Assisted Training Predicts Recovery in Stroke  Wright, Zachary* (University of Illinois at Chicago, Shirley Ryan AbilityLab); Patton, James (University Illinois at Chicago (UIC) & The Shirley Ryan AbilityLab (formerly RIC)); Huang, Felix (Shirley Ryan AbilityLab)

17:15-19:00  ThPoS-21.12  Feature Learning in Assistive Rehabilitation Robotic Systems  Lu, Lei* (Harbin Institute of Tech.); Tan, Ying (Univ. of Melbourne); Oetomo, Denny (Univ. of Melbourne); Mareels, Iven (Melbourne Univ., Australia); An, Shi (Harbin Institute of Tech.)

17:15-19:00  ThPoS-21.13  Real-Time Electromyography-Driven Functional Electrical Stimulation Cycling System for Chronic Stroke Rehabilitation  Fang, Yuqi* (Chinese Univ. of Hong Kong); Chen, Sai (Chinese Univ. of Hong Kong); Wang, Xiaojun (Chinese Univ. of Hong Kong); Leung, Wing Cheong (Chinese Univ. of Hong Kong); Wang, Xin (Chinese Univ. of Hong Kong); Tong, Kai Yu, Raymond (Chinese Univ. of Hong Kong)

17:15-19:00  ThPoS-21.14  Directly Measuring the Rate of Slacking as Stroke Survivors Produced Isometric Forces during a Tracking Task  Smith, Brendan W.* (Loyola Marymount University); Rowe, Justin (University of California at Irvine); Reinkensmeyer, David J. (University of California)

17:15-19:00  ThPoS-21.15  The Impact of Repetitive Transcranial Magnetic Stimulation on Affected and Unaffected Sides of a Child with Hemiplegic Cerebral Palsy  Parvin, Shokoofeh (Tehran Univ. of Medical Sciences); Mehdinezhad, Mina (Mina Mehdinezhad is Occupational Therapist, Noorafshar Hospital); Taghioo, Aidin (Day Hospital); Nourian, Rouollah (Sports Medicine Research Center, Tehran Univ. of Medical Sciences; Dept. of Rehabilitation and Sports Medicine, Nooraf); Mirbagheri, Mehdi* (Northwestern Univ./RIC)

17:15-19:00  ThPoS-22.1  Preclinical Efficacy Evaluation of a Non-Invasive Fat Reduction Medical Device at DGMIF–LAC  Ryu, Rae-Hyung (Daegu-Gyeongbuk Medical Innovation Foundation (DGMIF)); An, Sang-Hyun* (Daegu-Gyeongbuk Medical Innovation Foundation (DGMIF)); Kim, Jun-Sik (Lab Animal Center (LAC), Daegu-Gyeongbuk Medical Innovation Foundation (DGMIF)); Kim, Jong Chul (Daegu-Gyeongbuk Medical Innovation Foundation)

17:15-19:00  ThPoS-22.2  Electron Microscopy Imaging and Analysis of 3D Tumor Model  Madhavan, Mathangi* (Univ. of Connecticut, Storrs); Alamshad, Hassan* (Aljouf Univ.); Hoshino, K. (Univ. of Connecticut)

17:15-19:00  ThPoS-22.3  Long-Term Stable, Bidirectional, Osseo-neuromuscular Interfaces for Upper and Lower Limb Amputations  Ortiz-Catalán, Max* (Chalmers University of Technology); Milenara, Jason (Intrugram AB); Thesleff, Alexander (Chalmers University of Technology); Håkansson, Bo (Chalmers University of Technology); Brännmark, Rickard (Gothenburg University)

17:15-19:00  ThPoS-22.4  ISACHI: Integrated Segmentation and Alignment Correction of Heart Images  Villard, Benjamin* (University of Oxford); Zacur, Ernesto (Oxford University); Grau, Vicente (University of Oxford)

17:15-19:00  ThPoS-22.5  Optimization of 3D Knee Joint Angle Determination  Roland, Theresa* (Johannes Kepler University Linz); Fritz, Thomas (Johannes Kepler University Linz); Baumgartner, Werner (Johannes Kepler University Linz)

17:15-19:00  ThPoS-22.6  Does the Limb Position Influence the Motion Illusion Evoked by Tendon Vibration?  Ozshima, Hirokuy* (Tokyo Metropolitan Industrial Technology Research Institute); Shimada, Shigenobu (Tokyo Metropolitan Industrial Technology Research Institute)

17:15-19:00  ThPoS-22.7  Simple Generation Method of Urethane Resin Fiber Model using 3D Printer and Its Application to Medical Model  Kamiya, Naoki* (Aichi Prefectural University); Yamada, Saki (Nagoya Kougakuin College of Technology)

17:15-19:00  ThPoS-22.8  The Effect of Chronic Ankle Instability on Knee Joint Loadings using a Musculoskeletal Model  Li, Yumeng* (California State University)

17:15-19:00  ThPoS-22.9  Localization of the Epileptogenic Zone using Scalp EEG during REM Sleep  Duke, Tyler (University of Manitoba); Winkler, Jeff* (University of Manitoba); Moussavi, Zahr (University of Manitoba); Ng, Marcus (University of Manitoba)
Cytotoxicity and Cellular Uptake Study of Polyethylene Glycol Coated Gold Nanoparticles

Deprivation by Means of Permutation Entropy

Hybrid Transducer

Simultaneous Measurements of MMG/EMG to Provide Muscle Detection from Interictal Electrocorticogram

Tumor Cells using a Microfluidic Device

during Dynamic Exercise

Human Lung on Microfluidic Chips

Bootstrap Aggregating

Thyroid Texture Classification in Ultrasound Images using Recognization of Surgical Instrument

Hands-Free Interface for Laparoscope Robot based on Image

Cytotoxicity and Cellular Uptake Study of Polyethylene Glycol Coated Gold Nanoparticles

Tosun, Pinar Deniz*

Shogo Fukuhara, Shinichi

Yoon, Yousang

Ho Soon (Hanyang University)

Watanabe, Shogo

Fukuhara, Shinichi*

Chakravarty, Sumit

Settisara Janney, Srivarna*

Chen, Guan-Yu*

Kagawa Univ.)

Friebe, Michael (Otto-von-Guericke-University Magdeburg)

Impact of Pulmonary Alveolar Epithelial Cells of Human Lung on Microfluidic Chips

New Algorithms for CS – MRI: WTWTS, DWTS, WDWTS

Analysis Method for Real-Time Evaluation of Muscle Function during Dynamic Exercise

Size and Deformability based Separation of Viable Circulating Tumor Cells using a Microfluidic Device

Simultaneous Measurements of MMG/EMG to Provide Muscle Strength and Performance during Isotonic Contraction

Estimation of Cycling-Wheelchair Pedaling using MMG/EMG Hybrid Transducer

Characterization of Mouse Brain Activity following Sleep Deprivation by Means of Permutation Entropy

17:15-19:00 ThPoS-22.10

17:15-19:00 ThPoS-22.11

17:15-19:00 ThPoS-22.12

17:15-19:00 ThPoS-22.13

17:15-19:00 ThPoS-22.14

17:15-19:00 ThPoS-22.15

17:15-19:00 ThPoS-22.16

17:15-19:00 ThPoS-22.17

17:15-19:00 ThPoS-22.18

17:15-19:00 ThPoS-22.19

17:15-19:00 ThPoS-22.20

17:15-19:00 ThPoS-22.21

17:15-19:00 ThPoS-22.22

17:15-19:00 ThPoS-22.23

17:15-19:00 ThPoS-22.24

17:15-19:00 ThPoS-22.25

17:15-19:00 ThPoS-22.26

17:15-19:00 ThPoS-22.27

17:15-19:00 ThPoS-22.28

Description Language

Benso, Alfredo* (Politecnico di Torino); Di Carlo, Stefano (Politecnico di Torino); Politano, Gianfranco (Politecnico di Torino); Bardini, Roberta (Politecnico di Torino); Muggiano, Flavia (Politecnico di Torino)
A Computational Comparison of the Lower Limb Interbody Fusion with Unilateral and Bilateral Fixation
Zhang, Teng (St George Hospital, Univ. of New South Wales); Bai, Siwei * (Technical Univ. of Munich); Fang, Chris (Dept. of Orthopaedics and Traumatology, Queen Mary Hospital, Univ. of Hong Kong); Wong, Tak-Man (Dept. of Orthopaedics and Traumatology, Queen Mary Hospital, Univ. of Hong Kong); Kulper, Sloan (Dept. of Orthopaedics and Traumatology, Queen Mary Hospital, Univ. of Hong Kong); Cheung, Jason Pui Yin (Univ. of Hong Kong); Lu, William (Dept. of Orthopaedics and Traumatology, Queen Mary Hospital, Univ. of Hong Kong); Diwan, Ashish (Spine Service, St George Hospital)

Design and Development of an Electro Stimulator System with Programmable Routines based on a Human Skin Depth Effect Model
Amador Tejada, Alejandro Ian* (National Autonomous University of Mexico); Robles Martinez, Karina (National Autonomous University of Mexico)

Extraordinarily Transmission based Super-Compact Acoustic Resonators Accounting for Mechanism of Human Auditory System
Hori, Yasushi* (Kansai Univ.); Hong, Wenjia (Kansai Univ.); Tamaki, Airi (Kansai Univ.); Kitamura, Toshiaki (Kansai Univ.)

Human-Centered or Mechanical Slip Resistance Testing Method?
Li, Yue* (Toronto Rehabilitation Institute - University Health Network); Gauvin, Chantal (IRRST, Montreal); Cheng, Wayne (Toronto Rehabilitation Institute – University Health Network); Dutta, Tilak (Toronto Rehab, University Health Network)

A Microfluidic Chip for High-Efficiency Multiple Single-Cell Capture
He, Cheng-Kun (National Chung Hsing University); Chen, Chihchien (National Tsing Hua University); Hsu, Chia-Hsien* (National Health Research Institutes)

3D Printing of PLGA Circuits for Transient Electronics
Lin, Rongzan (Tsinghua University); Yan, Xinghui (Tsinghua University); Liu, Ran* (Tsinghua University)

Classification of Major Depressive Disorder based on Multiscale Entropy Analysis of Heart Rate Dynamics
Byun, Sangwon* (Incheon National University); Kim, Ah-Young (ETRI); Jiang, Eun-Hye (ETRI); Yu, hanyoung (ETRI)

Three Dimensional Flexible Microelectrodes for Subretinal Prosthesis
Seo, Hee Won* (Daegu Gyeongbuk Institute of Science and Technology (DGIST)); Kim, Namju (Daegu Gyeongbuk Institute of Science of Technology); Kim, Sohee (Daegu Gyeongbuk Institute of Science and Technology (DGIST))

Machine Learning-Based Brain Morphological Studies for Tinnitus
Liu, Yawen (Beijing Friendship Hospital, Capital Medical Univ.); Lv, Han (Beijing Friendship Hospital, Capital Medical Univ.); Yin, Hongxia (Beijing Friendship Hospital, Capital Medical Univ.); Zhang, Shaochuan (Dept. of Radiology, Beijing Friendship Hospital, Capital Medical Univ.); Wang, Zhenchong* (Beijing Friendship Hospital, Capital Medical Univ.)

A Microfluidic Interconnection Cable Delivering Pharmaceutical Drugs to Neural Electrodes
Kang, YooNa* (DGIST (Daegu Gyeongbuk Institute of Science & Technology)); Jang, JaeWon (Daegu Gyeongbuk Institute Science & Technology); Kim, Sohee (Daegu Gyeongbuk Institute of Science and Technology (DGIST))

Super Estimation of Veins by Deep Convolutional Neural Networks
Kashiwara, Koji* (Tokushima University)

Control of Culture Environment for Adherent Cells using Ultrasound Vibration
Fujisawa, Koji (Doshisha University); Tani, Kentaro (Doshisha University); Koyama, Daisuke* (Doshisha University)

Cell-Drug Interactions at Near Endothelial Wall Location
Wang, Tong* (Nanjing University of Aeronautics and Astronautics); Xing, Zhongwen (Nanjing University)

Heating Characteristics of Proposed Applicator using Rectangular Resonant Cavity for Treating Deep Tumors without Contact
Ichishima, Yasuhiro* (Meiji University, Graduate School of Science Technology); Shindo, Yasuhiro (Toyo University); Iseki, Yuya (Meiji University); Kato, Kazuo (Meiji University)

Development of VR Simulator System for Effective Hyperthermia Treatments
Takatake, Ryo* (Graduate School of Science Technology, Meiji Univ.); Shindo, Yasuhiro (Toyo Univ.); Kato, Kazuo (Meiji Univ.)

Tracking the Fate of Drug Nanocarrier using Photoluminescence Lifetime of Nanocrystalline Silicon
Joo, Jimmyoung* (Asan Medical Center)

Selective Cell Elimination Mediated by Ultrasonic Irradiation
Inui, Takumi (Keio Univ.); Kurashina, Yuta (Keio Univ.); Imashiro, Chikahiro (Keio Univ.); Takemura, Kenjiro* (Keio Univ.)

Cortical Classification of Cognitive-Motor Interactions during Walking
Alam, Mohammad (Space and Naval Warfare Systems Center Pacific); Solon, Amelia (DCS Corp); Bradford, J. Cortney (U.S. Army Research Lab); Lukos, Jamie* (SPAN Systems Center Pacific)

An Edge based PHR Platform "miParu®" using Secure SD Card
Minami, Shigenobu* (MIRUWS Inc.); Tanaka, Hirokazu (Hirosima City University); Miyamoto, Tsutomu (MIRUWS Inc.)

Fast Delay-Multiply-and-Sum Beamformer for Ultrasound and Photoacoustic Imaging
Jeon, Seungwan (Pohang University of Science and Technology); Park, Eunyeong (Pohang University of Science and Technology (POSTECH)); Choi, Wonseok (Pohang University of Science and Technology (POSTECH)); Kim, Chulhong* (Pohang University of Science and Technology)

Homogenizing Cell Seeding Density on Cell Culture Surface by using Ekman Transport
Fukuma, Yuki (Keio Univ.); Inui, Takumi (Keio Univ.); Imashiro, Chikahiro (Keio Univ.); Takemura, Kenjiro* (Keio Univ.)
A Study on Adhesion Strength between Parylene Interconnection Cable and Fluid Reservoir for Drug Delivery to Neural Electrodes
Jang, JaeWon* (Daegu Gyeongbuk Institute Science & Technology); Kang, YooNa (DGIST (Daegu Gyeongbuk Institute of Science & Technology)); Kim, Sohee (Daegu Gyeongbuk Institute of Science and Technology (DGIST))

Fingerprinting for CEST MRI
A Proposal of the Image Acquisition Sequence of MR

Implanted in Rats for the Resonance Coupling Wireless Long-Term Changes in Effective Inductance of Thin Coils
Wireless Power Transmission
A Novel Tuning Method for the Implantable Resonant Coupling Device during Thyroidectomy
The Possibility of Low-Cost Autofluorescence Measurement Device during Thyroidectomy

Hand Motion Discrimination by Forearm Deformation Measurement using Distance Sensors

Electrode Array for High Visual Acuity
Integrated Subretinal System Design with a Hexagonal Device during Thyroidectomy
Measurement using Distance Sensors

Hand Motion Discrimination by Forearm Deformation Measurement using Distance Sensors

ThPoS-23.1
Multiwave-Based Protruding Skin Disease Mobile Diagnostic System
Hong, Gee Yun (The Medical IT Engineering Dept., University of Soonchunhyang); Lee, Jiwon (The Medical IT Engineering Dept., University of Soonchunhyang); Moon, Cho-I (University of Soonchunhyang); Lee, Onseok* (Soonchunhyang University)

ThPoS-23.2
Hand Motion Discrimination by Forearm Deformation Measurement using Distance Sensors
Miyata, Chika* (Ritsumeikan University); Makikawa, Masaaki (Ritsumeikan University); Okada, Shima (Ritsumeikan University)

ThPoS-23.3
The Possibility of Low-Cost Autofluorescence Measurement Device during Thyroidectomy
Kim, Yikeun (Pukyong National University); Kim, Sung Won (Kosin University College of Medicine); Lee, Kang Dae (Kosin University College of Medicine); Ahn, Yeh-Chan* (Pukyong National University)

ThPoS-23.4
Integrated Subretinal System Design with a Hexagonal Electrode Array for High Visual Acuity
Kang, Ho-Seong (Korea Univ.); Abbasi, Wajahat Habib (Dept. of Health Sciences and Technology, GAIHST, Gachon Univ.); Kim, Jungsuk (Gachon Univ.); Kim, Seong-Woo* (Korea Univ.)

ThPoS-23.5
A Novel Tuning Method for the Implantable Resonant Coupling Wireless Power Transmission
Ozawa, Yuta* (Tokyo City Univ.); Minemura, Kohei (Tokyo City Univ.); Shimatanai, Yuichi (Tokyo City Univ.); Kyosho, Masaki (Tokyo City Univ.); Kiryu, Shogo (Tokyo City Univ.)

ThPoS-23.6
Long-Term Changes in Effective Inductance of Thin Coils Implanted in Rats for the Resonance Coupling Wireless Power Transmission
Minemura, Kohei* (Tokyo City University); Ozawa, Yuta (Tokyo City University); Sasaki, Kosuke (Tokyo City University); Shimatanai, Yuichi (Tokyo City University); Kyosho, Masaki (Tokyo City University); Kiryu, Shogo (Tokyo City University)

ThPoS-23.7
An Optoelectronic Epiretinal Prosthesis
Waschkowski, Florian* (RWTH Aachen); Raffelberg, Pascal (University Duisburg-Essen); Viga, Reinhard (University of Duisburg-Essen); Kokozinski, Rainer (Fraunhofer Institute for Microelectronic Circuits and Systems); Walter, Peter (University Clinics RWTH Aachen University); Mokwa, Wilfried (RWTH Aachen University)

ThPoS-23.8
A Proposal of the Image Acquisition Sequence of MR Fingerprinting for CEST MRI
Kamba, Kazuo* (Kyoto University); Imai, Hirohiko (Kyoto University); Nakao, Megumi (Kyoto University); Matsuda, Tetsuya (Kyoto University)

ThPoS-23.9
Modeling and Prediction of Sinusoidal Smooth Pursuit using Artificial Neural Networks
Costalago Meruelo, Alicia* (Ludwig-Maximilians-Univ. München); Fleuriet, Jérôme (Washington National Primate Research Center, Univ. of Washington); Bakst, Leah (Boston Univ.); Mustari, Michael J. (Washington National Primate Research Center); Glasauer, Stefan (Ludwig-Maximilians-Univ. München)

ThPoS-23.10
Hyperhidrosis Diagnosis Quantification System using Thermal Imagery
Lee, Jiwon (The Medical IT Engineering Dept., University of Soonchunhyang); Moon, Cho-I (University of Soonchunhyang); Hong, Gee Yun (The Medical IT Engineering Dept., University of Soonchunhyang); Kim, Eun Young (Dept. of Occupational Therapy, Soonchunhyang University); Lee, Onseok* (Soonchunhyang University)

ThPoS-23.11
Preliminary Study on Development of CT System Specialized in Pathology Diagnosis using Micro CT
Hayakawa, Tomonari (Fujita Health University); Yamada, Ayumi (Fujita Health University); Teramoto, Atsushi* (Fujita Health University); Fujita, Hiroshi (Gifu University); Salto, Kuniaki (Fujita Health University); Tsukamoto, Tetsuya (Fujita Health University)

ThPoS-23.12
Development of Application Software for Visually Impaired Persons to Support Cardiopulmonary Resuscitation
Tani, Kentaro* (Niigata University of Health and Welfare); Kamikura, Takahisa (Niigata University of Health and Welfare); Maeda, Yoshinobu (Niigata University)

ThPoS-23.13
Evaluating the use of Steering a Hearing Aid in a Dynamic Multi-Talker Environment using Body Signals
Fave-Félix, Antoine* (Eriksholm Research Centre); Harrison, Murrion (Eriksholm Research Centre); Hietkamp, Reneske K. (Eriksholm Research Centre); Bhuiyan, Tanveer A. (Eriksholm Research Centre); Lunner, Tomas (Eriksholm Research Centre - Part of Oticon)

ThPoS-23.14
Vibration-Induced Whirling Flow based Erythrocyte Disaggregation
Kim, Sangho* (National University of Singapore)

ThPoS-23.15
A Wearable Liquid Encapsulation Device for Real-Time Cardiovascular Monitoring
Fan, Xiangyu* (Chinese University of Hong Kong); Ding, Xiaorong (University of Oxford); Liu, Jing (Chinese University of Hong Kong); Zhao, Ni (Chinese University of Hong Kong)

ThPoS-23.16
A Medical Training System using AR: Evaluation of User Interfaces
Umeda, Ryosuke (Univ. of the Ryukyus); Gushi, Shotaro (Univ. of the Ryukyus); Higa, Hiroki* (Univ. of the Ryukyus)

ThPoS-23.17
Ocular Biometric System based on Corneal Shapes
Khal, Nassima* (Univ. of Montreal); Meunier, Jean (Univ. de Montreal); Brunette, Isabelle (Univ. de Montreal)

ThPoS-23.18
Power-Efficient Neural Stimulator using Charge Pumps
Kim, Jae Kun (Dept. of Health Sciences and Technology, GAIHST, Gachon Univ.); Abdullah Zawawi, Ruhafii (Dept. of Health Sciences and Technology, GAIHST, Gachon Univ.); Kim, Seong-Woo (Korea Univ.); Kim, Jungsuk* (Gachon Univ.)
Deep-Learning based Active Neuron Segmentation in Simulated Robot Grasping
Hirose, James* (Shinshu University); Nishikawa, Atsushi (Shinshu University); Pataky, Todd Colin (Kyoto University)

Spectral Characteristics of Angular Motion Captured by Microsoft Kinect® during Movements of an Exergame
Moreira, Gabrielly (Pontifícia Universidade Católica do Paraná); Castro, Marcos (PUCPR); Nohama, Percy (Pontifícia Universidade Católica do Paraná); Manfira, Elisangela F.* (Pontifícia Universidade Católica Do Paraná)

An Improved Exposure Therapy for Phobias using Virtual Reality and Motion Recognition Camera
Kritikos, Jacob* (BioMedical Engineering Lab, School of Electrical and Computer Engineering, National Technical Univ. of Athens); Koutsoouris, Dimitrios (BioMedical Engineering Lab, School of Electrical and Computer Engineering, National Technical Univ. of Athens); Vellidou, Elefteria (National Technical Univ. of Athens); Anastasiou, Manolis (National Technical Univ. of Athens); Pouloupolou, Stavroula (Univ. of Piraues)

Deep 3D Anatomy-Specific Neural Network Convolution for Radiation Dose Reduction in Chest CT at a Micro-Dose Level
Zarshenas, Amin* (Illinois Institute of Technology); Zhao, Yuji (Illinois Institute of Technology); Liu, Junchi (Illinois Institute of Technology); Higaki, Toru (Hiroshima University); Fukushima, Wataru (Hiroshima University); Awai, Kazuo (Illinois Institute of Technology); Suzuki, Kenji (Illinois Institute of Technology)

Sequential Neural Network Convolution (NCC) Deep Learning in Radiation Dose Reduction in Digital Breast Tomosynthesis (DBT)
Liu, Junchi* (Illinois Institute of Technology); Zarshenas, Amin (Illinois Institute of Technology); Qadir, Syed Ammar (Illinois Institute of Technology); Yang, Limin (University of Iowa Hospitals and Clinics); Fajardo, Laurie (University of Utah); Suzuki, Kenji (Illinois Institute of Technology)

A Branch-and-Bound Method of Grid Search to Estimate Parameters of Biological Models
Abe, Takeshi* (Yamaguchi University); Asai, Yoshiyuki (Yamaguchi University Graduate School of Medicine)

Medical Image Dataset for Machine Learning based on OMOP CDM
Noh, ShiHyong (Wonkwang University); Kim, SeungJin (Wonkwang University); Kim, Tae-Hoon (Wonkwang University); Jun, Hong Young (Wonkwang University Hospital); Jeong, Chang Won (Wonkwang University); Yoon, Kwon-Ha* (Wonkwang University School of Medicine)

Forearm sEMG Sites across Individual for Gesture Recognition
Wang, Yunlong (Southeast Univ.); Bao, Xueliang (Southeast Univ., State Key Lab of Bioelectronics); Zhou, Yuxuan (School of Basic Medical Science, Nanjing Medical Univ.); Lu, Xiaoyin* (Southeast Univ.); Wang, Zhigong (Southeast Univ.)

Deep-Learning based Active Neuron Segmentation in Two-Photon Calcium Imaging
Soltanian-Zadeh, Somayeh* (Duke University); Sahingur, Kaan (Duke University); Blau, Sarah (Duke University); Gong, Yiyang (Duke University); Farsiu, Sina (Duke University)

Guidewire Tip Segmentation with Atrous Convolution
Wu, Yu-Dong (Institute of Automation, Chinese Academy of Sciences); Xie, Xiao-Liang (Chinese Academy of Sciences); Bian, Gui-Bin (Institute of Automation, Chinese Academy of Sciences); Hou, Zeng-Guang* (Institute of Automation, Chinese Academy of Sciences); Liu, Shiq (State Key Lab of Management and Control for Complex Systems, Institute of Automation, Chinese Academy of Science)

Peak-Forming-Enhanced EM Imaging Method for Implantable Device Localization
Kobayashi, Hisato* (Nagoya Institute of Technology); Anzai, Daisuke (Nagoya Institute of Technology); Wang, Jianqin (Nagoya Institute of Technology)

Stabilization of Center of Mass by Kinematic Synergies during the Post-Stroke Hemiparetic Gait
Devetak, Gisele Francini (Pontifícia Universidade Católica do Paraná - PUCPR); Bohrer, Roberta (Parana Federal University and Universidade Positivo); Rodacki, Andre Luiz Felix (Universidade Federal do Parana); Nohama, Percy (Pontifícia Universidade Católica do Paraná); Manfira, Elisangela F.* (Pontifícia Universidade Católica Do Paraná)

Improvement in Chronic Stress Level Recognition by using Both Long-Term and Short-Term Measurements of Physiological Features
Nakashima, Yoshiki* (NEC Corp.); Tsujikawa, Masanori (NEC Corp.); Onishi, Yoshifumi (NEC Corp.)

Evaluation of Balance Ability of the Elderly during ADL using Convex-Hull Area
Shin, I Su (Eulji Univ.); Kim, Wooseop (The Seongnam Senior Experience Complex, Eulji Univ.); Shin, Young Seok (Eulji Univ.); Chae, Seonah (Eulji Univ.); Choi, Dagyeong (Eulji Univ.); Kim, Ku Ho (Eulji Univ.); Jung, Duk Young* (The Seongnam Senior Experience Complex, Eulji Univ.)

Knee Osteoarthritis Classification using Gait Analysis Data: A Feasibility Study
Kwon, Soon Bin (Seoul National University); Ro, Du Hyun (Seoul National University); Kim, Hee Chan* (Seoul National University)

Quantitative Assessment of Masticatory and Swallowing Function by MMG Measurement using PVDF Film
Hashimoto, Takuya* (Tokyo University of Science); Tsukagoshi, Keita (Tokyo University of Science)

Cell Suspension Culture using Acoustic Flow
Fujii, Genichiro (Keio University); Kurashina, Yuta (Keio University); Takahara, Osamu (Mitsubishi Electric Corp.); Kodeki, Kazuhide (Mitsubishi Electric Corp.); Monikawa, Akira (Mitsubishi Electric Corp.); Azuma, Tetsushi (Mitsubishi Electric Corp.); Takemura, Kenjiro* (Keio University)

A Study of Overhand Throwing using Simultaneous High-Speed Kinematic Videography and Surface Electromyography
Doty, Steven* (Denison University)

Velocity Dependent Light Interaction Force Improves Standing Balance
Saini, Anirudh (Missouri Univ. of Science and Technology); Burns, Devin (Missouri Univ. of Science & Technology); Song, Yun Seong* (Missouri Univ. of Science and Technology)
17:15-19:00 ThPoS-23.38
Examination of the Relationship between Autistic Traits and Gait Characteristics While Two Persons Walk Toward Each Other using the Exhaustive Search Method
Shigeta, Masahiro* (Tokyo Univ. of Science); Sawatome, Akira (Tokyo Univ. of Science); Takemura, Hiroshi (Tokyo Univ. of Science); Ichikawa, Hiroto (Tokyo Univ. of Science)

17:15-19:00 ThPoS-23.39
Automated Tracking of Entrapped Nerves in Dynamic Sonography
Wu, Chueh-Hung (National Taiwan University); Hsiao, Ming-Yen (National Taiwan University); Syu, Wei-Ting (National Taiwan University); Kuo, Po-Ling* (National Taiwan University)

17:15-19:00 ThPoS-23.40
Superior Facilitation of Mirror Neuron System (MNS) by Congruent Character’s Movement in Action Observation Game
Lim, Hyunmi (Keimyung Univ.); Ku, Jeonghun* (Keimyung Univ.)

17:15-19:00 ThPoS-23.41
Tracking System for Image-Guided Radiation Surgery
Yang, Sejung* (Yonsei University); Shi, Jining (UCLA); Oh, Byungho (Keimyung University, College of Medicine); Adler, John (Stanford University)

17:15-19:00 ThPoS-23.42
Numerical Analysis of the Effect of Adjacent Reference Electrode Configuration in Retinal Prostheses
Kim, Namju* (Daegu Gyeongbuk Institute of Science and Technology); Seo, Hee Won (Daegu Gyeongbuk Institute of Science and Technology (DGIST)); Kim, Sohee (Daegu Gyeongbuk Institute of Science and Technology (DGIST))

17:15-19:00 ThPoS-23.43
Effect of Zinc on Astrocytic Calcium Signaling in Mice
Cho, Yoon Kyung (Ewha Womans Univ.); Noh, Kyungchul (Dept. of Neuroscience and Physiology, and Dental Research Institute, School of Dentistry, Seoul National Univ.); Cho, Woo-Hyun (Dept. of Neuroscience and Physiology, and Dental Research Institute, School of Dentistry, Seoul National Univ.); Lee, Sung Joong (Dept. of Neuroscience and Physiology, and Dental Research Institute, School of Dentistry, Seoul National Univ.); Jun, Sang Beom* (Ewha Womans Univ.)

17:15-19:00 ThPoS-23.44
Influence of Structures of Deep Neural Network on Classification of EEG during Motor Imagery Task
Gu, Feng* (Univ. of Tokyo); Kobayashi, Yuya (Univ. of Tokyo); Kotani, Kiyoshi (Univ. of Tokyo); Jimbo, Yashihiko (Univ. of Tokyo)

17:15-19:00 ThPoS-23.45
Wrist Rehabilitation System using Enhanced Reality for Hemiplegic Patients’ Rehabilitation
Phan, Huu Lam* (Ulsan Univ.); Duong Van, Thuy (Univ. of Ulsan); Nguyen, Trung (Univ. of Ulsan); Lee, HyoSeok (Univ. of Ulsan); Son, HyeWon (Dept. of BioMedical Engineering, Univ. of Ulsan); Jang, Hojeong (Dept. of BioMedical Engineering, Univ. of Ulsan); Oh, Seok (Univ. of Ulsan); Lee, Yeasol (Univ. of Ulsan); Hwang, Changho (Ulsan University Hospital); Koo, Kyoin (Univ. of Ulsan)

17:15-19:00 ThPoS-23.46
Position Tracking System by using Unique Magnetic Field and 3D Magnetic Sensors for Surgical Navigation
Zhang, Da Peng* (National Institute of Advanced Industrial Science and Technology (AIST)); Lu, Jian (National Institute of Advanced Industrial Science and Technology (AIST)); Okuda, Yoichi (Tsukuba University); Zhang, Lan (National Institute of Advanced Industrial Science and Technology); Kurata, Masanao (University of Tsukuba); Maeda, Ryutaro (National Institute of Advanced Industry Science and Technology); Ohkohchi, Nobuhiro (University of Tsukuba)

17:15-19:00 ThPoS-23.47
Gold Nanorods Induce Oxidative Stress in Neurons and Promote Gial Proliferation
Kim, Soonyoung* (Ewha Womans Univ.); Cho, Yoon Kyung (Ewha Womans Univ.); Jun, Sang Beom (Ewha Womans Univ.)

17:15-19:00 ThPoS-23.48
Depth-Dependent Burn Area Extraction for Burn Diagnosis
Wada, Daigoro* (Keio University); Kato, Soichiro (Kyorin University School of Medicine); Yamaguchi, Yoshihiro (Kyorin University School of Medicine); Tanaka, Toshiyuki (Keio University)

17:15-19:00 ThPoS-23.49
A Development of Tactile Sensor and Tactile Feedback Device for Myoelectric Artificial Hand Users
Tsuda, Junya* (Tokai Univ.); Magatani, Kazushige (Tokai Univ.)

17:15-19:00 ThPoS-23.50
Comparing Amygdala Sub-Regions as a Stimulation Target for Animal Behavior Control
Lee, Youjin (Ewha Womans University); Lee, Joon Won (Ewha Womans University); Kim, Soonyoung (Ewha Womans University); Jun, Sang Beom* (Ewha Womans University)

17:15-19:00 Exhibit Hall 2
Thursday 1 Page Research Poster Paper (III) (Poster Session)

17:15-19:00 ThPoS-24.1
Improving Clinical Outcomes of Balance after Traumatic Brain Injury using Computerized Biofeedback based Intervention
Ibironke, Oluwaseun (Kessler Foundation); Tanis, Daniel (Kessler Foundation); Nolan, Karen J. (Kessler Foundation);
Pilkar, Rakesh* (Kessler Foundation - Rutgers NJMS)

17:15-19:00 ThPoS-24.2
Proposal of a New PTT Measurement Method using Tactile Sensors Toward Cuff-Less Blood Pressure Measurement
Gishi, Yudai* (Meijo Univ.); Mukai, Toshiharu (Meijo Univ.)

17:15-19:00 ThPoS-24.3
Segmentation of Cell Images by Leaking the Information of Discriminator to Generator
Sawada, Kyoya* (Meijo University); Hotta, Kazuhiro (Meijo University); Imanishi, Ayako (Kyoto University); Matsuda, Michiyuki (Kyoto University); Terai, Kenta (Graduate School of Biostudies, Kyoto University)

17:15-19:00 ThPoS-24.4
Using Fuzzy Approximate Entropy to Analyze the Activation Changes of Paretic Wrist Flexor in Stroke Survivors
Luo, Zichong (Univ. of Macau); Wong, Seng Fat* (Univ. of Macau); Li, Le (The First Affiliated Hospital, Sun Yat-sen Univ.); Bian, Ruihao (The First Affiliated Hospital, Sun Yat-sen Univ.)

17:15-19:00 ThPoS-24.5
Analysis of Deaeration Deformation in Ex Vivo Animal Lung by Laplacian-Based Surface Registration
Kobayashi, Kotaro* (Kyoto University); Nakao, Megumi (Kyoto University); Tokuno, Junko (Kyoto University); Chen-Yoshikawa, Toyofumi (Kyoto University); Matsuda, Tetsuya (Kyoto University)

17:15-19:00 ThPoS-24.6
EMG Biofeedback Training Improves Motor Impairment of Mental Disease: A Case Study of Conversion Disorder
Oouchida, Yutaka* (Osaka Kyoiku Univ.); Ortiz-Catalan, Max (Chalmers Univ. of Technology); Sudo, Tamami (Tohoku Univ.); Inamura, Tetsunari (National Institute of Informatics); Ohki, Yukari (Kyorin Univ.); Izumi, Shin-ichi (Tohoku Univ.)
Detection and Part Estimation of Heart Disease using Integral Values for Rat Magnetocardiography by LTS-SQUID
Tsukamoto, Yuto* (Waseda Univ.); Ono, Yumie (Meiji Univ.); Minamisawa, Susumu (Jikei Univ. School of Medicine); Kajimura, Ichigo (Univ.); Ishiyama, Atsushi (Waseda Univ.)

Development of a Pressure Ulcer Severity Estimation Algorithm via Machine Learning
Ono, Koki* (University of Tokyo); Mori, Taketoshi (University of Tokyo); Noguchi, Hiroshi (University of Tokyo); Sanada, Hiromi (University of Tokyo)

Effect of Age in the Auditory Late Response during Gap-Prepulse Inhibition Paradigm
Kim, Do Youn (Interdisciplinary Program, Bioengineering, Graduate School, Seoul National University); Ku, Yunseo (Chungnam National University College of Medicine); Ahn, Joong Woo (Seoul National University); Park, Moo Kyun (Seoul National University Hospital); Lee, Jun Ho (Seoul National University College of Medicine); Oh, Seung Ha (Seoul National University of Medicine); Suh, Myung-Whan (Seoul National University Hospital); Kim, Hee Chan* (Seoul National University)

Convolational Neural Networks for Sparse Cardiac CT Reconstruction
Inkinen, Satu Irene* (University of Oulu); Ketola, Juuso Heikki Jalmari (University of Oulu); Juntunen, Mikael Asko Kaarlo (University of Oulu); Nieminen, Mikko Tapio (University of Oulu)

Characterization of Dielectric Properties of Cell Membrane with Cholesterol Depletion using Dielectrophoretic Technique
Kim, Chaewon* (Yonsei University, BioMedical Engineering, Nanobiosystem Lab)

Using Lasso and Group Lasso Techniques for Seizure Prediction
Yu, Pen-Ning* (University of Southern California); Song, Dong (University of Southern California); Berger, Theodore (USC)

Biometric Identity Authentication based on Biomechanical Transfer Characteristics of Fingers
Sim, Joo Yong* (Electronics and Telecommunications Research Institute); Noh, Hyung Wook (Electronics and Telecommunications Research Institute); Kim, Bong Kyu (Electronics and Telecommunications Research Institute); Ahn, Chang-Geun (Electronics and Telecommunications Research Institute)

Accelerating Worm Segmentation through Inter-Node Parallelism
Pillai, Vineeth (Illinois Institute of Technology); Raicu, Daniela S. (DePaul University); Raicu, Ioan* (Illinois Institute of Technology)

4D Printed Biomedical Soft Microdevices
De Marco, Carmela* (ETH Zurich); De Bernardis, Gaston (Dept. of Pediatric Surgery Kantonspital Aarau); Alcantara, Carlos (Multi-Scale Robotics Lab, Institute of Robotics and Intelligent Systems, ETH Zurich); Kadioglu, Ahmet (Multi-Scale Robotics Lab, Institute of Robotics and Intelligent Systems, ETH Zurich); Kim, Sangwon (Multi-Scale Robotics Lab, Institute of Robotics and Intelligent Systems, ETH Zurich); Nelson, Bradley (ETH Zurich); Pané Vidal, Salvador (ETH Zurich)

Selecting Artifactual Independent Components from fNIRS based on Decoding Analysis
Hoshino, Takayuki (Keio University); Kanogu, Suguru (National Institute of Advanced Industrial Science and Technology (AIST)); Kanemura, Atsunori* (National Institute of Advanced Industrial Science and Technology (AIST)); Ogawa, Takeshi (ATR Cognitive Mechanisms Labs)

Longitudinal Assessment of Vagus Nerve Stimulation in Awake Behaving Rats
Yaghoubi, Farid* (FDA); Shafer, Benjamin (Food and Drug Admin.); Vasudevan, Srikantan (Food and Drug Admin.)

Crosswalk Guidance System for the Blind
Hojun Son, Hojun* (Univ.); Cheung, Kai Ho Edgar (Univ. of Michigan Ann Arbor); Chung, Yooree (Univ. of Michigan); Shergill, Harleen (Univ. of Michigan); Johnson-Roberson, Matthew (Univ. of Michigan); Wieland, James (Univ. of Michigan)

Quantitative Bone Morphometry with Sparse Projection Data
Ketola, Juuso Heikki Jalmari* (University of Oulu); Karhula, Sakari (Univ. of Oulu); Finnilä, Mikko (University of Oulu); Nieminen, Mikko Tapio (University of Oulu); Saarakkala, Simo (Univ. of Oulu)

Linear Discriminant Analysis and K-Means Clustering for Classification of Thyroid Texture in Ultrasound Images
Poudeil, Prabal* (Otto-von-Guericke-Universität Magdeburg); Gomes Ataide, Elmer Jeto (Otto-von-Guericke University of Magdeburg); Illanes, Alfredo (Otto-von-Guericke University of Magdeburg); Friese, Michael (Otto-von-Guericke-University)

Mechanisms of Age-Related Memory Decline – MEG Study of Alpha-Band Activity during Memory Encoding
Murakami, Yui (Hokkaido Bunkyo Univ.); Boasen, Jared (Hokkaido Univ.); Suzuki, Nagito (Hokkaido Univ.); Ogino, Koji (Hokkaido Univ.); Kuwata, Wakan (Hokkaido Bunkyo Univ.); Takahashi, Saya (Hokkaido Bunkyo Univ.); Nagaya, Midori (Hokkaido Bunkyo Univ.); Hirayama, Itsuki (Hokkaido Bunkyo Univ.); Maruyama, Aki (Hokkaido Bunkyo Univ.); Yokosawa, Koichi* (Hokkaido Univ.)

Assessment of Efficacy of Newly Developed Neural Electrical Stimulator (NerveON-EX)
Kim, Doo Hee* (Seoul National University); Ahn, Woonin (KAIST); Kim, Jinwon (Seoul National University); Min, Kyu Sik (Seoul National University); Bae, Ji Yeon (Seoul National University Hospital); Oh, Seung Ha (Seoul National University of Medicine)

Augmented Reality in Transbronchial Needle Aspiration Poster
Garzon Ramirez, Alvaro Esteban* (Anhalt Univ. of Applied Sciences); Xohxhaj, Festim (Anhalt Univ. of Applied Sciences); Shaji, Ashly (Anhalt Univ. of Applied Sciences); Bracio, Boris Romanus (Univ. of Applied Science Anhalt); Pannier, Judith (Städtisches Klinikum Dessau); Schulze, Jurgen (UC San Diego)
17:15-19:00 ThPoS-24.25
Segmentation of Myocardium in Ultrasound Image: A Method of Fast Superpixels and Neighborhood Patches based Continuous Min-Cut
Song, Xiangfen (Institute of Medical Information, School of BioMedical Engineering, Southern University of Guangzhou, Guangdong, China); Wang, Qing* (Southern Medical Univ.)

17:15-19:00 ThPoS-24.26
Platinum-Iridium Coatings Increased Sensitivity of Impedance-Based Polymer Flow Sensors
Baldwin, Alex* (University of Southern California); Lee, Curtis (University of Southern California); Petrossians, Artin (University of Southern California); Weiland, James (University of Michigan); Meng, Ellis (University of Southern California)

17:15-19:00 ThPoS-24.27
Toward a Capacitive Energy and Signal Supply in Neural Implants: In-Vitro Evaluation of Coupling Behavior through Human Skin
Kiele, Patrick* (University of Freiburg); Pazluosta, Cristian Federico (University of Freiburg); Braig, David (Dept. of Plastic Surgery, Medical Center, University of Freiburg); Steiglitz, Thomas (University of Freiburg)

17:15-19:00 ThPoS-24.28
Continuous Walking Speed Estimation using Neural Networks and Multi-Sensor Data Fusion
Camargo, Jonathan* (Georgia Institute of Technology); Csomay-Shanklin, Noel (Georgia Institute of Technology); Kanwar, Bharat (Georgia Institute of Technology); Young, Aaron (Georgia Tech)

17:15-19:00 ThPoS-24.29
Muscle Synergies in Simultaneous Movement of Upper Limb
Camargo, Jonathan* (Georgia Institute of Technology); Young, Aaron (Georgia Tech)

17:15-19:00 ThPoS-24.30
Power-Law Scaling Properties of RR and QT Intervals in Electrocardiograms and at the Cellular Level
Kim, Jiyeong* (Tampere University of Technology); Molkkari, Matti (Tampere University of Technology); Shah, Disheet (University of Tampere); Kaito-Setälä, Katrinna (University of Tampere); Räsänen, Esa (Tampere University of Technology)

17:15-19:00 ThPoS-24.31
Temporal Expansion and Parameter Varying Methods for the Identification of Nonlinear Time-Varying Ankle Dynamic Stiffness
Vargas-Calixto, C. A. Johann* (McGill University); Guarin, Diego Luis (Harvard Medical School); Sobhani Tehrani, Ehsan (McGill University); Kearney, Robert Edward (McGill University)

17:15-19:00 ThPoS-24.32
Improvement of Dry and Wet Adhesion of Parylene C to Platinum for Robust Thin Film Medical Microdevices
Ortigoza-Diaz, Jessica Lizbeth* (University of Southern California); Scholten, Kee (University of Southern California); Meng, Ellis (University of Southern California)

17:15-19:00 ThPoS-24.33
Contribution of the Central Pattern Generator and Reflex to the Performance of Hexapod Locomotion
Nagahori, Masayuki* (Yamaguchi University); Nishi, Jun (Yamaguchi University)

17:15-19:00 ThPoS-24.34
An Implantable Animal Neural Stimulation System Partly Powered by Biofuel Cell
Yun, Seunghyeon (Seoul National Univ.); Seo, Jungmin (Seoul National Univ.); Ahn, Seung-Hee (Seoul National Univ.); Koh, Chin Su (Yonsei Univ.); Shin, Soowon (Seoul National Univ.); Choi, Gwang Jin (Seoul National Univ.); Lee, Dahye (Seoul National Univ.); Jeong, Sung Hee (Seoul National Univ.); Yoon, Min-Sik (Yonsei Univ.); Cho, Yoon Kyung (Ewha Womans Univ.); Lee, Jee Won (Ewha Womans Univ.); Lee, Youjin (Ewha Womans Univ.); Kim, Chaebin (Seoul National Univ.); Jung, Hyun Ho (Yonsei Univ.); Jun, Sang Beom (Ewha Womans Univ.); Chung, Taek Dong (Seoul National Univ.); Chang, Jin Wooy (Yonsei Univ.); Kim, Sung June* (Seoul National Univ.)

17:15-19:00 ThPoS-24.35
A Basic Study for Doorknob Biometric Authentication using High Frequency ECG Measured through Capacitive Electrodes
Sasaki, Kosuke* (Tokyo City University); Minemura, Kohei (Tokyo City University); Ozawa, Yuta (Tokyo City University); Kyoso, Masaki (Tokyo City University)

17:15-19:00 ThPoS-24.36
Active Visual Neurofeedback for Direct Alpha Wave Modulation
Liu, Jia (Shenzhen Univ.); Huang, Gao* (Shenzhen Univ.); Zhang, Li (Shenzhen Univ.); Chen, Xin (Shenzhen Univ.); Lu, Minhua (Shenzhen Univ.); Zhang, Xin-Yu (Shenzhen Univ.); Zhang, Zhiqiu (Shenzhen Univ.)

17:15-19:00 ThPoS-24.37
Development of Thin Film based Flexible Pressure Sensor and Its Biomedical Application to Steam Popping Detection
Jeong, Yongrok (KAIST); Park, Jaeho (Korea Advanced Institute of Science and Technology (KAIST)); Kim, Kyuyoung (Korea Advanced Institute of Science and Technology); Park, Inkyu* (Korea Advanced Institute of Science and Technology (KAIST))

17:15-19:00 ThPoS-24.38
Effects of Kinesio Taping on the Lower Limb in Drop Jump Performance
Shinohara, Mai* (Ritsumeikan University); Shiozawa, Naruhito (Ritsumeikan University)

17:15-19:00 ThPoS-24.39
An End-to-End Electrocardiogram Delineator via Deep Neural Networks
Jia, Dongya* (CVTE, Guangdong Province, China); Zhao, Wei (Guangzhou Shiyuan Electronics Co., Ltd.); XU, Yanwu (Guangzhou Shiyuan Electronics Co., Ltd.); Sun, Xu (Guangzhou Shiyuan Electronics Co., Ltd. (CVTE)); Hu, Jing (Guangzhou Shiyuan Electronics Technology Co., Ltd.); Yan, Cong (Guangzhou Shiyuan Electronics Co., Ltd.); Wang, Hongmei (Guangzhou Shiyuan Electronics Co., Ltd.); You, Tianyuan (Guangzhou Shiyuan Electronics Co., Ltd.)

17:15-19:00 ThPoS-24.40
Ph-Responsive Polymer Coating for Transient Electronic Device with Capability of Controllable Degradation
Park, Jaeho (Korea Advanced Institute of Science and Technology (KAIST)); Park, Inkyu* (Korea Advanced Institute of Science and Technology (KAIST))

17:15-19:00 ThPoS-24.41
Process for Bonding between Polydimethylsiloxane (PDMS) and Polyimide (pi) with Oxygen Plasma Treatment at Room Temperature
Moon, Jin-hee* (Medical Device Development Center of Osong Medical Innovation Foundation); Kwon, Dahye (KBO); Lee, Seung-A (Osong Medical Innovation Foundation); Baek, Dong-Hyun (Korea University)
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<td>Stereotactic Radiosurgery for Spinal Metastases Delivered with Volumetric Modulated Arc Therapy – A Paradigm Shift for Stereotactic Radiosurgery</td>
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Development of a Direct Feeding FES Treatment System with Selective High Precision Function
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Effects of Personalized Exoskeleton-Based Rehabilitation on Upper Limb Kinematics and Muscle Activation after Stroke: A Pilot Study
Pierrelia, Camilla* (École Polytechnique Fédérale de Lausanne); Kinany, Nawal (Swiss Federal Institute of Technology); Coccia, Martina (TNE Lab École Polytechnique Federale de Lausanne); Pirindini, Elvira (Institute of Bioengineering/Center for Neuroprosthetics, École Polytechnique Federale de Lausanne (EPFL)); Mielibradt, Jennifer (École Polytechnique Fédérale de Lausanne); Giang, Christian (École Polytechnique Fédérale de Lausanne); Guggisberg, Adrian G (University Hospital of Geneva); Micera, Silvestro (Scuola Superiore Sant'Anna)

Pinna Orienting by Multiple Auricular Muscles in Response to Exogenously Driven Attention
Schroer, Andreas (Saarland University of Applied Sciences); Corona-Strauss, Farah I. (Saarland University); Hackley, Steven Allen (University of Missouri, Columbia); Strauss, Daniel J.* (Saarland University, Medical Faculty)

Interactive Control of Elbow Movement in Virtual Reality for Limb Movement Rehabilitation
Hou, Wensheng (Bioengineering Inst of Chongqing University); Chen, Lin* (Chongqing University); Zhai, Shengjie (University of Nevada, Las Vegas)

A Measurement System for Contact Pressure Distribution between Oronasal Mask and the Face to Evaluate Fitting
Noguchi, Hiroshi* (Univ. of Tokyo); Shikama, Maiko (Univ. of Tokyo); Nakagami, Gojro (Univ. of Tokyo); Sanada, Hiromi (Univ. of Tokyo); Morii, Taketoshi (Univ. of Tokyo)

A Lower Limb Phantom for Testing High-Density EMG
Schlink, Bryan* (Univ. of Florida); Ferris, Daniel (Univ. of Florida)

Enabling Communication with Pseudocoma Patients using EEG and Deep Learning
Comaniciu, Alexandra* (The Lawrenceville School); Najafizadeh, Laleh (Rutgers University)

Enhancement of Hippocampal Spatial Decoding with Q-Learning Method Utilizing 8 Rhythm Phase Precession as the Relative Reward Approach
Chen, Ko-Chiang (National Yang-Ming Univ.); Chen, Bo-Wei (National Yang-Ming Univ.); Yeh, Yi-hsin (Yang Ming Univ.); Ting-Yu, Ho (Yang Ming Univ.); Syu, Yi-Siang (Yang Ming Univ.); Pan, Han-Chi (National Health Research Institutes); Lai, Hsin-Yi (Zhongjiang Univ.); Chen, You-Yin* (National Chiao-Tung Univ.)

Somatosensory Attentional Correlates Elicited by Ultrasound in Mid-Air
Lehser, Caroline* (Saarland University); Strauss, Daniel J. (Saarland University, Medical Faculty)

Muscle Synergies as Index for Expert Sit-to-Stand Therapy
Lao, Bryan* (Nara Institute of Science and Technology); Tamei, Tomoya (Nara Institute of Science and Technology); Ikeda, Kazushi (Nara Institute of Science and Technology)

Distributed Implantation of Intracortical Microdevice Sensors
Sigurdsson, Stefan Alexis (Brown University); Yu, Zeyang (Brown University); Pages, Stephane (Wyss Center for Bio and Neuroengineering); Batti, Laura (Wyss Center for Bio and Neuroengineering); Nurmi, Arto* (Brown University)

Multi-Joint Neuromuscular Electrical Stimulation Improves Post-Stroke Gait Kinematics
Makowski, Nathaniel* (MetroHealth Medical Center); Kobetic, Rudi (Louis Stokes Veterans Affairs Medical Center); Foglyano, Kevin M. (Cleveland APT Center/Louis Stokes Cleveland VA Medical Center); Lombardo, Lisa (Louis Stokes Cleveland VA Medical Center / Cleveland FES Center); Bailey, Stephanie (Louis Stokes Cleveland Veterans Affairs Medical Center); Pinaullt, Gilles (Case Western Reserve University); Seilkirk, Stephen (Louis Stokes Cleveland Veterans Affairs Medical Center); Triolo, Ronald J. (US Dept of Veterans Affairs/Cas Western Reserve)

A Deep Learning based Reconstruction Method for Sparse-View CT
Zhang, Zhicheng (Virginia Polytechnic Institute and State Univ.); Dong, Xue (Virginia Polytechnic Institute and State Univ.); Cao, Guohua* (Virginia Polytechnic Institute and State Univ.)

A Comparison of Alpha Rhythm Detection by Tripolar Concentric Ring Electrodes and Conventional Disk EEG Electrodes
Haddix, Chase (University of Kentucky); Al-Bakri, Amir (University of Kentucky); Besio, W. G. (University of Rhode Island); Sunderam, Sridhar* (University of Kentucky)

Advance Target Locator for Blind/Visually Impaired Archers
Hess, Robert (Wilkes University); Kiehart, John (Wilkes University); Mugg, David (Wilkes University); Patriarco, Vincent (Wilkes University); Sabouni, Abas* (Wilkes University); Westawski, Sean (Wilkes University)

Tomography based Multi-Distance Near Infrared Spectroscopy for Measuring Muscle Oxygen Saturation
Choi, JongKwon* (QBELAB); Han, I.Taek (QBELAB)

Archelas: A Wearable Chair for Reducing Surgeons’ Fatigue in the Operating Room
Nakamura, Ryoichi* (Chiba University); Kawahira, Hiroshi (Jichi Medical University)

An Implantable Photovoltaic Device using Single-Walled Carbon Nanotubes and Performance Evaluation in Vivo
Murakami, Orie* (Tokyo City Univ.); Minemura, Kohei (Tokyo City Univ.); Hirata, Takamichi (Tokyo City Univ.); Hatakeyama, Rikizo (Tohoku Univ.); Kyoso, Masaki (Tokyo City Univ.)

A Low-Cost, Passive Bodyweight Support System for Overground Walking
MacLean, Mhairi* (Univ. of Florida); Ferris, Daniel (Univ. of Florida)
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<td>Innovative Larynx Elevation Counter during Saliva Swallowing using a Series of Flexible Stretchable Strain Sensors</td>
<td>Yamamoto, Akio* (Kobe Univ.); Nakamoto, Hiroyuki (Kobe Univ.); Bessho, Yusuke (Bando Chemical Industries, Ltd.); Terada, Tsutomu (Kobe Univ.); Ishikawa, Akira (Kobe Univ.)</td>
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<td>Wavelet Leader based Multifractal Analysis of Heart Rate Variability in Atrial Fibrillation</td>
<td>Kais, Gadhouni* (University of California San Francisco); Do, Duc H. (University of California Los Angeles); Hu, Xiao (University of California, San Francisco)</td>
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<td>Photometric Stereo for Endoscopic 3D Reconstruction</td>
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<td>The Relation between Electrophysiological and Motor Outcomes in Adult Stroke Survivors</td>
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<td>Cross-Correlation based ROI Detection for SNR Maximization in Calcium Imaging</td>
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<td>Smaller Alginate Micro-Droplets using Three Inlets Microfluidic Device for the Drug Delivery System</td>
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<td>ThPoS-26.12</td>
<td>Evaluation of Implantable Cortical Multimodality Probe in a Feline Calcium Imaging</td>
<td>Ishihara, Yuya* (Kumamoto University); Yamakawa, Toshitaka (Kumamoto University)</td>
</tr>
<tr>
<td>17:15-19:00</td>
<td>ThPoS-26.13</td>
<td>Improvement of Voxel Arrangement for Depth Selective Filtering Algorithm</td>
<td>Yamamoto, Kohei* (Sophia University)</td>
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<tr>
<td>17:15-19:00</td>
<td>ThPoS-26.14</td>
<td>Development of Dual Mode Feedback-Controlled Cycling System for Upper Limb Rehabilitation of Children with Cerebral Palsy</td>
<td>Cho, Seung Yeon (Handong Global University); Seo, Seong Won (Handong Global University); Kim, Sung Gyoung (K Institute of Motor Development); Kim, Jihun (Handong Global University); Kim, Jaehyo* (Handong Global University)</td>
</tr>
<tr>
<td>17:15-19:00</td>
<td>ThPoS-26.15</td>
<td>Walking on a Treadmill with Perturbations during Every Stride: Effects on Step Length and Step Width</td>
<td>Li, Jinfeng* (University of Central Florida); Huang, Helen J. (University of Central Florida)</td>
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<tr>
<td>17:15-19:00</td>
<td>ThPoS-26.16</td>
<td>Towards Contactless Interaction for Image-Guided Surgery Base on Hand Gesture Recognition</td>
<td>Sun, Yu (Hangzhou Normal Univ.); Yuan, Zhenming (Hangzhou Normal Univ.); Sun, Xiaoyan* (Hangzhou Normal Univ.)</td>
</tr>
</tbody>
</table>
Enhancement of Cortical Activation for Motor Imagery during BCI-FES Training
Wang, Zhongpeng (Tianjin Univ.); Chen, Long (Tianjin Univ.); Yi, Weibo (Tianjin Univ.); Gu, Bin (Tianjin Univ.); Liu, Shuang (Tianjin Univ.); An, Xingwei (Tianjin Univ.); Xu, Minpeng (Tianjin Univ.); Qi, Hongzhi (Tianjin Univ.); Ye, Feng (Tianjin Univ.); Wan, Bai-kun (Tianjin Univ.); Ming, Dong* (Tianjin Univ.)
08:15-08:30 FrAT1.1
Enhancing Detection of SSVEPs with Intermodulation Frequencies using Individual Calibration Data
Chen, Xiaogang* (Institute of BioMedical Engineering, Chinese Academy of Medical Sciences); Wang, Yijun (Institute of Semiconductors, Chinese Academy of Sciences); Zhang, Shangen (Tsinghua Univ.); Gao, Xiaorong (Tsinghua Univ.)
08:30-08:45 FrAT1.2
EEG Data Augmentation for Emotion Recognition using a Conditional Wasserstein GAN
Luo, Yun (Shanghai Jiao Tong University); Lu, Bao-Liang* (Shanghai Jiao Tong University)
08:45-09:00 FrAT1.3
Neural Decoding Forelimb Trajectory using Evolutionary Neural Networks with Feedback-Error-Learning Schemes
Lin, Yu-Chieh (National Yang Ming Univ.); Chou, Chin (National Yang-Ming Univ.); Yang, Shih-Hung (Feng Chia Univ.); Lai, Hsin-Yi (Zhejiang Univ.); Lo, Yu-Chun (Taipei Medical Univ.); Chen, You-Yin* (National Chiao-Tung Univ.)
09:00-09:15 FrAT1.4
Analyzing P300 Distractors for Target Recognition
McDaniel, Jonathan* (DCS Corp); Gordon, Stephen (DCS Corp); Solon, Amelia (DCS Corp); Lawhern, Vernom (Human Research and Engineering Directorate, Army Research Lab)
09:15-09:30 FrAT1.5
Spike Rate Estimation using Bayesian Adaptive Kernel Smoother (BAKS) and Its Application to Brain Machine Interfaces
Ahmadi, Nur* (Imperial College London); Constandinou, Timothy (Imperial College of Science, Technology and Medicine); Bougani, Christos-Savvas (Imperial College London)
09:45-09:00 FrAT2.1
Premature Ventricular Contraction Detection from Ambulatory ECG using Recurrent Neural Networks
Zhau, Xue* (University of Aizu); Zhu, Xin (The University of Aizu); Nakamura, Keijiro (Toho University Ohashi Medical Center); Mahito, Noro (Toho University Sakura Medical Center)
08:00-08:15 FrAT2.2
Bidirectional Recurrent Neural Network and Convolutional Neural Network (BiRCNN) for ECG Beat Classification
Xie, Pengwei (Tsinghua University); Wang, Guijin* (Tsinghua University); Zhang, Chenshuang (Tsinghua University); Chen, Ming (Tsinghua University); Yang, Huazhong (Tsinghua University); Lv, TingTing (Beijing Tsinghua Changgung Hospital); Sang, ZhenHua (Beijing Tsinghua Changgung Hospital); Zhang, Ping (Beijing Tsinghua Changgung Hospital)
08:15-08:30 FrAT2.3
Region Aggregation Network: Improving Convolutional Neural Network for ECG Characteristic Detection
Chen, Ming (Tsinghua University); Wang, Guijin* (Tsinghua University); Xie, Pengwei (Tsinghua University); Sang, ZhenHua (Beijing Tsinghua Changgung Hospital); Lv, TingTing (Beijing Tsinghua Changgung Hospital); Zhang, Ping (Beijing Tsinghua Changgung Hospital); Yang, Huazhong (Tsinghua University)
08:45-09:00 FrAT2.4
A Novel Deep Learning based Neural Network for Heartbeat Detection in Ballistocardiograph
Lu, Han (Nanyang Technological Univ.); Zhang, Haihong (Institute for Infocomm Research); Lin, Zhiping* (Nanyang Technological Univ.); Ng, Soon Huat (Institute for Infocomm Research)
09:00-09:15 FrAT2.5
Real-Time Cardiac Arrhythmia Classification using Memristor Neuromorphic Computing System
Hassan, Amr Mahmoud* (Univ. of Pittsburgh); Khalaf, Aya (Cairo Univ.); Sayed, Khaled (Univ. of Pittsburgh); Li, Hai (Helen) (Duke Univ.); Chen, Yiran (Univ. of Pittsburgh)
09:15-09:30 FrAT2.6
A Generative Modeling Approach to Limited Channel ECG Classification
Rajan, Deepa* (IBM Research); J. Thiagarajan, Jayaraman (Lawrence Livermore National Lab)
08:00-09:30 Meeting Room 311
Brain-Computer Interface (III) (Theme 6) (Oral Session)
Chair: Weiland, James (University of Michigan)
08:00-08:15 Enhanced Neural Network (BiRCNN) for ECG Beat Classification
Xie, Pengwei (Tsinghua University); Wang, Guijin* (Tsinghua University); Zhang, Chenshuang (Tsinghua University); Chen, Ming (Tsinghua University); Yang, Huazhong (Tsinghua University); Lv, TingTing (Beijing Tsinghua Changgung Hospital); Sang, ZhenHua (Beijing Tsinghua Changgung Hospital); Zhang, Ping (Beijing Tsinghua Changgung Hospital)
08:15-08:30 A Generative Modeling Approach to Limited Channel ECG Classification
Rajan, Deepa* (IBM Research); J. Thiagarajan, Jayaraman (Lawrence Livermore National Lab)
08:30-08:45 Region Aggregation Network: Improving Convolutional Neural Network for ECG Characteristic Detection
Chen, Ming (Tsinghua University); Wang, Guijin* (Tsinghua University); Xie, Pengwei (Tsinghua University); Sang, ZhenHua (Beijing Tsinghua Changgung Hospital); Lv, TingTing (Beijing Tsinghua Changgung Hospital); Zhang, Ping (Beijing Tsinghua Changgung Hospital); Yang, Huazhong (Tsinghua University)
08:45-09:00 A Novel Deep Learning based Neural Network for Heartbeat Detection in Ballistocardiograph
Lu, Han (Nanyang Technological Univ.); Zhang, Haihong (Institute for Infocomm Research); Lin, Zhiping* (Nanyang Technological Univ.); Ng, Soon Huat (Institute for Infocomm Research)
09:00-09:15 Real-Time Cardiac Arrhythmia Classification using Memristor Neuromorphic Computing System
Hassan, Amr Mahmoud* (Univ. of Pittsburgh); Khalaf, Aya (Cairo Univ.); Sayed, Khaled (Univ. of Pittsburgh); Li, Hai (Helen) (Duke Univ.); Chen, Yiran (Univ. of Pittsburgh)
09:15-09:30 A Generative Modeling Approach to Limited Channel ECG Classification
Rajan, Deepa* (IBM Research); J. Thiagarajan, Jayaraman (Lawrence Livermore National Lab)
08:00-08:15 FrAT3.1
Controlled Synthesis of Dermoscopic Images via a New Color Labeled Generative Style Transfer Network to Enhance Melanoma Segmentation
Chi, Yucong (Duke University); Bi, Lei (University of Sydney); Kim, Jinman* (University of Sydney); Feng, Dagan (University of Sydney); Kumar, Ashnil (University of Sydney)

08:15-08:30 FrAT3.2
Heart Rate Estimation using Hermite Transform Video Magnification and Deep Learning
Moya-Albor, Ernesto (Univ. Panamericanana); Breiva, Jorge* (Univ. Panamericanana); Ponce, H. (Univ. Panamericanana); Rivas-Scott, O.Y. (Univ. Panamericanana); Gomez-Peña, C.A. (Univ. Panamericanana)

08:00-08:15 FrAT4.1
University Group for Identification Technologies (GUTI))

08:00-08:15 FrAT4.2
Telebiometric Personal Authentication Technologies using Bio-Signals
Lee, Saewoon* (KISA (Korea Internet & Security Agency)); Kim, Jason (Korea Internet & Security Agency)

08:30-08:45 FrAT4.3
Analysis of Bio-Signal Sensor Requirements for Personal Authentication
Kwon, Young-Bin* (Chung-Ang University); Kim, Jason (Korea Internet & Security Agency)

08:45-09:00 FrAT4.4
ECG-Based Human Authentication Algorithm for Wrist-Worn Device
Kim, Jeehoon (Seoul National University); Sung, Dongsuk (Seoul National University); Kim, Jason (Korea Internet & Security Agency); Park, Kwang S.* (Seoul National University)

09:00-09:15 FrAT4.5
Secure Transmission Protocol for ECG and PPG z Ultra-Low-Power Wireless Applications
Caras, John* (Telebiometrics Inc.)

08:00-08:15 FrAT5.1
Fetal MRI Synthesis via Balanced Auto-Encoder based Generative Adversarial Networks
Torrents-Barrena, Jorquina (Univ. Pompeu Fabra); Piella, Gemma (Univ. Pompeu Fabra); Masoller, Narcis (Fetal i+D Fetal Medicine Research Center, BCNatal - Barcelona Center for Maternal-Fetal and Neonatal Medicine (Hospital Clinic a); Gratacos, Eduard (Fetal i+D Fetal Medicine Research Center, BCNatal - Barcelona Center for Maternal-Fetal and Neonatal Medicine (Hospital Clinic a); Eixarch, Eliesenda (BCNatal, Hospital Clinic, Hospital Sant Joan de Déu); Ceresa, Mario (Univ. Pompeu Fabra); Gonzalez Ballester, Miguel Angel* (ICREA & Univ. Pompeu Fabra)

08:15-08:30 FrAT5.2
A Two-Level Food Classification System for People with Diabetes Mellitus using Convolutional Neural Networks
Kogias, Kleomenis (National Technical University of Athens); Andreadis, Ioannis (BioMedical Simulations and Imaging Lab); Dalakleidi, Kalliopi (National Technical University of Athens); Nikita, Konstantina* (National Technical University of Athens)

08:30-08:45 FrAT5.3
The Analysis of Temperature Changes of the Saliva Traces Left on the Fur during Laboratory Rats Social Contacts
Mazur-Milecka, Magdalena (Gdańsk University of Technology); Rumiński, Jacek* (Gdansk University of Technology)

08:45-09:00 FrAT5.4
MARBLES – Metal ARTifact based Landmark Enhanced Susceptibility Weighted Imaging for Interventional Device Localization in MRI
Dhulipala, Pranav Vaidik* (Texas A&M University); Shi, Caiyun (Shenzhen Institutes of Advanced Technology, Lauterbur Research Center for BioMedical Imaging); Xie, Guoxi (Shenzhen Institutes of Advanced Technology, Lauterbur Research Center for BioMedical Imaging); Wang, Haifeng (Chinese Academy of Sciences); Ji, Jim Xiuquan (Texas A&M University)

09:00-09:15 FrAT5.5
A Convolutional Neural Network based Auto-Positioning Method for Dental Arch in Rotational Panoramic Radiography
Du, Xin* (UEG Medical Imaging, Co., Ltd.); Chen, Yi (UEG Medical Imaging Equipment Co. Ltd., Shanghai, China); Zhao, Jun (Shanghai Jiao Tong University); Xi, Yan (Rensselaer Polytechnic Institute)

08:00-08:15 FrAT6.1
Estimation of Neural Inputs and Detection of Saccades and Smooth Pursuit Eye Movements by Sparse Bayesian Learning
Wadehn, Federico* (ETH Zurich); Loeliger, Hans-Andrea (ETH Zurich); Weber, Thilo (ETH Zurich); Mack, David J. (University Hospital Zurich)

08:15-08:30 FrAT6.2
Extraction of Muscle Synergies in Spinal Cord Injured Patients
Cheng, Richard* (California Institute of Technology); Burdick, Joel W. (Caltech)

08:30-08:45 FrAT6.3
Independent Component Analysis for Fully Automated Multi-Electrode Array Spike Sorting
Buccino, Alessio Paolo* (Univ. of Oslo); Hagen, Espen (Univ. of Oslo); Enevoll, Gaute (Norwegian Univ. of Life Sciences); Häfliger, Philipp (Univ. of Oslo, Dept. of Informatics); Cauwenberghs, Gert (Univ. of California San Diego)

08:45-09:00 FrAT6.4
An Information-Theoretic Measure of Multiscale Causality for Spike-Field Activity
Wang, Chuanmeizhi* (University of Southern California); Shangguan, Jiamei (University of Southern California)

09:00-09:15 FrAT6.5
Estimation of Functional Dependence in High-Dimensional Spike-Field Activity
Bighamian, Ramin* (University of Southern California); Shangguan, Jiamei (University of Southern California)
08:00-08:15 FrAT8.1 Long-Term Depression Learning in Spinal Cord Networks
Baker, Zachary* (George Mason University); Therrien, Karen (George Mason University); LaFosse, Paul (George Mason University); Noor, Abdul (George Mason University); Peikoto, Nathalia (George Mason University)

08:15-08:30 FrAT8.2 Preliminary Study of Time to Recovery of Rat Sciatic Nerve from High Frequency Alternating Current Nerve Block
Rapeaux, Adrien* (Imperial College London); Brunton, Emma Kate (Newcastle University); Nazarpour, Kianoush (Newcastle University); Constandinou, Timothy (Imperial College of Science, Technology and Medicine)

08:30-08:45 FrAT8.3 Capacitive Micromachined Ultrasonic Transducer (CMUT) Ring Array for Transcranial Ultrasound Neuromodulation
Kim, Hyunggug (KAIST); Kim, Seongyeon (Korea Advanced Institute of Science and Tech. (KAIST)); Lee, Hyunjoo Jenny* (Korea Advanced Institute of Science and Tech. (KAIST))

08:45-09:00 FrAT8.4 Improved Target Specificity of Transcranial Focused Ultrasound Stimulation (TFUS) using Double-Crossed Ultrasound Transducers
Kim, Seongyeon* (Korea Advanced Institute of Science and Technology (KAIST)); Kim, Hyunggug (KAIST); Shim, Chaeyun (Korea Advanced Institute of Science and Technology (KAIST)); Lee, Hyunjoo Jenny (Korea Advanced Institute of Science and Technology (KAIST))

09:00-09:15 FrAT8.5 Bayesian Optimization of Asynchronous Distributed Microelectrode Stimulation for Spatial Memory
Ashmaig, Omer (Emory Univ.); Connolly, Mark (Emory Univ.); Gross, Robert (Emory Univ.); Mahmoudi, Babak* (Emory Univ.)

09:15-09:30 FrAT8.6 Noninvasive Detection of Motor-Evoked Potentials in Response to Brain Stimulation Below the Noise Floor – How Weak can a Stimulus Be and Still Stimulate
Goetz, Stefan* (Duke University); Zhongxi, Li (Duke University); Peterchev, Angel V (Duke University)

09:45-09:00 FrAT9.1 Real-Time ECG Delineation with Randomly Selected Wavelet Transform Feature and Random Walk Estimation
Xia, Zhourui (Beijing Univ. of Posts and Telecommunications); Wang, Guijin (Tsinghua Univ.); Fu, Dapeng (Beijing Zhong Guan Cun Hospital (Chinese Academy of Sciences Zhong Guan Cun Hospital)); Wang, Haiping* (Beijing Zhong Guan Cun Hospital (Chinese Academy of Sciences Zhong Guan Cun Hospital)); Chen, Ming (Tsinghua Univ.); Xie, Pengwei (Tsinghua Univ.); Yang, Huazhong (Tsinghua Univ.)

09:15-09:30 FrAT9.2 Parametric Modeling of Electrocardiograms using Particle Swarm Optimization
Peng, Tommy* (University of Auckland); Trew, Mark L. (University of Auckland); Malik, Avinash (University of Auckland)

08:00-08:15 FrAT9.3 Daily Stress Monitoring using Heart Rate Variability of Bathtub ECG Signals
Li, Tianhui* (University of Aizu); Chen, Ying (University of Aizu); Chen, Wemxi (University of Aizu)

08:45-09:00 FrAT9.4 Improved Heart Rate Tracking using Multiple Wrist-Type Photoplethysmography during Physical Activities
Zhu, Lianning (1990); Du, Dongping* (Texas Tech University)
08:00-08:15  FrAT10.1
Automated Diabetic Macular Edema (DME) Analysis using Fine Tuning with Inception-Resnet-V2 on OCT Images
Kamble, Raviraj (SGGS India); Chan, Genevieve C Y (Università Tecnologica Petronas); Perdomo Charry, Oscar Julian (Universidad Nacional de Colombia); Kokare, Manesh (SGSSIE&T, Nanded, India); Müller, Henning (University of Applied Sciences Western Switzerland (HES-SO); Meriaudeau, Fabrice* (Università Tecnologica Petronas, Malaysia); González, Fabio (Universidad Nacional de Colombia)

08:15-08:30  FrAT10.2
Are There Categories of Corneal Shapes?
Bouazziz, Haila* (University of Montreal); Brunette, Isabelle (University of Montréal); Meunier, Jean (Université de Montréal)

08:30-08:45  FrAT10.3
Multi-Cell Multi-Task Convolutional Neural Networks for Diabetic Retinopathy Grading
Zhou, Kang* (ShanghaiTech University); Gu, Zaiwang (Ningbo Institute of Materials Technology and Engineering; Shanghai University); Liu, Wen (ShanghaiTech University); Luo, Weixian (ShanghaiTech University); Cheng, Jun (Institute of BioMedical Engineering, Chinese Academy of Sciences); Gao, Shenghua (ShanghaiTech University); Liu, Jiang (Ningbo Institute of Materials Technology and Engineering, CAS)

08:45-09:00  FrAT10.4
Monocular Retinal Depth Estimation and Joint Optic Disc and Cup Segmentation using Adversarial Networks
M Shankaranarayana, Shankar* (Indian Institute of Technology Madras); Ram, Keerthi (IT Madras); Mitra, Kaushik (Indian Institute of Technology Madras); Sivaprakasam, Mohanaskar (Indian Institute of Technology Madras)

09:00-09:15  FrAT10.5
Detection of Diabetes by Macrovascular Tortuosity of Superior Bulbar Conjunctiva
Kondarage, Achinthia Iroshan* (University of Moratuwa); De Zoysa, Dulara Nawathan (University of Moratuwa); Wannapura, Chamari (National Diabetes Center, Rajagiriya, Sri Lanka); Wijesuriya, Mahen (National Diabetes Center, Rajagiriya, Sri Lanka); Jayasinghe, Saroj (Dept. of Clinical Medicine, University of Colombo); Nanakakkara, Nuwan Dayananda (University of Moratuwa); De Silva, Anjula (University of Moratuwa)

09:15-09:30  FrAT10.6
Sensitivity of Cross-Trained Deep CNNs for Retinal Vessel Extraction
Kassim, Yasin M.* (University of Missouri Columbia); Palaniappan, Kannappan (University of Missouri-Columbia)
Patients with Parkinson's Disease and Their Caregivers

A Mobile App for the Remote Monitoring and Assistance of Parkinson's Disease and Their Caregivers

**Gold Foil-Based Biosensor for the Determination of Hydrogen Peroxide**

Narayanan, J. Shankara (Univ. of Maryland Baltimore County); Slaughter, Gymama* (Univ. of Maryland Baltimore County)

**Portable Fluorescence Detection Platform with Integrating Sphere**

Harmon, Dain (Univ. of Alaska Fairbanks); Chen, Cheng-fu* (Univ. of Alaska Fairbanks); Halford IV, John (Univ. of Alaska Fairbanks)

**Applying Machine Learning to the Flagellar Motor for Biosensing**

Zajdel, Tom* (University of California, Berkeley); Nam, Andrew (University of California, Berkeley); Yuan, Jove (University of California, Berkeley); Shirsat, Vikram Rajas (University of California, Berkeley); Rad, Behzad (Lawrence Berkeley National Labs); Maharriz, Michel (University of California, Berkeley)

**Capacitive Micromachined Ultrasonic Transducer (CMUT)-Based Biosensor for Detection of Low Concentration Neuropeptide**

Lee, Sung Woo (Korea Advanced Institute of Science and Technology); Eom, Gayoung (Korea Advanced Institute of Science and Technology (KAIST)); Yoon, Inug (KAIST); Park, Sangjun (KAIST); Kook, Geon (Korea Advanced Institute of Science and Technology); Kim, Mi Kyung (Korea Advanced Institute of Science and Technology (KAIST)); Kim, Hyojung (Korea Advanced Institute of Science and Technology); Seo, Ji-Won (Korea Advanced Institute of Science and Technology); Lee, Hyunjoo Jenny* (Korea Advanced Institute of Science and Technology (KAIST))

**Label-Free Paper-Based Immunosensor with Graphene Nanocomposites for Electrochemical Detection of Follicle-Stimulating Hormone**

Luo, Jinping (Institute of Electronics, Chinese Academy of Sciences); Kong, Zhuang (State Key Lab of Transducer Technology, Institute of Electronics, Chinese Academy of Sciences); Wang, Yang (State Key Lab of Transducer Technology, Institute of Electronics, Chinese Academy of Sciences); Xie, Jing Yu (Institute of Electronics, Chinese Academy of Sciences); Liu, Juntao (Institute of Electronics, Chinese Academy of Sciences); Jin, Hongyan (Obstetrics and Gynecology Dept., First Hospital Peking University); Cai, Xinxia* (Institute of Electronics, Chinese Academy of Sciences)

**Identification of Biomarkers with Different Classifiers in Urine Test**

Zhang, Haotian (ChongQing Technology and Business Univ.); Dong, Tao* (Univ. College of Southeast Norway - HSN, TekMar)

**A Mobile App for the Remote Monitoring and Assistance of Patients with Parkinson’s Disease and Their Caregivers**

Bernardini, Silvia (Campus Bio-medico University of Rome); Cianfrocca, Claudia (Università Campus Bio Medico di Roma); Maimoni, Melissa (Università Campus Bio-Medico di Roma/Istituto dell’Agire Scientifico e Tecnologico FAST); Pennacchini, Maddalena (Università Campus Bio-Medico di Roma); Tartaglini, Daniela (Università Campus Bio-Medico di Roma); Vollerio, Luca* (Università Campus Bio-Medico di Roma)

**Identification of Parkinson’s Disease Utilizing a Single Self-recorded 20-step Walking Test Acquired by Smartphone’s Inertial Measurement Unit**

Mehrang, Saeed (Tampere University of Technology); Jauhiainen, Milla Karolinta (Tampere University of Technology); Pietilä, Julia* (Tampere University of Technology); Puustinen, Juha (Satakunta Hospital District, Satakunta Central Hospital); Ruokolainen, Jari (Tampere University of Technology); Nieminen, Hannu (Tampere University of Technology)

**Activity Tracking with Momentary Assessments**

Moon, Jon* (MEI Research, Ltd.); Shade, John (MEI Research); Wolff-Hughes, Dana (National Institutes of Health); Josse, Pabitra (National Institutes of Health); Locke, Sarah (National Institutes of Health); Beane Freeman, Laura (National Institutes of Health); Hofmann, Jonathan (National Institutes of Health); Bowles, Heather (National Institutes of Health); Friesen, Melissa (National Institutes of Health)

**CEA: Clinical Event Annotator mHealth Application for Real-Time Patient Monitoring**

Nizami, Shermeen* (Carleton University); Basharat, Amna (National University of Computer & Emerging Sciences); Shoukat, Arslan (National University of Computer & Emerging Sciences, Islamabad); Hameed, Uzair (National University of Computer & Emerging Sciences, Islamabad); Raza, Syed Ali (National University of Computer & Emerging Sciences, Islamabad); Bekele, Amete (Carleton University); Giffen, Perry Randall (IBM); Green, James R. (Carleton University)

**Congestive Heart Failure Risk Assessment Monitoring through Internet of Things and Mobile Personal Health Systems**

Spanakis, Emmanouil G. (Foundation for Research and Technology – Hellas (FORTH)); Psaraki, Maria (Foundation for Research and Technology - Hellas); Sakkalis, Vangelis* (ICS-FORTH)

**Severity Classification of Chronic Obstructive Pulmonary Disease and Asthma with Heart Rate and SpO2 Sensors**

Siddiqui, Tasnuba* (University of Memphis); Morshed, Bashir (University of Memphis)

**Continuous Phase Estimation for Phase-Locked Neural Stimulation using an Autoregressive Model for Signal Prediction**

Blackwood, Ethan (Massachusetts General Hospital); Lo, Meng-chen* (Massachusetts General Hospital); Widge, Alik (Massachusetts General Hospital)

**Head-to-Nerve Analysis of Electro-Mechanical Impairments of Diffuse Axonal Injury**

Cinelli, Ilaria* (NUI of Galway)

**Modelling of Brain Injuries under Altered Gravity Conditions: Understanding Brain Plasticity**

Cinelli, Ilaria* (NUI of Galway)

**Water-Content Electrical Property Tomography (wEPT) for Mapping Brain Tissues’ Conductivity in the 100-1000 kHz Range: Results of an Animal in-Vivo Study**

Wenger, Cornelia* (Novocure GmbH); Hershkovich, Hadas Sara (Novocure Ltd.); Tempel-Brami, Catherine (Novocure Ltd.); Giladi, Moshe (Novocure Ltd.); Bomzon, Zev'e (Novocure Ltd.)
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<thead>
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<th>Time</th>
<th>Session Code</th>
<th>Title</th>
<th>Authors</th>
<th>Location</th>
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<td>10:00-10:15</td>
<td>FrBT1.1</td>
<td>Low Temperature Approach for High Density Electrical Feedthroughs for Neural Implants using Maskless Fabrication Techniques</td>
<td>Langenmair, Michael* (Univ Freiburg); Martens, Julien (Albert-Ludwigs-Univers. Freiburg); Gierthmuehlen, Mortimer (Dept. of Neurosurgery Univ. Freiburg); Plachta, Dennis T. T. (Univ. Freiburg - IMTEK); Stieglitz, Thomas (Univ. Freiburg)</td>
<td>Meeting Room 311</td>
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<tr>
<td>10:15-10:30</td>
<td>FrBT1.2</td>
<td>An Energy-Efficient, Inexpensive, Spinal Cord Stimulator with Adaptive Voltage Compliance for Freely Moving Rats</td>
<td>Olafsdottir, Gudrun Erla* (Össur hf.); Serdijn, Wouter A. (Delft University of Technology); Giagka, Vasiliki (Bioelectronics Section, Dept. of Microelectronics, Faculty of Electrical Engineering, and Mathematics and Computer Science, Del)</td>
<td>10:00-11:30</td>
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<td>10:30-10:45</td>
<td>FrBT1.3</td>
<td>PDMS Gasket Underfill for Long-Term Insulation of High-Density Interconnections in Active Implantable Medical Devices</td>
<td>Khan, Sharif* (University of Freiburg); Scholz, Daniel (Albert-Ludwigs-Universität Freiburg); Ordonez, Juan Sebastian (Indigo); Stieglitz, Thomas (University of Freiburg)</td>
<td>10:15-10:30</td>
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<td>10:45-11:00</td>
<td>FrBT1.4</td>
<td>Velocity Selective Recording: A Demonstration of Effectiveness on the Vagus Nerve in Pig</td>
<td>Metcalfe, Benjamin William* (Univ. of Bath); Taylor, John (Univ. of Bath); Nielsen, Thomas Nergaard (Aalborg Univ.)</td>
<td>10:00-11:15</td>
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<tr>
<td>11:00-11:15</td>
<td>FrBT1.5</td>
<td>Experimental Factors Affecting Stability of Electrochemical Impedance Spectroscopy Measurements</td>
<td>Koo, Beomsao* (University of Michigan); Weiland, James (University of Michigan)</td>
<td>11:15-11:30</td>
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<tr>
<td>11:15-11:30</td>
<td>FrBT1.6</td>
<td>Neurophysiological Evaluation of a Customizable µECoG-Based Wireless Brain Implant</td>
<td>Gokogkidas, Constantin Alexis* (Dept. of Neurosurgery, Medical Center - University of Freiburg, Germany); Bentler, Christian (University of Freiburg); Wang, Xi (Dept. of Neurosurgery, Medical Center - University of Freiburg, Germany); Gierthmuehlen, Mortimer (Dept. of Neurosurgery University Freiburg); Scheiwe, Christian (University Hospitals, Freiburg); Cristina Schmitz, Heidi Ramona (University Hospitals, Freiburg); Haberstroh, Joerg (University Hospitals, Freiburg); Stieglitz, Thomas (University of Freiburg); Ball, Tonia (Dept. of Neurosurgery, Medical Center - University of Freiburg, Germany)</td>
<td>10:00-10:15</td>
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10:30-10:45 FrBT4.3
Long-Term in Vivo Performance of Novel Ultrasound Powered Implantable Devices
Kang, Chaoyi (Food and Drug Administration); Chang, Ting Chia (Stanford University); Vo, Jesse (Food and Drug Administration); Charthad, Jayant (Stanford University); Weber, Marcus J. (Stanford University); Arbaban, Amin (Stanford University); Vasudevan, Srikanth* (Food and Drug Administration)

10:45-11:00 FrBT4.4
Vascular Graft Pressure-Flow Monitoring using 3D Printed MWCNT-PDMS Strain Sensors
Majerus, Steve* (APT Center, Cleveland VAMC); Chong, Hao (Case Western Reserve University); Ariando, David (Case Western Reserve University); Lerchbacker, Joseph (Louis Stokes Cleveland VA Medical Center); Potkay, Joseph (VA Ann Arbor Healthcare System); Bogie, Kath (Cleveland VA Medical Center/Case Western Reserve University); Zorman, Christian (Case Western Reserve University)

11:00-11:15 FrBT4.5
A Low-Power Injection-Locked VCO for an Implantable MICS Band Transmitter with Wireless Frequency Reference and Tune-while-Lock Channel Calibration
Nenadovic, Miljana* (IHP GmbH); Fiebig, Norbert (IHP GmbH); Fischer, Guenter (IHP GmbH); Wessel, Jan (IHP); Kissinger, Dietmar (IHP)

11:15-11:30 FrBT4.6
Sensors Selection for Continuous Monitoring of Bowel State and Activity
Smiley, Arel* (Cleveland Clinic); Majerus, Steve (APT Center, Cleveland VAMC); McAdams, Ian (Cleveland Clinic); Hanzlicek, Brett (Advanced Platform Technology Center, Louis Stokes Cleveland VA Medical Center); Bourbeau, Dennis (FES Center, Cleveland VAMC); Damaser, Margot S. (Lerner Research Institute, The Cleveland Clinic Foundation)

FrBT5: 10:00-11:30 Meeting Room 316A
Optical Imaging (I) (Theme 2) (Oral Session)
Chair: Jo, Javier Antonio (Texas A&M University)
Co-Chair: Pesaran, Bijan (New York University)

10:00-10:15 FrBT5.1
Spectral Imaging of Thermal Damage Induced during Microwave Ablation in the Liver
Clancy, Neil* (Univ. College London); Gurusamy, Kurinchi (Univ. College London); Jones, Geoffrey (Univ. College London); Davidson, Brian (Univ. College London); Clarkson, Matthew (Univ. College London); Hawkes, David J. (Univ. College London); Staynov, Danail (Univ. College London)

10:15-10:30 FrBT5.2
A Molecular Imaging “Skin”: A Time-Resolving Intraoperative Imager for Microscopic Residual Cancer Detection using Enhanced Upconverting Nanoparticles
Najafighdam, Hossein* (UC Berkeley); Papageorgiou, Efthymios Phillip (UC Berkeley); Torquato, Nicole A. (Molecular Foundry, Lawrence Berkeley National Lab, CA USA); Tajon, Cheryl A (Lawrence Berkeley National Lab); Zhang, Hui (UCSF); Park, Catherine (UCSF); Boser, Bernhard (UC Berkeley); Cohen, Bruce E. (Lawrence Berkeley National Lab); Anwar, Mekhail (UCSF)

10:30-10:45 FrBT5.3
Endogenous Fluorescence Lifetime Imaging (FLIM) Endoscopy for Early Detection of Oral Cancer and Dysplasia
Jo, Javier Antonio* (Texas A&M Univ.); Cheng, Shuna (Texas A&M Univ.); Cuencar, Rodrigo (Texas A&M Univ.); Duran, Elvis (Texas A&M Univ.); Malik, Bilal (QT Ultrasound Labs); Ahmed, Beena (Univ. of New South Wales); Mattla, Kristen (Texas A&M Univ.); Cheng, Yi-Shing (Texas A&M Univ.); Wright, John (Texas A&M Univ.)

10:45-11:00 FrBT5.4
Monkey-MIMMS: Towards Automated Cellular Resolution Large Scale Two-Photon Microscopy in the Awake Macaque Monkey
Choi, John* (New York University); Gontcharov, Vasily (Janelia Research Campus, Howard Hughes Medical Institute); Kleinbart, Jessica (New York University); Orsborn, Amy (University of California Berkeley); Pesaran, Bijan (New York University)

11:00-11:15 FrBT5.5
Sakaki, Kelly Dean Roy* (University of British Columbia, Centre for Brain Health); Coleman, Patrick (University of British Columbia); Dellazzato Toth, Tristan (University of British Columbia); Guerrier, Claire (University of British Columbia); Haas, Kurt (University of British Columbia)

11:15-11:30 FrBT5.6
Fast and Robust Heart Rate Estimation from Videos through Dynamic Region Selection
Fujita, Yuya* (Kyoto University); Hiromoto, Masayuki (Kyoto University); Sato, Takashi (Kyoto University)

FrBT6: 10:00-11:30 Meeting Room 316B
Human Performance (I) (Theme 6) (Oral Session)
Chair: Jones, Richard D. (New Zealand Brain Research Institute)
Co-Chair: Ellis, Michael (Northwestern University)

10:00-10:15 FrBT6.1
Sensitiveness Assessment for User Interface and Training Program of an Upper-Limb Rehabilitation Robot, D-SEMUL
Kikuchi, Takehito* (Oita University); Nagata, Tomoya (Oita University); Sato, Chihiro (Oita University); Abe, Isao (Oita University); Inoue, Akio (ER Tec, Corp.); Kugimiya, Shintaro (Oita Rehabilitation Hospital); Ohno, Tetsuya (Oita Rehabilitation Hospital); Hatabe, Shinnosuke (Oita Rehabilitation Hospital)

10:15-10:30 FrBT6.2
The Effectiveness of Compression Garments on EEG during a Running Test
Nguyen, Thi Nhu Lan* (Univ. of Technology Sydney); David, Eager (UTS); Nguyen, Hung T. (Swinburne Univ. of Technology)

10:30-10:45 FrBT6.3
Ensemble Learning based on Overlapping Clusters of Subjects to Predict Microsleep States from EEG
Burio, Abdul Baseer* (Univ. of Canterbury); Shoorangiz, Reza (Univ. of Canterbury); Weddell, Stephen J. (Univ. of Canterbury); Jones, Richard D. (New Zealand Brain Research Institute)

10:45-11:00 FrBT6.4
The Impact of Freezing of Gait on Balance Perception and Mobility in Community-Living with Parkinson's Disease
Mancini, Martina* (OHSU); Curtze, Carolin (Oregon Health & Science University); Stuart, Samuel (Oregon Health & Science University); El-Gohary, Mahmoud (Portland State University); McNames, James (Portland State University); Nult, John (Oregon Health & Science University); Horak, Fay (Oregon Health & Science University)

11:00-11:15 FrBT6.5
Perception of Mechanical Impedance during Active Ankle and Knee Movement
Azocar, Alejandro* (University of Michigan); Shorter, Amanda (Northwestern University); Rouse, Elliott (University of Michigan)
Signal Processing and Classification of Electrophysiological Signals (Theme 1) (Oral Session)
Chair: Kameneva, Tatiana (Swinburne University of Technology)

10:00-10:15 FrBT7.1
Analysis of Nocturnal Evoked Potentials during Multi-Stimulus Experiments using Linear Mixed Models
van den Berg, Boudevijn* (University of Twente); Buitenweg, Jan Reinoud (University of Twente)

10:15-10:30 FrBT7.2
Investigation of the Influence of ECoG Grid Spatial Density on Decoding Hand Flexion and Extension
Jiang, Tianxiao (University of Houston); Jiang, Tao (Tian Tan Hospital); Mei, Shenshen (Haidian Hospital); Wang, Taylor (Tian Tan Hospital); Li, Yunlin (Haidian Hospital); Sujit, Prabhu (MD Anderson Cancer Center); Sha, Zhiyi (University of Minnesota, Dept. of Neurology); Ince, Nuri Firat* (University of Houston)

10:30-10:45 FrBT7.3
Differences between Morphological and Electrophysiological Retinal Ganglion Cell Classes
Zehra, Syeda (Swinburne University of Technology); Hicks, Damien (Swinburne University of Technology); Hadjinicolaou, Alex E. (Australian College of Optometry); Ibbotson, Michael R (Australian College of Optometry); Kameneva, Tatiana* (Swinburne University of Technology)

10:45-11:00 FrBT7.4
EEG Complexity Maps to Characterize Brain Dynamics during Upper Limb Motor Imagery
Catrambone, Vincenzo* (Univ. di Pisa); Greco, Alberto (Univ. of Pisa); Averna, Alberto* (Soterix Medical, Inc.); Wang, Jiang* (Tianjin University); Cai, Lihui (Tianjin University); Huang, Yun* (City College of New York); Parra, Lucas C. (City College of New York)

11:00-11:15 FrBT7.5
Chaotic Analysis of Hippocampal and Cortical Sleep EEG during Various Vigilance States
Dahal, Prawesh (Trinity College); Ning, Taikang (Trinity College); Blaise, J. Harry* (Trinity College)

11:15-11:30 FrBT7.6
A New Sympathovagal Balance Index from Electrodermal Activity and Instantaneous Vagal Dynamics: A Preliminary Cold Pressor Study
Ghiasi, Shadi (University of Pisa); Greco, Alberto (University of Pisa); Nardelli, Mimma (University of Pisa); Catrambone, Vincenzo (Università di Pisa); Barbieri, Riccardo (Politecnico di Milano); Scilingo, Enzo Pasquale (University of Pisa); Valenza, Gaetano (University of Pisa)

10:00-11:30 Meeting Room 316A
Neural Stimulation (II) (Theme 6) (Oral Session)
Chair: Abbas, James (Arizona State University)

10:00-10:15 FrBT8.1
ROAST: An Open-Source, Fully-Automated, Volumetric-Approach-based Simulator for TES
Huang, Yu* (City College of New York); Datta, Abhishek (Soterix Medical, Inc.); Bikson, Marom (The City College of New York); Parra, Lucas C. (City College of New York)

10:15-10:30 FrBT8.2
Neuroengineering Tools for Studying the Effect of Intracortical Microstimulation in Rodent Models
Avema, Alberto* (Istituto Italiano di Tecnologia); Guggenmos, David (Dept. of Physical Medicine and Rehabilitation University of Kansas Medical Center); Pasquaile, Valentina (Istituto Italiano di Tecnologia); Semprini, Mariana (Italian Institute of Technology); Nudo, Randolph (University of Kansas Medical Center); Chiappalone, Michela (Istituto Italiano di Tecnologia)

10:30-10:45 FrBT8.3
The Effect of Movement Phase on the Contralaterally Coordinated Paired Associative Stimulation-Induced Excitability
Alokaily, Ahmad (New Jersey Institute of Technology); Yarossi, Mathew (Northeastern Univ.); Fluet, Gerard (Rutgers, The State Univ. of New Jersey); Tunik, Eugene (Northeastern Univ.), Adamovich, Sergei* (New Jersey Institute of Technology)

10:45-11:00 FrBT8.4
Effect of Aging on Cortical Current Flow Due to Transcranial Direct Current Stimulation: Considerations for Safety
Thomas, Chris* (Soterix Medical, Inc.); Datta, Abhishek (Soterix Medical, Inc.); Woods, Adam J. (University of Pennsylvania)

11:00-11:15 FrBT8.5
Cortical Brain Stimulation with Endovascular Electrodes
Gerboni, Giulia* (Univ. of Melbourne); John, Sam (Vascular Bionics Lab, Dept. of Medicine, Univ. of Melbourne); Ronayne, Stephen (Vascular Bionics Lab, Dept. of Medicine, Univ. of Melbourne); Rind, Gil (Vascular Bionics Lab, Dept. of Medicine, Univ. of Melbourne); May, Clive (Florey Institute of Neuroscience and Mental Health); Oxley, Thomas (Univ. of Melbourne); Grayden, David B. (Univ. of Melbourne); Opie, Nicholas (Univ. of Melbourne); Wong, Yan Tat (Monash Univ.)

11:15-11:30 FrBT8.6
Stimulation Effect of Inter-Subject Variability in tDCS – Multi-Scale Modeling Study
Im, Cheolki (Gwangju Institute of Science and Technology); Seo, Hyeon (Gwangju Institute of Science and Technology); Jun, Sung Chan* (Gwangju Institute of Science and Technology)

10:00-10:15 FrBT9.1
Signal-Adaptive Denoising of Event-Related Potentials
Leistritz, Lutz* (Jena Univ. Hospital, Friedrich Schiller Univ. Jena); Ligges, Carolin (Dept. of Child and Adolescent Psychiatry, Psychosomatic Medicine and Psychotherapy; Jena Univ. Hospital)

10:15-10:30 FrBT9.2
Analysis of Spontaneous EEG Activity in Alzheimer’s Disease using Weighted Visibility Graph
Cai, Lihui (Tianjin University); Deng, Bin (Tianjin University); Wei, Xile (Tianjin University); Wang, Ruofan (Tianjin University of Technology and Education); Wang, Jiang* (Tianjin University)

10:30-10:45 FrBT9.3
Dynamic Time-Frequency Feature Extraction for Brain Activity Recognition
Shi, Yang* (University of Georgia); Li, Fangyu (University of Georgia); Liu, Tianming (University of Georgia); Beyette, Fred R (University of Georgia); Song, WenZhan (University of Georgia)

10:45-11:00 FrBT9.4
Compressed Sensing of EEG with Gabor Dictionary: Effect of Time and Frequency Resolution
Dao, Phuong Thi (Auckland University of Technology); Griffin, Anthony (Auckland University of Technology); Li, Xue Jun* (Auckland University of Technology)

11:00-11:15 FrBT9.5
The Embedding Transform. A Novel Analysis of Non-Stationarity in the EEG
Loza, Carlos* (Universidad San Francisco de Quito); Principe, Jose (University of Florida)
11:15-11:30 FrBT9.6
Automated Detection of High Frequency Oscillations in Human Scalp Electroencephalogram
Charupanit, Krit (University of California, Irvine); Nunez, Michael Dawson (University of California, Irvine); Bernardo, Danilo (University of North Carolina School of Medicine); Bebin, Martina (UAH); Krueger, Darcy A (Cincinnati Children’s Hospital Medical Center); Northrup, Hope (McGovern Medical School; University of Texas Health Science Center at Houston); Sahin, Mustafa (Boston Children’s Hospital); Wu, Joyce (University of California Los Angeles); Lopour, Beth* (University of California, Irvine)

11:15-11:30 FrBT10.6
Automated Myocardial Wall Motion Classification using Handcrafted Features vs a Deep CNN-Based Mapping
Omar, Hasmila* (Oxford University); Patra, Arijit (Oxford University); Domingos, Joao (University of Oxford); Leeson, Paul (John Radcliffe Hospital); Noble, J Alison (University of Oxford)

10:00-11:30 Meeting Room 319A
Ultrasound Imaging (I) (Theme 2) (Oral Session)
Chair: Linguraru, Marius George (Children’s National Health System)

10:00-10:15 FrBT10.1
A New Method for the Anterior Mitral Leaflet Segmentation in Echocardiography Videos by using the Virtual M-Mode Space
Sultan, Malik Saad (University of Porto); Martins, Nelson (Neovadance, Machine Vision, SA; Universidade do Porto); Eva, Costa (Enenermer, Sistemas de Medicação, Lda, Braga, Portugal); Veiga, Diana (Neovadance Machine Vision SA); Ferreira, Manuel Joao (University of Minho); Sandra, Mattos (Círculo do Coração de Pernambuco, Recife PE, Brazil); Coimbra, Miguel* (Instituto de Telecomunicações / Universidade do Porto)

10:15-10:30 FrBT10.2
B-Mode Ultrasound based Diagnosis of Liver Cancer with CEUS Images as Privileged Information
Meng, Fanqing (Shanghai University); Shi, Jun* (Shanghai University); Gong, Bangming (Shanghai University); Zhang, Qi (Shanghai University); Lehang, Guo (Shanghai Tenth People’s Hospital); Dan, Wang (Shanghai Tenth People’s Hospital); Huixiong, Xu (Shanghai Tenth People’s Hospital)

10:30-10:45 FrBT10.3
Contrast-Enhanced Ultrasound to Quantify Perfusion in a Machine-Perfused Pig Liver
Chen, Melinda (Massachusetts Institute of Technology); Li, Qian (Massachusetts General Hospital); Karimian, Negin (Center for Engineering in Medicine, Dept. of Surgery, Division of Transplantation, Massachusetts General Hospital); Yeh, Heidi (Massachusetts General Hospital); Duan, Yu (The First Affiliated Hospital, Sun Yat-sen University); Fontan, Feminn (Massachusetts General Hospital); Aburawi, Mohamed (Harvard Medical School, Massachusetts General Hospital); Anthony, Brian W.* (Massachusetts Institute of Technology); Uygun, Korkut (Massachusetts General Hospital/Harvard Medical School); Samir, Anthony Edward (Harvard Medical School, Massachusetts General Hospital)

10:45-11:00 FrBT10.4
Multiple Empirical Kernel Mapping based Broad Learning System for Classification of Parkinson’s Disease with Transcranial Sonography
Shen, Lu (Shanghai Univ.); Shi, Jun* (Shanghai Univ.); Gong, Bangming (Shanghai Univ.); Zhang, Yingchun (The Second Affiliated Hospital of Soochow Univ.); Dong, Yun (Shanghai East Hospital of Tongji Univ.); Zhang, Qi (Shanghai Univ.); An, Hedi (Shanghai East Hospital of Tongji Univ.)

11:00-11:15 FrBT10.5
Automatic Segmentation of Neonatal Ventricles from Cranial Ultrasound for Prediction of Intraventricular Hemorrhage Outcome
Roshanlatabrizi, Pooneh* (Children’s National Health System); Obeid, Rawad (Children’s National Health System); Cerrolaza, Juan J. (Imperial College London); Penn, Anna (Children’s National Medical Center); Mansoor, Awaïs (Children’s National Health System); Linguraru, Marius George (Children’s National Health System)

10:00-10:15 FrBT11.1
A Deep Learning Framework for the Remote Detection of Parkinson’s Disease using Smart-Phone Sensor Data
Prince, John* (Univ. of Oxford); De Vos, Maarten (Univ. of Oxford)

10:15-10:30 FrBT11.2
EEG Classification via Convolutional Neural Network-Based Intercital Epileptiform Event Detection
Thomas, John* (Nanyang Technological Univ.); Comoretto, Luca (Politecnico di Milano); Jing, Jin (Nanyang Technological Univ.); Dauweils, Justin (NTU): Cash, Sydney (Massachusetts General Hospital); Westover, Brandon (Massachusetts General Hospital)

10:30-10:45 FrBT11.3
Seizure Reduction using Model Predictive Control
Brar, Harleen* (Georgia Institute of Technology); Exarchos, Ioannis (Emory University); Pan, Yunpeng (Emory University)

10:45-11:00 FrBT11.4
Supra-Spinal Modulation of Walking in Healthy Individuals and Persons with Multiple Sclerosis: An NIRS Mobile Imaging Study
Saleh, Soha* (Kessler Foundation); Sandroff, Brian (University of Alabama); Owoeye, Oyindamola (New Jersey City Institute of Technology); Villatto, Tyler (Kessler Foundation); Hoaxh, Armand (Kessler Foundation); Yue, Guang (Kessler Foundation); DeLuca, John (Kessler Foundation)

11:00-11:15 FrBT11.5
Development of Sensor-Based Measures of Upper Extremity Interlimb Coordination
Miller, Aaron* (University of Tennessee); Duff, Susan (Chapman University, Physical Therapy); Quinn, Lori (Teachers College, Columbia University); Bishop, Lauri (Teachers College, Columbia University); Youdan Jr., Gregory (Teachers College, Columbia University); Rutherfuir, Heather (Children’s Hospital of Philadelphia); Wade, Eric (University of Tennessee)

11:15-11:30 FrBT11.6
Source Connectivity Analysis can Assess Recovery of Acute Mild Traumatic Brain Injury Patients
Li, Liangyuan (Univ. of Houston); Arakaki, Xianghong (Huntington Medical Research Inst.); Harrington, Michael (Huntington Medical Research Inst.); Zouridakis, George* (Univ. of Houston)

10:00-11:30 Meeting Room 321A
Blood Flow (Theme 5) (Oral Session)
Chair: Avolio, Alberto P. (Macquarie University)

10:00-10:15 FrBT12.1
Transfer Function between Intracranial Pressure and Aortic Blood Pressure and Carotid Blood Flow
Lara Hernandez, Julio Antonio (Macquarie University); Kim, Mi Ok (Macquarie University); Avolio, Alberto P* (Macquarie University); Butlin, Mark (Macquarie University)

10:15-10:30 FrBT12.2
Estimation of Three-Dimensional Blood Flow with Ultrasound – Continuity Equation on Multislice Dual-Angle Doppler Imaging
Yagashiti, So (Tohoku Univ.); Maeda, Moe (Tohoku Univ.); Nagaoka, Ryo (Tohoku Univ.); Saijo, Yoshifumi* (Tohoku Univ.)
10:30-10:45 FrBT12.3

Assist-as-Needed Controller to a Task-Based Knee Rehabilitation Exoskeleton
Adhikari, Visharath (Wichita State University); MajidiRad, Amir Hossein (Wichita State University); Yihun, Yimesker* (Wichita State University); Desai, Jaydip (Wichita State University)

FrBT14: 10:00-11:30 Meeting Room 322AB

Thermal Ablation and Hyperthermia (Theme 9) (Oral Session)
Chair: Prakash, Punit (Kansas State University)
Co-Chair: Panescu, Dorin (Advanced Cardiac Therapeutics)

10:00-10:15

In vitro Measurement of Release Kinetics of Temperature Sensitive Liposomes with a Fluorescence Imaging System
Asemani, Davud (Medical University of South Carolina); Matomarry, Anjan (Medical University of South Carolina); Haemmerich, Dieter* (Medical University of South Carolina)

FrBT14.2

Evaluation of Deep Thermal Rehabilitation System using Resonant Cavity Applicator during Knee Experiments
Shindo, Yasuhiro* (Toyo University); Kato, Kazuo (Meiji University); Ichishima, Yasuhiro (Meiji University, Graduate School of Science Technology); Iseki, Yuya (Meiji University)

10:30-10:45 FrBT14.3

An Intelligent Theranostics Method using Optical Coherence Tomography Guided Automatic Laser Ablation for Neurosurgery
Chang, Wei (Tsinghua University); Yingwei, Fan (Tsinghua University); Zhang, Xinran (Tsinghua University); Liao, Hongen* (Tsinghua University)

10:45-11:00 FrBT14.4

Intuitive Hand-Held Instrument for Loose Body Removal in Arthroscopic Synovial Chondromatosis Surgery
Qin, Fangyu (Shanghai Jiao Tong University); Zhang, Kangwei (Shanghai Jiao Tong University); Zou, Jincheng (Shanghai Jiao Tong University); Zhang, Ali* (Shanghai Jiao Tong University); Xu, Lisa XueMIN (Shanghai Jiao Tong University); Sun, Jianqi (Shanghai Jiao Tong University)

11:00-11:15 FrBT14.5

A New Model for RF Ablation Planning in Clinic
Faridi, Pegah (Kansas State Univ.); Fallahi, Hojjatollah (Kansas State Univ.); Prakash, Punit* (Kansas State Univ.)

11:15-11:30 FrBT14.6

Evaluation of the Effect of Uterine Fibroids on Microwave Endomterial Ablation Profiles
Fard, Hadi (Shanghai Jiao Tong University); Prakash, Punit* (Kansas State Univ.)

FrBT16: 10:00-11:30 Meeting Room 323B

General and Theoretical Informatics – Decision Support Systems (Theme 10) (Oral Session)

10:00-10:15 FrBT16.1

A Novel Sleep Stage Scoring System: Combining Expert-Based Rules with a Decision Tree Classifier
Gunnarsdottir, Kristin* (Johns Hopkins University); Gamaldo, Charlene (Johns Hopkins University, School of Medicine); Salas, Rachel (Johns Hopkins University, School of Medicine); Ewen, Joshua (Kennedy Krieger Institute); Allen, Richard (Johns Hopkins University); Sarma, Sridevi V. (Johns Hopkins University)
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
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<tbody>
<tr>
<td>10:00-10:15</td>
<td>FrBT16.1</td>
<td>Cognitive DDx Assistant in Rare Diseases</td>
<td>Reumann, Matthias* (IBM Research - Zurich); Giovannini, Andrea (IBM Switzerland); Nadworny, Christoph (IBM Research, Rüsslikon); Girardi, Ivan (IBM Research - Zurich); Marchiori, Chiara (IBM Research - Zurich)</td>
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<td>10:15-10:30</td>
<td>FrBT16.2</td>
<td>An Intelligent Wearable Device for Human’s Cervical Vertebra Posture Monitoring</td>
<td>Wang, Yingying (Shenzhen Institutes of Advanced Tech., Chinese Academy of Sciences); Zhou, Hui (Shenzhen Institutes of Advanced Tech.); Yang, Zijian (Shenzhen Institutes of Advanced Tech., Chinese Academy of Sciences); Samuel, Oluwarotimi Williams (Shenzhen Institutes of Advanced Tech.); Liu, Weidong (Shenzhen Traditional Chinese Medicine Hospital); Cao, yafei (Shenzhen Traditional Chinese Medicine Hospital); Li, Guanglin (Shenzhen Institutes of Advanced Tech.)</td>
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<td>11:00-11:15</td>
<td>FrBT16.3</td>
<td>Sparse Modeling of Mandibular Reconstruction Procedures using Statistical Geometric Features</td>
<td>Nakao, Megumi* (Kyoto Univ.); Matsuda, Tetsuya (Kyoto Univ.)</td>
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<td>11:15-11:30</td>
<td>FrBT16.5</td>
<td>Personality Markerless Upper-Body Tracking with a Depth Camera and  Wrist-Worn Inertial Measurement Units</td>
<td>Jateskat, Prayoyok (NTU); Anopas, Dopporn* (Nanyang Technological Univ.); Ang, Wei Tech (Nanyang Technological Univ.)</td>
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<tr>
<td>10:00-10:15</td>
<td>FrBT18.1</td>
<td>Confusion State Induction and EEG-Based Detection in Learning</td>
<td>Zhou, Yun* (Shaanxi Normal University); Xu, Tao (Northwestern Polytechnical University); Li, Shiqian (Shaanxi Normal University); Li, Shaoqi (Northwestern Polytechnical University)</td>
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<td>10:45-11:00</td>
<td>FrBT18.2</td>
<td>Hardware Implementation of an Adaptive Data Acquisition System for Real-World EEG</td>
<td>Poirier, Catherine (Army Research Lab); Dixon, Anna Marie Rogers (Army Research Lab); Gadfort, Peter (U.S. Army Research Lab); Conroy, Joseph K. (U.S. Army Research Lab); Hairston, W. David* (U.S. Army Research Lab); Nonte, Michael (DCS Corp.)</td>
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<td>11:00-11:15</td>
<td>FrBT18.3</td>
<td>Effect of Epoch Length on Compressed Sensing of EEG</td>
<td>Li, Xue Jun* (Auckland University of Technology); Dao, Phuong Thi (Auckland University of Technology); Griffin, Anthony (Auckland University of Technology)</td>
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<tr>
<td>10:45-11:00</td>
<td>FrBT18.4</td>
<td>Cancellation Method of Signal Fluctuations in Brain Function Measurements using Near-Infrared Spectroscopy</td>
<td>Fukuda, Keiko* (Tokyo Metropolitan College of Industrial Technology); Sato, Daisuke (Tokyo Metropolitan College of Industrial Technology)</td>
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<td>11:00-11:15</td>
<td>FrBT18.5</td>
<td>Vocal Stereotypy Detection: An Initial Step to Understanding Emotions of Children with Autism Spectrum Disorder</td>
<td>Min, Cheol-Hong* (University of St. Thomas); Feltzner, John (University of St. Thomas)</td>
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<td>11:15-11:30</td>
<td>FrBT18.6</td>
<td>Simultaneous Measurement of Swallowing Sound and Mechanomyogram of Submental Muscle with PVDF Film</td>
<td>Tsukagoshi, Keita* (Tokyo University of Science); Hashimoto, Takuya (Tokyo University of Science); Koike, Takuji (The University of Electro-Communications)</td>
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<td>11:00-11:15</td>
<td>FrBT17.1</td>
<td>Detecting Reach to Grasp Activities using Motion and Muscle Activation Data</td>
<td>Hauser, Nathaniel (University of Tennessee Knoxville); Wade, Eric* (University of Tennessee)</td>
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<td>10:30-10:45</td>
<td>FrBT17.2</td>
<td>Classification of Human Posture from Radar Returns using Ultra-Wideband Radar</td>
<td>Baird, Zachary* (Carleton University); Rajan, Sreeraman (School of Information Technology and Engineering (SITE), University of Ottawa, Ottawa, Canada); Bolic, Miodrag (University of Ottawa)</td>
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<td>10:45-11:00</td>
<td>FrBT17.3</td>
<td>Combined Regression and Classification Models for Accurate Estimation of Walking Speed using a Wrist-Worn IMU</td>
<td>Zihajezadeh, Shaghayegh (Simon Fraser University); Aziz, Omar (Simon Fraser University); Tae, Chul-Gyu (Biemotion Technologies); Park, Edward J.* (Simon Fraser University)</td>
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<td>10:45-11:00</td>
<td>FrBT17.4</td>
<td>Ni-Doped Liquid Metal Printed Highly Stretchable and Conformable Strain Sensor for Multifunctional Human-Motion Monitoring</td>
<td>Wang, Xuelin (Tsinghua Univ.); Guo, Rui (Tsinghua Univ.); Yuan, Bo (Tsinghua Univ.); Yao, Youyou (Tsinghua Univ.); Wang, Feng (Tsinghua Univ.); Liu, Jing* (Tsinghua Univ.)</td>
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<td>10:00-10:15</td>
<td>FrBT19.1</td>
<td>Evaluation of ReminX as a Behavioral Intervention for Mild to Moderate Dementia</td>
<td>Vincent, Filoteo* (UCSD); Cox, Edward (Dthera Sciences); Molly, Split (UCSD); Gross, Martyn (Dthera Sciences); Culjat, Martin (Dthera Sciences); Keene, David (Dthera Sciences)</td>
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10:15-10:30 FrBT2.2
Ontology-Based Dementia Care Support System
Jeon, Hwawoo (Korea Institute of Science and Technology); Park, Sungkee (Korea Institute of Science and Technology); Choi, JongSuk (Korea Institute of Science and Technology); Lim, Yoonseob* (Korea Institute of Science and Technology)

10:30-10:45 FrBT2.3
Obstructive Sleep Apnea Detection using Difference in Feature and Modified Minimum Distance Classifier
Shi, Wen (Nanyang Technological Univ.); Xu, Bing (Singapore MIT Alliance for Research and Technology); Guo, shuli (Nanyang Technological Univ.); Goh, Daniel (National Univ. Hospital); Ser, Wee* (Nanyang Technological Univ.)

10:45-11:00 FrBT2.4
Ballistocardiogram based Identity Recognition: Towards Zero-Effort Health Monitoring in an Internet-of-Things (IoT) Environment
Javaid, Abdul Qadir (Univ. of Toronto); Chang, Isaac Sungjae* (Univ. of Toronto); Miahilidis, Alex (Univ. of Toronto)

11:00-11:15 FrBT2.5
A Multimodal Virtual Keyboard using Eye-Tracking and Hand Gesture Detection
Cecotti, Hubert* (California State Univ. Fresno); Meena, Yogesh Kumar (Ulster Univ.); Prasad, Girijesh (Univ. of Ulster)

11:15-11:30 FrBT2.6
A Gaze-Based Virtual Keyboard using a Mouth Switch for Command Selection
Sanjay, Soundarajan (California State University Fresno); Cecotti, Hubert* (California State University Fresno)

FrBT20: 10:00-11:30 Meeting Room 325B
Smart Cardiorespiratory Devices and Sensors (Theme 5) (Oral Session)
Chair: Chbat, Nicolas W. (Quadrus Medical Technologies)
Co-Chair: Sunagawa, Kenji (Kyushu University)

10:00-10:15 FrCT1.1
A 0.9m Long 0.5gf Resolution Catheter-based Force Sensor for Real-Time Force Monitoring of Cardiovascular Surgery
Jeon, Sangkuk* (Yonsei University); Lee, JiYoung (Yonsei University); Ryu, Wonyoung (Yonsei University); Chae, Youngchoel (Yonsei University)

10:15-10:30 FrCT1.2
Assessment of Inspiratory Muscle Activity using Surface Diaphragm Manoeuromyography and Crural Diaphragm Electromyography
Lozano-Garcia, Manuel (Institute for Bioengineering of Catalonia (IBEC), The Barcelona Institute of Science and Technology (BIST)); Sarlabous, Leonardo (Institute for Bioengineering of Catalonia (IBEC)); Moxham, John (King's College London); F Rafferty, Gerrard (King's College Hospital NHS Foundation Trust, King's Health Partners); Torres, Abel (Institute for Bioengineering of Catalonia (IBEC) - BarcelonaTech (UPC)); J Jolley, Caroline (King's College Hospital NHS Foundation Trust, King's Health Partners); Jané, Raimon* (Institut de Bioenginyeria de Catalunya (IBEC))

10:30-10:45 FrCT1.3
Comparison of Automated and Manual Peripheral Oxygen Saturation Control Applied to One Human Subject at a High Target Range
Faqeeh, Akram (University of Missouri-Columbia); Hou, Xuefeng (University of Missouri); Zaniletti, Isabella (University of Missouri); Pardalos, John (University of Missouri); Amjad, Ramak (University of Missouri); Fales, Roger* (University of Missouri)

10:45-11:00 FrCT2.4
Assessment of Respiratory Muscle Activity with Surface Electromyographic Signals Acquired by Concentric Ring Electrodes
Ráfols-de-Urquía, Magda (Institut de Bioenginyeria de Catalunya (IBEC)); Estévez-Piorno, Josep (Institut de Bioenginyeria de Catalunya (IBEC)); Estrada, Luis (Institut de Bioenginyeria de Catalunya); García-Casado, Javier (Universitat Politècnica de València); Prats-Boluda, Gema (UniversitatPolitècnica de València); Sarlabous, Leonardo (Institute for Bioengineering of Catalonia (IBEC)); Jané, Raimon (Institut de Bioenginyeria de Catalunya (IBEC)); Torres, Abel* (Institute for Bioengineering of Catalonia (IBEC) - BarcelonaTech (UPC))

11:00-11:15 FrCT2.5
A Fiducial Scaffold for ECG Compression in Low-Powered Devices
Birjiniuk, Jonathan* (Massachusetts Institute of Technology); Gordhandas, Ankit (Massachusetts Institute of Technology); Verghese, George (Massachusetts Institute of Technology); Heidt, Thomas (Massachusetts Institute of Technology)

11:15-11:30 FrCT2.6
Anti-Windup and Disturbance Rejection Controller Design of an Automated Oxygen Control System for Premature Infants
Hou, Xuefeng (University of Missouri); Faqeeh, Akram (University of Missouri-Columbia); Shin, Tyler (University of Missouri); Fales, Roger* (University of Missouri)

FrCT1: 13:30-15:00 Meeting Room 311
Neural Interfaces (II) (Theme 6) (Oral Session)

13:30-13:45 FrCT1.1
A Modular Implant System for Multimodal Recording and Manipulation of the Primate Brain
Kleinbart, Jessica (New York University); Orsborn, Amy (University of California Berkeley); Choi, John (New York University); Qiao, Shaoou (New York University); Wang, Charles (Duke University); Viventi, Jonathan (Duke University); Pesaran, Bijan* (New York University)

13:45-14:00 FrCT1.2
A Wireless Smartphone Controlled, Battery Powered, Head Mounted Light Delivery System for Optogenetic Stimulation
Mazaheri Kouhani, Mohammad Hossein* (Michigan State University); Luo, Rui (Tsinghua University); Madi, Fatma (Michigan State University); Weber, Arthur (Michigan State University); Li, Wen (Michigan State University)

14:00-14:15 FrCT1.3
Effect of Asymmetric, Charge Balanced Stimuli on Elicited Compound Neural Action Potentials
Delgado, Francisco (Dr.); Curtin, Seth (University of Florida); Kundo, Antra (University of Florida); Patrick, Erin (University of Florida); Otto, Kevin* (University of Florida)

14:15-14:30 FrCT1.4
Parylene Neural Probe with Embedded CMOS Multiplexing Amplifier
Forssell, Mats* (Carnegie Mellon University); Fedder, Gary K. (Carnegie Mellon University)

14:30-14:45 FrCT1.5
Magnetically Balanced Power and Data Telemetry for Mm-Scale Neural Implants
Mandloi, Neeraj Kumar* (NYU Abu Dhabi); Ha, Sohmyung (New York University Abu Dhabi)
14:45-15:00 FrCT1.6
Chronically Implantable Package based on Alumina Ceramics and Titanium with High-Density Feedthroughs for Medical Implants
Yang, Hangao (Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences); Wu, Tianzhun* (Shenzhen Institutes of Advanced Technology (SIAT), Chinese Academy of Sciences (CAS)); Zhao, Saihui (Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences); Xiong, Shanshan (Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences); Peng, Bo (Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences); Humayun, Mark (USC / Doheny Eye Institute)

FrCT2: 13:30-15:00 Meeting Room 312
Novel Methods for the Detection and Prediction of Epileptic Seizures (Theme 1) (Oral Session)

13:30-13:45 FrCT2.1
A Distributed Descriptor Characterizing Structural Irregularity of EEG Time Series for Epileptic Seizure Detection
Mei, Zhenning (Fudan University); Zhao, Xian (Fudan University); Chen, Hongyu (Technische Universität Eindhoven - TU/e); Chen, Wei* (Fudan University)

13:45-14:00 FrCT2.2
An Unsupervised Methodology for the Detection of Epileptic Seizures using EEG Signals: A Multi-Dataset Evaluation
Tsouris, Kostas (BioMedical Engineering Lab, School of Electrical and Computer Engineering, National Technical University of Athens); Konitsiotis, Spiros (Medical School, University of Ioannina); Markoula, Sofia (University of Ioannina); Koutsouris, Dimitrios (BioMedical Engineering Lab, School of Electrical and Computer Engineering, National Technical University of Athens); Fotiadis, Dimitrios L.* (University of Ioannina)

14:00-14:15 FrCT2.3
Rapid Annotation of Seizures and Interictal-Ictal Continuum EEG Patterns
Jing, Jin (Massachusetts General Hospital); d'Angremont, Emile (University of Twente, Enschede, The Netherlands); Zafar, Sahar (Massachusetts General Hospital, Boston, MA); Rosenthal, Eric (MGH); Tabaeizadeh, Mohammad (Massachusetts General Hospital, Boston, MA); Ebrahim, Senan (Massachusetts General Hospital, Boston, MA); Dauwels, Justin (NTU); Westover, Brandon* (MGH / Harvard Medical School)

14:15-14:30 FrCT2.4
MCA based Epilepsy EEG Classification using Time Frequency Domain Features
Mahapatra, Arindam Gajendra (Graduate School of Medicine, Yamaguchi Univ., Ube); Singh, Balbir (National Institute of Physiological Sciences); Horio, Keichi* (Kyushu Institute of Technology); Wagatsuma, Hiroaki (Kyushu Institute of Technology)

14:30-14:45 FrCT2.5
Improved Detection and Classification of Convulsive Epileptic and Psychogenic Non-Epileptic Seizures using FLDA and Bayesian Inference
Kusmakar, Shilanshu* (Univ. of Melbourne); Karmakar, Chandan (Deakin Univ.); Yan, Bernard (The Royal Melbourne Hospital); O'Brien, Terence (The Royal Melbourne Hospital); Palaniswami, Marimuthu (Univ. of Melbourne); Muthuganapathy, Ramanathan (Indian Institute of Technology Madras)

FrCT3: 13:30-15:00 Meeting Room 314
Image Segmentation (Theme 2) (Oral Session)

13:30-13:45 FrCT3.1
Fully Automatic Finger Extensor Tendon Segmentation in Ultrasound Images of the Metacarpophalangeal Joint
Martins, Nelson (Neadvance, Machine Vision, SA; Univ. do Porto); Sultan, Malik Saad (Univ. of Porto); Veiga, Diana (Neadvance Machine Vision SA); Ferreira, Manuel Joao (Univ. of Minho); Coimbra, Miguel* (Instituto de Telecomunicações / Univ. do Porto)

14:45-15:00 FrCT3.2
Clumped Nuclei Segmentation with Adjacent Point Match and Local Shape-Based Intensity Analysis in Fluorescence Microscopy Images
Guo, Xiaoyuan* (Emory Univ.); Yu, Hanyi (Emory Univ.); Rossetti, Blair (Emory Univ.); Teodoro, George (Univ. of Brasilia); Brat, Daniel (Emory Univ.); Kong, Jun (Emory Univ.)

14:00-14:15 FrCT3.3
Segmentation of Both Diseased and Healthy Skin from Clinical Photographs in a Primary Care Setting
Coddela, Noel* (IBM T.J. Watson Research Center); Anderson, Daren (Community Health Center, Inc.); Phillips, Tyler (Community Health Center, Inc.); Porto, Anthony (Community Health Center, Inc.); Massey, Kevin (Community Health Center, Inc.); Snowden, Jane (IBM Watson Health); Feins, Rogero (IBM T.J. Watson Research Center); R Smith, John (IBM T.J. Watson Research Center)

14:15-14:30 FrCT3.4
Automated Kidney Segmentation for Traumatic Injured Patients through Ensemble Learning and Active Contour Modeling
Farzaneh, Negar* (Univ. of Michigan); Soroshmehr, S.M.Reza (Univ. of Michigan, Ann Arbor); Patel, Hirenkumar (Univ. of Michigan); Wood, Alexander (Univ. of Michigan); Gryak, Jonathan (Univ. of Michigan); Fessell, David (Univ. of Michigan); Najarian, Kayvan (Univ. of Michigan - Ann Arbor)

14:30-14:45 FrCT3.5
Segmentation of Cervical Nuclei using SLIC and Pairwise Regional Contrast
Saha, Ratna (Flinders University); Baigee, Mariusz (Flinders University); Lee, Gobert* (Flinders University)

14:45-15:00 FrCT3.6
OCT Fluid Segmentation using Graph Shortest Path and Convolutional Neural Network
Rashno, Abdooleza* (Lorestan University); Koozekanani, Darin (University of Minnesota); Parhi, Keshab (University of Minnesota)

FrCT4: 13:30-15:00 Meeting Room 315
Implantable Sensors (II) (Theme 7) (Oral Session)
Chair: Kirchner, Jens (University of Erlangen-Nuremberg)

13:30-13:45 FrCT4.1
Temperature Compensated Fibre Bragg Grating Pressure Sensor for Ventricular Assist Devices
Stephens, Andrew* (Innovative Cardiovascular Engineering and Tech. Lab); Busch, Andrew (Griffith Univ.); Gregory, Shaun David (Queensland Univ. of Tech.); Salamonsen, Robert F (Alfred Hospital); Tansley, Geoff (Griffith Univ., Queensland, Australia)

13:45-14:00 FrCT4.2
A Multi-Site Heart Pacing Study using Wirelessly Powered Leadless Pacemakers
Lyu, Hongming* (UCLA); John, Mathews (Texas Heart Institute); Burkhild, David (Baylor College of Medicine); Greet, Brian (Baylor College of Medicine); Xi, Yutao (Texas Heart Institute); Sampaio, Luiz C. (Texas Heart Institute); Taylor, D. (Texas Heart Institute); Razavi, Mehdi (Texas Heart Institute); Babakhani, Aydin (UCLA)

14:00-14:15 FrCT4.3
Abnormal Spontaneous Neuronal Discharge and Local Field Potential Both in Cortex and Striatum of a Non-Human Primate of Parkinson's Disease using Implantable Microelectrode Arrays
Wang, Xiaoyi (Inst. of Elec., Chinese Academy of Sciences); Song, Yillin (State Key Lab of Transducer Tech., Inst. of Elec., Chinese Academy of Sciences); Zhang, Song (Inst. of Elec., Chinese Academy of Sciences); Xu, Shengwei (Inst. of Elec., Chinese Academy of Sciences); Xue, Guoxin (Univ. of Chinese Academy of Sciences); Li, Ziyue (Chinese Academy of Sciences, Inst.s of Elec.); Gao, Fei (Chinese Academy of Sciences, Inst.s of Elec.); Zhang, Yu (Chinese Academy of Sciences, Inst.s of Elec.); Yue, Feng (Xuanwu Hospital, Capital Medical Univ.); Chu, Pan (Xuanwu Hospital, Capital Medical Univ.); Cai, Xinxia* (Inst. of Elec., Chinese Academy of Sciences)
14:15-14:30 FrCT5.4
Miniaturization of External Mechanical Vibration for Shear Wave Elastography

14:30-14:45 FrCT5.5
Objective Liver Fibrosis Estimation from Shear Wave Elastography

14:45-15:00 FrCT5.6
Multiparametric QUS Analysis for Placental Tissue Characterization

15:00-15:15 FrCT6.1
Research of the Regulation Effect of Transcranial Alternating Current Stimulation on Vigilant Attention

15:15-15:30 FrCT6.2
A New Mathematical Force Model that Predicts the Force-Pulse Amplitude Relationship of Human Skeletal Muscle

15:30-15:45 FrCT6.3
Virtual Reality for Activities of Daily Living Training in Neurorehabilitation: A Usability and Feasibility Study in Healthy Participants

15:45-15:00 FrCT6.4
Visually Impaired Users can Locate and Grasp Objects under the Guidance of Computer Vision and Non-Visual Feedback

15:00-15:15 FrCT6.5
A Sensor Fusion Approach for Inertial Sensors based 3D Kinematics and Pathological Gait Assessments: Toward an Adaptive Control of Stimulation in Post-Stroke Subjects

15:15-15:30 FrCT6.6
Sleep Posture Classification using a Convolutional Neural Network

15:30-15:45 FrCT7.1
Human Performance (II) (Theme 6) (Oral Session)

15:45-16:00 FrCT7.2
Movement Speed Estimation based on Foot Acceleration Patterns

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<td>Transfer Learning Approach for Fall Detection with the FARSEEING Real-World Dataset</td>
<td>Silva, Joana Raquel* (Fraunhofer Portugal AICOS); Sousa, Inês (Fraunhofer Portugal AICOS); Cardoso, Jaime S. (INESC TEC and University of Porto)</td>
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<td>FrCT7.3</td>
<td>A Novel Time-Domain Descriptor for Improved Prediction of Upper Limb Movement Intent in EMG-PR System</td>
<td>Samuel, Oluwarotimi Williams (Shenzhen Institutes of Advanced Tech.); Asogbon, Mojisola Grace (Shenzhen Institutes of Advanced Tech., Chinese Academy of Sciences); Geng, Yanjuan (Shenzhen Institutes of Advanced Tech.); Chen, Shixiong (Shenzhen institutes of Advanced Tech.); Fang, Peng (Shenzhen Institutes of Advanced Tech., Chinese Academy of Sciences); Lin, Chuang (Shenzhen Institutes of Advanced Tech., Chinese Academy of Sciences); Wang, Lin (Shenzhen Institutes of Advanced Tech., Chinese Academy of Sciences); Li, Guanglin* (Shenzhen Institutes of Advanced Tech.)</td>
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<td>14:15-14:30</td>
<td>FrCT7.4</td>
<td>Hand Gesture Recognition with Inertial Sensors</td>
<td>Techaasingaksil, Kritiann* (Imperial College London); Wu, Li-Qun (Imperial College London); Yang, Guang-Zhong (Imperial College London); Lo, Benny (Imperial College London)</td>
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<td>FrCT7.5</td>
<td>Automated Finger Chase (ballistic Tracking) in the Assessment of Cerebellar Ataxia</td>
<td>Tran, Ha* (Deakin University); Pathirana, Pubudu N. (Deakin University); Home, Malcolm (Florey Institute of Neuroscience and Mental Health); Power, Laura (Royal Victorian Eye and Ear Hospital); Szmulewicz, David (Victoria Eye and Ear Hospital)</td>
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<td>Studying the Interactions in a Mammalian Nerve Fiber: A Functional Modeling Approach</td>
<td>Sadashiviah, Vijay (Johns Hopkins University); Sacré, Pierre (Johns Hopkins University); Guan, Yun (Johns Hopkins University School of Medicine); Anderson, William S. (Johns Hopkins School of Medicine, Dept. of Neurosurgery); Sarma, Sridevi V.* (Johns Hopkins University)</td>
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<td>FrCT8.2</td>
<td>Correction of Toe-Walking Gait in Children with Spastic Cerebral Palsy by using Electrical Stimulation Therapy</td>
<td>Mukhopadhyay, Rupsha (Indian Institute of Technology, Kharagpur); Mahadevappa, Manjunatha* (Indian Institute for Technology Kharagpur); Prasanna, Lenka (National Institute for the Orthopaedically Handicapped); Biswas, Abhishek (National Institute for the Orthopaedically Handicapped)</td>
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<td>14:00-14:15</td>
<td>FrCT8.3</td>
<td>Features of Referred Sensation Areas for Artificially Generated Sensory Feedback – A Case Study</td>
<td>Lontis, Eugen Romulus* (Aalborg University); Yoshida, Ken (Indiana University-Purdue University Indianapolis); Jensen, Winnie (Center for Sensory-Motor Interaction)</td>
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<td>FrCT8.4</td>
<td>The Influence of Environment Stimulation on Learning and Memory Function in Rats with Medication Chemotherapy</td>
<td>Li, Jian-ping (Zunyi Medical University Zhuhai Campus); Li, Yuan-heng (The Zhuhai campus of the Zunyi Medical University); Su, Huan (Zunyi Medical University Zhuhai Campus); Zhao, Lei (Zunyi Medical University); Yu, Qianhengyuan (Zunyi Medical University); Lu, Wei (Zunyi Medical University, Zhuhai Campus); Yang, Lin* (Zhuhai campus, Zunyi Medical University)</td>
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<td>FrCT8.5</td>
<td>Customization of Synergy-Based FES for Post-Stroke Rehabilitation of Upper-Limb Motor Functions</td>
<td>Wang, Tong (Shanghai Jiao Tong Univ., School of Biomedical Engineering); Bao, Yong (Dept. of Rehabilitation Medicine, Ruijin Rehabilitation Hospital); Hao, Huaqing (Shanghai Jiao Tong Univ.); Zhang, Xiao (Ruijin Rehabilitation Hospital); Li, Si (Shanghai Jiao Tong Univ.); Xie, Qing (Ruijin Hospital Shanghai Jiao Tong Univ.School of Medicine); Lan, Ning (Shanghai Jiao Tong Univ.); Niu, Chuanxin M.* (Ruijin Hospital, School of Medicine, Shanghai Jiao Tong Univ.)</td>
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<td>14:45-15:00</td>
<td>FrCT8.6</td>
<td>Optimized tDCS for Targeting Multiple Brain Regions: An Integrated Implementation</td>
<td>Huang, Yu* (City College of New York); Thomas, Chris (Soterox Medical, Inc.); Datta, Abhishek (Soterox Medical, Inc.); Parra, Lucas C. (City College of New York)</td>
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<td>FrCT9.1</td>
<td>Efficient Modeling of Acoustic Feedback Path in Hearing Aids by Voice Activity Detector-Supervised Multiple Noise Injections</td>
<td>Mishra, Parth* (Univ. of Texas at Dallas); Tokgoz, Serkan (Univ. of Texas at Dallas); Panahi, Issa (Univ. of Texas at Dallas)</td>
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<td>A Simple Preprocessing Technique for ESPRIT Suitable for Non-Contact Vital Sensing using a Doppler Sensor</td>
<td>Kamiya, Yukihiro* (Aichi Prefectural University)</td>
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<td>Local Interval Estimation Improves Accuracy and Robustness of Heart Rate Variability Derivation from Photoplethysmography</td>
<td>Hoog Antink, Christoph* (RWTH Aachen University, Aachen, Germany); Leonhardt, Steffen (RWTH Aachen University); Walter, Marian (RWTH Aachen University)</td>
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<td>A State-Space Approach for Detecting Stress from Electrodermal Activity</td>
<td>Wickramasuriya, Dilranjan (University of Houston); Qi, Chaoxian (University of Houston); Faghii, Rose T.* (University of Houston)</td>
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<td>FrCT9.5</td>
<td>Combining Adaptive Filter and Phase Vocoder for Heart Rate Monitoring using Photoplethysmography during Physical Exercise</td>
<td>Xie, Qingsong (Shanghai Jiao Tong University); Zhang, Qirui (Shanghai Jiao Tong University); Wang, Guoxing* (Shanghai Jiao Tong University); Lian, Yong (York University)</td>
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<td>FrCT9.6</td>
<td>A Heart Rate Driven Kalman Filter for Continuous Arousal Trend Monitoring</td>
<td>Bhattacharjee, Tanuka* (Research &amp; Innovation, Tata Consultancy Services, India); Datta, Shreyasi (Tata Consultancy Services); Das, Deepan (Tata Consultancy Services); Dutta Choudhury, Anirban (Tata Consultancy Services Ltd.); Pal, Arpan (Tata Consultancy Services); Ghosh, Prasanta (Indian Institute of Science)</td>
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**Deep Motion Analysis for Epileptic Seizure Classification**
Ahmedt-Aristizabal, David* (Queensland Univ. of Technology); Nguyen, Kien (Queensland Univ. of Technology); Denman, Simon (Queensland Univ. of Technology); Sridharan, Sridha (Queensland Univ. of Technology); Dionisio, Sasha (Mater Hospital); Fookes, Clinton (Queensland Univ. of Technology)

13:45-14:00 FrCT10.2
**Extracting Thickness Profiles of Anterior Mitral Leaflets in Echocardiography Videos**
Pires, Luiz (Universidade do Porto); Sultan, Malik Saad (University of Porto); Martins, Nelson (Neadvance, Machine Vision, SA; Universidade do Porto); Costa, Eva (Neadvance); Veiga, Diana (Neadvance Machine Vision SA); Ferreira, Manuel Joao (University of Minho); Mattos, Sandra (UCMF - Unidade de Cardiologia e Medicina Fetal); Coimbra, Miguel* (Instituto de Telecomunicações / Universidade do Porto)

14:00-14:15 FrCT10.3
**Lagrangian Motion Magnification Revisited: Continuous, Magnitude Driven Motion Scaling for Psychophysiological Experiments**
Flotho, Philipp* (Saarland University Faculty of Medicine); Bhamborae, Mayur J. (Saarland University Faculty of Medicine); Haab, Lars (Saarland University Hospital); Strauss, Daniel J. (Saarland University, Medical Faculty)

14:15-14:30 FrCT10.4
**A System for Accurate Tracking and Video Recordings of Rodent Eye Movements using Convolutional Neural Networks for Biomedical Image Segmentation**
Puri, Ishan* (Harvard University); Cox, David (Harvard University)

14:30-14:45 FrCT10.5
**Bleeding Detection in Wireless Capsule Endoscopy Image Video using Superpixel-Color Histogram and a Subspace KNN Classifier**
Xing, Xiaohan* (Chinese University of Hong Kong); Jia, Xiao (Chinese University of Hong Kong); Meng, Max Q.-H. (Chinese University of Hong Kong)

14:45-15:00 FrCT10.6
**Detection of Atypical and Typical Infant Movements using Computer-Based Video Analysis**
Orlandi, Silvia* (Holland Bloorview Kids Rehabilitation Hospital); Raghuram, Kamini (The Hospital for Sick Children); Smith, Corinnia (Univ. of Waterloo); Mansueto, David (Filinders Univ.); Church, Paige (Sunnybrook Health Sciences Centre); Shah, Vibhuti (Mount Sinai Hospital); Luther, Maureen (Sunnybrook Health Sciences Centre); Chau, Tom (Univ. of Toronto)

13:30-13:45 FrCT11.1
**Cooperative Cooking: A Novel Virtual Environment for Upper Limb Rehabilitation**
Gorsic, Maja (University of Wyoming); Tran, Minh Ha (University of Wyoming); Novak, Domen* (University of Wyoming)

13:45-14:00 FrCT11.2
**Selective Relay of Afferent Sensory Induced Action Potentials from Peripheral Nerve to Brain and the Effects of Electrical Stimulation**
Sadashivaiah, Vijay (Johns Hopkins University); Sacrè, Pierre (Johns Hopkins University); Guan, Yun (Johns Hopkins University School of Medicine); Anderson, William S. (Johns Hopkins School of Medicine, Dept. of Neurosurgery); Sarma, Sridevi V.* (Johns Hopkins University)

14:00-14:15 FrCT11.3
**Quantitative EEG as Biomarkers for the Monitoring of Post-Stroke Motor Recovery in BCI and IDCs Rehabilitation**
Mane, Ravikiran* (Nanyang Technological University); Chew, Effie (National University Health System); Phua, Kok Soon (Institute for Infocomm Research); Ang, Kai Keng (Institute for Infocomm Research); A. P., Vinod (Indian Institute of Technology Palakkad); Guan, Cuntai (Nanyang Technological University)

14:15-14:30 FrCT11.4
**Elbow Training Device using the Mechanically Adjustable Stiffness Actuator (MASA)**
Choi, Junho* (Korea Institute of Science and Technology); Son, Choonghyun (Korea Institute of Science and Technology); Park, Seunghan (Korea Institute of Science and Technology); Jung, Euiwook (Rainbow Co.); Yu, Donggoup (Korea Institute of Science and Technology)

14:30-14:45 FrCT11.5
**Towards Robot-Based Cognitive and Motor Assessment across the HIV-Stroke Spectrum**
Bui, Kevin* (University of Pennsylvania); Johnson, Michelle (University of Pennsylvania)

14:45-15:00 FrCT11.6
**Electrocorticographic Activity of the Brain during Micturition**
Tran, Tracie (University of California Irvine); Wang, Po T. (University of California Irvine); Lee, Brian (University of Southern California); Liu, Charles Y. (Keck Hospital of the University of Southern California); Kreydin, Evgeniy (University of Southern California); Nenadic, Zoran (University of California Irvine); Do, An H.* (University of California Irvine)

13:30-13:45 FrCT12.1
**Power Spectral Analysis of Short-Term Blood Pressure Recordings for Assessing Daily Variations of Blood Pressure in Human**
Kinoshita, Hiroyuki (Omron Healthcare Co., Ltd.); Mannoji, Hiroshi (Kyushu University); Saku, Keita* (Kyushu University); Mano, Jumpei (Omron Healthcare Co., Ltd.); Miyamoto, Tadayoshi (Morinomiya University of Medical Sciences); Todaka, Koji (Kyushu University); Kishi, Takuya (Kyushu University Graduate School of Medical Sciences); Kanaya, Shigehiko (Nara Institute of Science and Technology); Sunagawa, Kenji (Kyushu University)

13:45-14:00 FrCT12.2
**Non-Invasive Continuous-Time Blood Pressure Estimation from a Single Channel PPG Signal using Regularized ARX Models**
Acararl, Giada* (University of Padova); Facchinetti, Andrea (University of Padova); Pillonetto, Gianluigi (University of Padova); Sparacino, Giovanni (University of Padova)

14:00-14:15 FrCT12.3
**Continuous Blood Pressure Monitoring Algorithm using Laser Doppler Flowmetry**
Kim, Insoo* (Univ. of Connecticut Health Center); Hossain, Md Faruk (Univ. of Connecticut Health Center); Bhagat, Yusuf (Jabil Inc.)

14:15-14:30 FrCT12.4
**Sensitivity of Video-Based Pulse Arrival Time to Dynamic Blood Pressure Changes**
Shirbani, Fatemeh (Macquarie University, Faculty of Medicine and Health Sciences); Blackmore, Conner (Macquarie University); Kazzi, Christina (Macquarie University); Tan, Isabella (Macquarie University); Butlin, Mark (Macquarie University); Avolio, Alberto P* (Macquarie University)
14:30-14:45
The Calibration Method for Blood Pressure Pulse Wave Measurement based on Arterial Tonometry Method
Shimura, Koichi* (Chuo University); Hori, Masatake (Chuo University); Dohi, Tetsuji (University of Tokyo); Takao, Hiroyuki (Jikei University School of Medicine)

14:45-15:00
Effect of Respiration on the Characteristic Ratios of Oscillometric Pulse Amplitude Envelope in Blood Pressure Measurement
Gui, Yiyan (Southern Univ. of Science and Technology); Chen, Fei* (Southern Univ. of Science and Technology); Murray, Alan (Newcastle Univ.); Zheng, Dingchang (Anglia Ruskin Univ.)

13:30-13:45
Ebrahimi, Ali* (Johns Hopkins Univ.); He, Changyan (Beihang Univ.); Roizenblatt, Marina (Johns Hopkins Univ.); Patel, Niravkumar (Johns Hopkins Univ.); Sefati, Shahriar (Johns Hopkins Univ.); Gehlbach, Peter (Johns Hopkins Medical Institute); Iordachita, Iulian (Johns Hopkins Univ.)

14:00-14:15
Non-Contact Tissue Ablations with High-Speed Laser Scanning in Endoscopic Laser Microsurgery
Acemoglu, Alperen* (Istituto Italiano di Tecnologia); Mattos, Leonardo (Istituto Italiano di Tecnologia)

14:15-14:30
Evaluation of a Force-Sensing Handheld Robot for Assisted Retinal Vein Cannulation
Gonen, Berk* (Johns Hopkins Univ.); Patel, Niravkumar (Johns Hopkins Univ.); Iordachita, Iulian (Johns Hopkins Univ.)

14:30-14:45
Adaptation of Translated Frame-Based Approach for Forward Kinematics in a Radiosurgical Snake-Like Robot
Omisore, Olutunjii Mumini* (Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences); Shipeng, Han (Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences); Ren, Lingxue (Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences); Zhao, Zhichun (Chengdu University of Technology, Chengdu); Wang, Lei (Shenzhen Institutes of Advanced Technology)

14:45-15:00
Robotics-Assisted Surgical Skills Evaluation based on Electrocoagulation Activities
Shahbazi, Mahya* (The University of Western Ontario, Canadian Surgical Technologies and Advanced Robotics (CSTAR)); Poursartip, Behnaz (Western University); Siroen, Karen (London Health Sciences Centre); Schlachta, Christopher (Western University); Patel, Rajni (London Health Sciences Centre)

13:30-13:45
Estimating the Quality of Electroconvulsive Therapy Induced Seizures using Decision Tree and Fuzzy Inference System Classifiers
Al-kaysi, Alaa* (University of Technology Sydney); Al-Ani, Ahmed (University of Technology, Sydney); Galvez, Veronica (University of NSW); Loo, Colleen (School of Psychiatry, University of New South Wales); Ling, Sai Ho, Steve (University of Technology Sydney); Boonstra, Tjeerd W. (University of New South Wales)

14:00-14:15
Acute Hemodynamic Effects of Vagus Nerve Stimulation in Conscious Hypertensive Rats
Anoni, Elizabeth (University of Minnesota); Tolkacheva, Elena* (University of Minnesota)

14:15-14:30
Neurophysiologic and Chronic Safety Testing of a Miniaturized Active Implanted Device with Integrated Electrodes for Bioelectronic Medicine Applications
Levine, Yaakov* (SetPoint Medical, Inc.); Simon, Jesse (SetPoint Medical, Inc.); Fallys, Michael (SetPoint Medical, Inc.)

14:30-14:45
A 41.2 nJ/class, 32-Channel On-Chip Machine Learning Classifier for Epileptic Seizure Detection
Taghavi, Milad* (California Institute of Technology); Allahgholizade Hagh, Benyamin (California Institute of Technology); Farivar, Masoud (Google); Shoaran, Mahsa (Cornell University); Emami, Azita (Caltech)

14:45-15:00
A Novel Numerical Approach to Stimulation of a Specific Brain Region using Transcranial Focused Ultrasound
Park, Tae Young (Korea Institute of Science and Technology (KIST)); Pahk, Ki Joo (Center for Bionics, BioMedical Research Institute, Korea Institute of Science and Technology KIST); Kim, Hyunmin* (Korea Institute of Science and Technology)

13:30-13:45
Deep Learning for Medication Assessment of Individuals with Parkinson’s Disease using Wearable Sensors
Hssayeni, Murtadha Dawood (University of Technology-Baghdad); Adams, Jamie (University of Rochester and Center for Health + Technology (CHeT)); Ghoraani, Behnaz* (Florida Atlantic University)

13:45-14:00
Fusion of Deep Convolutional Neural Networks for Microaneurysm Detection in Color Fundus Images
Harangi, Balazs* (Univ. of Debrecen); Toth, Janos (Univ. of Debrecen, Faculty of Informatics); Hajdu, Andras (Univ. of Debrecen)
14:00-14:15 FrCT16.3
**Predicting Lymph Node Metastasis in Head and Neck Cancer by Combining Many-Objective Radiomics and 3-Dimensional Convolutional Neural Network through Evidential Reasoning**
Zhou, Zhiqiu* (UT Southwestern Medical Center); Liu, Yan (UT Southwestern Medical Center); Scher, David (UT Southwestern Medical Center); Qiongwen, Zhang, Qing (UT Southwestern Medical Center); Chia-Jen, Liao (UT Southwestern Medical Center); Steve, Jiang (UT Southwestern Medical Center); Wang, Jing (University of Texas Southwestern Medical Center)

14:15-14:30 FrCT16.4
**Deep Residual Networks for Automatic Sleep Stage Classification of Raw Polysomnographic Waveforms**
Olesen, Alexander Neergaard* (Technical University of Denmark); Jensum, Pou (University of Copenhagen, Denmark); Peppard, Paul (University of Wisconsin School of Medicine and Public Health); Mignot, Emmanuel (Stanford University); Sorensen, Helge B D (Technical University of Denmark)

14:30-14:45 FrCT16.5
**Predict In-Hospital Code Blue Events using Monitor Alarms through Deep Learning**
Xiao, Ran* (Univ. of California San Francisco); King, Johnathan (Univ. of California, San Francisco); Villaroman, Andrea (Univ. of California, San Francisco); Do, Duc H. (Univ. of California Los Angeles); Boyle, Noel G. (Univ. of California Los Angeles); Hu, Xiao (Univ. of California, San Francisco)

14:45-15:00 FrCT16.6
**Personalized Prediction of Asthma Severity and Asthma Attack for a Personalized Treatment Regimen**
Do, Quan* (New Mexico State University); Doig, Alexa (New Mexico State University); Tran, Son (New Mexico State University); Chaudri, Jamil (Marshall University)

13:30-13:45 FrCT17.1
**Temperature Profiling of Ex-Vivo Organs during Ferromagnetic Nanoparticles-Enhanced Radiofrequency Ablation by Fiber Bragg Grating Arrays**
Jebudilna, Madina* (Nazarbayev University); Korgarbayev, Sanzhar (Nazarbayev University); Korobeiynk, Alina (Nazarbayev University); Inglezakis, Vassilis (Nazarbayev University); Tosi, Daniele (Nazarbayev University)

13:45-14:00 FrCT17.2
**Doubling the Signal Quality of Smartphone Camera Pulse Oximetry using the Display Screen as a Controllable Selective Light Source**
Holz, Christian* (Microsoft Research); Ofek, Eyal (Microsoft Research)

14:00-14:15 FrCT17.3
**Towards Finger Motion Capture System using FBG Sensors**
Jang, Minsu (Korea Institute of Science and Technology); Kim, Junsik (Korea Institute of Science and Technology); Kang, Kyumin (Korea Institute of Science and Technology); Kim, Jinsuouk (Korea Institute of Science and Technology); Yang, Sungwook* (Korea Institute of Science and Technology)

14:15-14:30 FrCT17.4
**Dental pH Opti-Wand (DPoW): Measuring Oral Acidity to Guide Enamel Preservation**
Sharma, Manuja* (Univ. of Washington); Carson, Matthew D. (Univ. of Washington); Graham, Jasmine Y. (Univ. of Washington); Nelson, Leonard Y. (Univ. of Washington); Patel, Shwetak (Univ. of Washington); Seibul, Eric (Univ. of Washington)

13:30-13:45 FrCT18.1
**Performance Evaluation and Improvement of PER and Throughput in Galvanic-Coupling Intra-Body Communication Systems**
Ito, Kenichi* (Nagita Institute of Technology)

13:45-14:00 FrCT18.2
**Wireless Channel Modeling for Leadless Cardiac Pacemaker: Effects of Ventricular Blood Volume**
Bose, Pritam* (Univ. of Oslo and Oslo Univ. Hospital); Kaileghi, Ali (Oslo University Hospital); Balasingham, Ilangko (Oslo University Hospital and Norwegian Univ. of Science and Technology)
Improved Training Paradigms and Motor-Decode Algorithms: Results from Intact Individuals and a Recent Transradial Amputee with Prior Complex Regional Pain Syndrome
George, Jacob A.* (University of Utah); Brinton, Mark (University of Utah); Duncan, Christopher (University of Utah); Hutchinson, Douglas (University of Utah); Clark, Gregory (University of Utah)

A Pilot Study on using Forcemography to Record Upper-Limb Movements for Human-Machine Interactive Control
Zhang, Nanxin (University of Chinese Academy of Sciences); Li, Xiangxin (Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences); Samuel, Oluowatomi Williams (Shenzhen Institutes of Advanced Technology); Huang, Pin-Gao (Chinese Academy of Sciences); Fang, Peng* (Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences); Li, Guanglin (Shenzhen Institutes of Advanced Technology)

Finger-Wearable Blood Pressure Monitor
Narasimhan, Ravi* (Verily Life Sciences LLC); Parlikar, Tushar (Massachusetts Institute of Technology); Verghese, George (Massachusetts Institute of Technology); McConnell, Michael V. (Stanford School of Medicine)

Using Moving Average Method to Recognize Systole and Diastole on Seismocardiogram without ECG Signal
Dinh, Anh* (University of Saskatchewan); Luu, gia Loc (University of Saskatchewan)

A Hybrid Hierarchical Framework for Free Weight Exercise Recognition and Intensity Measurement with Accelerometer and ECG Data Fusion
Qi, Jun* (Liverpool John Moores University); Yang, Po (Liverpool John Moores University); Wariach, Atif (Liverpool John Moores University); Hanneghan, Martin (Liverpool John Moores University); Tang, Stephen (Liverpool John Moores University)

A Low-Cost, Smartphone-Only Pulse Transit Time Measurement System using Cardio-Mechanical Signals and Optical Sensors
Yang, Chenxi (Stevens Institute of Technology); Dong, Yudi (Stevens Institute of Technology); Chen, Yingying (Rutgers University); Tavassolian, Negar* (Stevens Institute of Technology)

Detecting Cardiac Activity by Capacitive Electrodes from a Single Point on the Wrist
He, Shan* (University of Ottawa); Li, Xinde (Liodigital Corp., Toronto, ON Canada); Batkin, Izmail (ottawa University); Dajani, Hilmi (University of Ottawa); Bolic, Miodrag (University of Ottawa)

Performance of Graphene ECG Electrodes under Varying Conditions
Beach, Christopher* (Univ. of Manchester); Karim, Nazmul (Univ. of Manchester); Casson, Alexander James (Univ. of Manchester)

Monitoring of Pulse Pressure and Arterial Pressure Waveform Changes during the Valsalva Maneuver by a Portable Ultrasound System
Seo, Joohyun* (Massachusetts Institute of Technology); Sodini, Charles (Massachusetts Institute of Technology); Lee, Hae-Seung (Massachusetts Institute of Technology)

Kick LL: A Smartwatch for Monitoring Respiration and Heart Rate using Photoplethysmography
Hoilett, Orlando* (Purdue University); Twibell, Ashlyn (Purdue University); Srivastav, Rohit (Purdue University); Linnes, Jacqueline Callihan (Purdue University)

A Novel Electrochemical Sensor for Non-Invasive Monitoring of Lithium Levels in Mood Disorders
Criscuolo, Francesca* (EPFL); Taurino, Irene (EPFL); Carrara, Sandro (EPFL - Swiss Federal Institute of Technology - Lausanne); De Micheli, Giovanni (EPFL)

Drinking Water Quality Monitoring: An Alternative Approach to Microbial Contamination Events
Simões, João Carlos Gomes (ChongQing Technology & Business University (CBTU), University College of Southeast Norway (USN)); Dong, Tao* (University College of Southeast Norway - HSN, TekMar); Yang, Yili (Nanyang City Center Hospital); Silva, Carlos Alberto Batista (Universidade do Minho)

A Precise Sampling Strip with Microstructures
Kamiya, Haruka* (Keio University); Ota, Takashi (Keio University); Yasuga, Hiroki (Keio University); Miki, Norihisa (University)

Low Power Consumption Device for Biological Stability Monitoring in Drinking Water
Grønvold, Fredrik Sommerfelt (Univ. College of Southeast Norway); Simões, João Carlos Gomes (ChongQing Technology & Business Univ. (CBTU), Univ. College of Southeast Norway (USN)); Berntsen, Helene (Univ. College of Southeast Norway); Roseng, Lars Eric (Univ. College of Southeast Norway); Dong, Tao* (Univ. College of Southeast Norway - HSN, TekMar)

Detection of Human Chorionic Gonadotropin (hCG) Hormone using Digital Lateral Flow Immunoassay
Hamad, Eyad* (German Jordanian University); Hawamdeh, Ghadeer (Biomedical Engineering Dept., German Jordanian University); Abu Jarad, Noor (Biomedical Engineering Dept., German Jordanian University); Yasin, Omar (Biomedical Engineering Dept., German Jordanian University); Al-Gharabli, Samer (Pharmaceutical and Chemical Engineering Dept., German Jordanian University); Shadfan, Raed (Atlas Medical Co. Sahab Free Zone Area, Amman)

Hermetic Packaging for Implantable Microsystems: Effectiveness of Sequentially Electroplated AuSn Alloy
Szostak, Katarzyna Maria* (Imperial College London); Constandinou, Timothy (Imperial College of Science, Technology and Medicine)

Microfluidic Spectrophotometer for Neurotransmitter Detection based on Gold Nanoparticles: Preliminary Results
Niyomnabza, Shimwe Dominique* (Universite Laval); Boisselier, Elodie (Universite Laval); Boukdoum, Mounir (Universite de Quebec at Montreal); Miled, Amine (Laval University)
Comparison between Reheating Behavior in Women with Raynaud's Phenomenon and Not Diagnosed Women using Thermography

Campos, Mariane* (Federal University Technology - Paraná); Heimbecher, Catia (Federal University Technology - Paraná); Romanelli, Eduardo F. R. (UTFPR - Federal University of Technology - Paraná); Ripka, Wagner L. (UTFPR- Federal Technological University of Paraná); Ulbricht, Leandra (UTFPR - Federal University of Technology - Paraná); Stadnik, Adriana Maria Wan (UTFPR - Federal Technological University of Paraná)

Selective Collection and Condensation of Exhaled Breath for Glucose Detection

Tansakala, Divya* (Purdue Univ.); Ng, Gabriel (Purdue Univ.); Smith, Michael (Purdue Univ.); Bendell, Jessica (Purdue Univ.); Linnes, Jacqueline Callihan (Purdue Univ.)

Intuitive Visualization of Innervation Zones based on Surface-EMG Signals

Kiese, Constanze* (Dr. von Hauner Children's Hospital, Dept. of Pediatric Surgery, Clinics of the University of Munich); Landgraf, Hans-Peter (AEGAEON Technologies GmbH); Danzer, Anna-Lena (Dept. of Neurology, University of Regensburg); Schickling, Benedikt (OTH Regensburg, Lab for Measurement and Control Technology, Faculty of Mechanical Engineering, Regensburg); Nicolau Torra, Anna (OTH Regensburg, Lab for Measurement and Control Technology, Faculty of Mechanical Engineering, Regensburg); Reitmeier, Torsten (OTH Regensburg, Lab for Measurement and Control Technology, Faculty of Mechanical Engineering, Regensburg); Schulte-Mattler, Wilhelm (Dept. of Neurology, University of Regensburg); von Schweinitz, Dietrich (Dr. von Hauner Children's Hospital, Dept. of Pediatric Surgery, Clinics of the University of Munich); Ketterl, Hermann (OTH Regensburg, Lab for Measurement and Control Technology, Faculty of Mechanical Engineering, Regensburg)

Design and Evaluation of a Portable Smart-Phone based Peripheral Neuropathy Test Platform

Jacobs, Peter G. (Oregon Health & Science University); Hanaway, Peter (All Systems Go); Leitschu, Joseph (Oregon Health & Science University); Condon, John (Pro-tech); Rajbeharrysingh, Uma (Johns Hopkins University); Mosquera-Lopez, Clara* (Oregon Health & Science University); Guidarelli, Carolyn (Oregon Health & Science University); Winters-Stone, Kerri (Oregon Health & Science University)

Low-Noise Transimpedance Amplifier Design using Chopper-Stabilized Technique for Nanopore Applications

Park, Youkeyong (Gachon University); Yun, Jeong-dae (Gachon University); Kim, Jungsuk* (Gachon University)

Point-of-Care Assessment of Folate Status using a Fluorescence Lateral Flow Assay

Rey, Elizabeth* (Cornell University); Finkelsstein, Julia (Cornell University); Erickson, David (Cornell University)

Black-Box Model Identification of Physical Activity in Type-1 Diabetes Patients

Faccioli, Simone (University of Padua); Ozaslan, Basak (University of Virginia); Garcia-Tirado, Jose (University of Virginia, Center for Diabetes Technology); Breton, Marc D. (University of Virginia); Del Favero, Simone* (University of Padova)

Bibliometric Research

Gimenez, Francielli Vanessa (Universidade Tecnológica Federal do Paraná); Stadnik, Adriana Maria Wan* (UTFPR - Federal Technological University of Paraná); Maldaner, Marcelo (Federal University of Technology – Paraná)
17:15-19:00 FrPoS-05.5 Development of a Human Infant Feeding Reinforcement System
Dharmavaram, Poornima (University at Buffalo, The State University of New York); Kong, Kai Ling (University at Buffalo, NY); Anzma-Fraca, Stephanie (University at Buffalo, The State University of New York); Epstein, Leonard (University at Buffalo, The State University of New York); Titus, Albert* (University at Buffalo, The State University of New York)

17:15-19:00 FrPoS-05.6 3-Stage Miller Cross-Coupled Load based Photodiode Readout for Glucose Monitoring
Vinchi, Bakul* (EPFL Lausanne); Dehollain, Catherine (Ecole Polytechnique Federale de Lausanne); Berger, Daniel (EPFL)

17:15-19:00 FrPoS-06.1 Identification of the Relationships between Noncontact Capacitive Sensing Signals and Continuous Grasp Forces: Preliminary Study
Zheng, Enhao* (Institute of Automation, Chinese Academy of Sciences); Wang, Qining (Peking University); Qiao, Hong (Institute of Automation, Chinese Academy of Sciences)

17:15-19:00 FrPoS-06.2 A Novel Variable Stiffness Compliant Finger Exoskeleton for Rehabilitation based on Electromagnet Control
Liang, Renghao (Xi’an Jiao Tong University); Xu, Guanhua* (Xi’an Jiao Tong University); Li, Min (School of Mechanical Engineering, Xi’an Jiao Tong University); Zhang, Sicong (Xi’an Jiao Tong University); Luo, Ailing (Xi’an Jiao Tong University); Tao, Tangfei (Xi’an Jiao Tong University)

17:15-19:00 FrPoS-06.3 Dynamically Mapping Socket Loading Conditions during Real Time Operation of an Upper Limb Prosthesis
Fu, Jonathan* (Johns Hopkins University); Nguyen, Harrison (Johns Hopkins University); Kim, Dong Woo (Johns Hopkins University); Shallall, Christopher (Johns Hopkins University); Cho, Sue Min (Johns Hopkins University); Osborn, Luke (Johns Hopkins University); Thakor, Nitish (Johns Hopkins University)

17:15-19:00 FrPoS-06.4 Modeling of Hand and Forearm Link using Inertial Sensors
Kitano, Keisuke* (Doshisha University); Ito, Akihito (Doshisha University); Tsuchiuchi, Nobutaka (Doshisha University)

17:15-19:00 FrPoS-06.5 A Practical Approach for Evaluation of Socket PINSTONING for Lower Limb Amputees
Vempala, Vibhavari* (North Carolina State University); Liu, Ming (NC State University); Kamper, Derek (North Carolina State University); Huang, He (North Carolina State University and University of North Carolina at Chapel Hill)

17:15-19:00 FrPoS-06.6 Development of Sensorised Resistance Band for Objective Exercise Measurement: Activities Classification Trial
Ma, Jianjia (Loughborough University); Hogervorst, Eef (Loughborough University); Magistro, Daniele (Loughborough University); Choulilas, Vassilios (Loughborough University); Zecca, Massimiliano* (Loughborough University)

17:15-19:00 FrPoS-06.7 Exploration of Metrics for Leg Length Discrepancy using a Wearable Gait Analysis System
Marquez, J. Sebastian* (Florida International University); Atri, Roozbeh (Florida International University); Siddiquee, Masudur R. (Florida International University); Leung, Connie (Florida International University); Bai, Ou (Florida International University)

17:15-19:00 FrPoS-06.8 Design of a Low-Cost MRI Compatible Plantarflexion Force Measurement Device
Alexandre, Didier* (Kessler Foundation); Androwis, Ghait (Kessler Foundation, and New Jersey Institute of Technology); Saleh, Soha (Kessler Foundation); Benony, Betty (Marquette Getinge Group); Yue, Guang (Kessler Foundation)

17:15-19:00 FrPoS-07.1 Automatic Detection of Preferred Retinal Locus (PRL) for Low Vision Rehabilitation using Oculometrics Analysis
Yow, Ai Ping (Institute for Infocomm Research); Wong, Damon* (Institute for Infocomm Research); Lim, Tock Han (Tan Tock Seng Hospital); Laude, Augustinus (Tan Tock Seng Hospital)

17:15-19:00 FrPoS-07.2 A Novel Method to Determine Dynamic Temperature Trends Applied to In-Shoe Temperature Data during Walking
Cutajar, Lucianne (University of Malta); Falzon, Owen* (University of Malta); Mizzi, Anabelle (University of Malta); Swaine, Ian (University of Greenwich); Springett, Kate (Canterbury Christ Church University); Mizzi, Stephen (University of Malta)

17:15-19:00 FrPoS-07.3 Deviations of Acoustic Low-Level Descriptors in Speech Features of a Set of Triplets, One with Autism
Yatawatte, Hasini* (University of Notre Dame); Poellabauer, Christian (University of Notre Dame); Schneider, Sandra (Saint Mary’s College); Latham, Susan (Saint Mary’s College)

17:15-19:00 FrPoS-07.4 Interval Kernels for Combining Biometric Measurements from Multiple Prostate Samples Per Patient in Prognostic Models with Transductive Semi-Supervised Support Vector Regression
Khan, Faisal* (Rutgers, The State University of New Jersey)

17:15-19:00 FrPoS-08.1 Diagnosis of Prostate Cancer in a Chinese Population using Machine Learning Methods
Wang, Guanjin* (The Hong Kong Polytechnic University); Teoh, Jeremy Yuen-Chun (Chinese University of Hong Kong); Choi, Kup-Sze (Centre for Smart Health, School of Nursing, The Hong Kong Polytechnic University)

17:15-19:00 FrPoS-08.2 Automatic System for Obstructive Sleep Apnea Events Detection using Convolutinal Neural Network
Cen, Ling (Nanyang Technological University); Yu, Zhuliang (South China University of Technology, Chinese); Kluge, Tilman (Austrian Institute of Technology); Ser, Wee* (Nanyang Technological University)

17:15-19:00 FrPoS-08.3 A Fully Automated System for Sizing Nasal PAP Masks using Facial Photographs
Johnston, Benjamin* (University of Sydney); de Chazal, Philip (University of Sydney)
Rapid Anxiety and Depression Diagnosis in Young Children Enabled by Wearable Sensors and Machine Learning
McGinnis, Ryan S.* (University of Vermont); McGinnis, Ellen (University of Vermont); Hruschak, Jessica (University of Michigan); Lopez-Duran, Nestor (University of Michigan); Fitzgerald, Kate (University of Michigan); Rosenblum, Katherine L. (University of Michigan); Muzik, Maria (University of Michigan)

SCOSY: A Biomedical Collaboration Recommendation System
Guerra Marin, Jorge* (Children's Hospital of Philadelphia); Quan, Wei (Drexel University); Li, Kai (Drexel University); Ahumada, Luis (Johns Hopkins All Children's Hospital); Winston, Flaura (Children's Hospital of Philadelphia); Desai, Bimal (Children's Hospital of Philadelphia)

Identification of Optimum Panel of Blood-Based Biomarkers for Alzheimer's Disease Diagnosis using Machine Learning
Eke, Chima Stanley* (School of Computing, Electronics, and Mathematics, University of Plymouth); Jammeh, Emmanuel (Plymouth University, School of Computing and Mathematics); Li, Xinzhong (Medical Statistics/Bioinformatics, Plymouth University); Carroll, Camille (Peninsula Schools of Medicine and Dentistry, Plymouth University); Pearson, Stephen (Re:Cognition Health, UK); Ieacohar, Emmanuel (University of Plymouth)

Prediction of One-Year Transplant-Free survival after Norwood Procedure based on the Pre-Operative Data
Ahumada, Luis (Johns Hopkins All Children's Hospital); Peck, Jacquelin (Johns Hopkins All Children's Hospital); Guerra Marin, Jorge (Children's Hospital of Philadelphia); Do, Nhue (Johns Hopkins All Children's Hospital); Gupta, Moneshaa (Johns Hopkins All Children's Hospital); Ghazarian, Sharon (Johns Hopkins All Children's Hospital); Rehman, Mohamed (The Children's Hospital of Philadelphia); Jacobs, Jeffrey P. (Johns Hopkins All Children's Hospital); Jalali, Ali* (Villanova University)

3D Shape-Based Body Composition Prediction Model using Machine Learning
Lu, Yao* (George Washington University); McCuade, Scott (George Washington University); Hahn, James (George Washington University)

A Spark-Based Analytic Pipeline for Seizure Detection in EEG Big Data Streams
Estampanah Sendi, Mohammad Sadegh (Georgia Institute of Technology); Heydarzadeh, Mehrdad (University of Texas at Dallas); Mahmoudi, Babak* (Emory University)

Personalized Gaussian Processes for Forecasting of Alzheimer’s Disease Assessment Scale-Cognition Sub-Scale (ADAS-Cog13)
Utsumi, Yuria* (MIT); Rudovic, Ogjen (Massachusetts Institute of Technology); Peterson, Kelly (Massachusetts Institute of Technology); Guerrero, Ricardo (Imperial College London); Picard, Rosalind (Massachusetts Institute of Technology)

Eye Movements – An Early Marker of Cognitive Dysfunctions
Chatterjee, Debatri (TCS Innovation Lab); Gavas, Rahul* (TCS Research and Innovation, Tata Consultancy Services Ltd.); Chakravarty, Kingshuk (Tata Consultancy Services Ltd.); Sinha, Aniruddha (Tata Consultancy Services Ltd.); Lahiri, Uttama (Indian Institute of Technology, Gandhinagar)
FrPoS-10.2
Methodologies for Workforce Optimization in Hospital's Emergency Dept.
Paul, Soubhik (Philips India Ltd.); Palanisamy, Krishnamoorthy (Philips India Ltd.); M.S, Dinesh* (Philips Research India); Swaminathan, Kailash (Philips Research India); Bussa, Nagaraju (Philips Research Asia - Bangalore); Mariyanna, Shiva (Philips India Ltd.)

FrPoS-10.3
A Different Approach for Digital Pathology: Lexicon-Semantic Analysis of Histopathological Reports for the Assessment of Their Quality
Vega-Barbas, Mario* (Karolinska Institutet); Seoane, Fernando (Karolinskia Institutet)

FrPoS-10.4
How is the Doctor Feeling? ICU Provider Sentiment is Associated with Diagnostic Imaging Utilization
Ghassemi, Mohammad (Massachusetts Institute of Tech.); Al-Hanai, Tuka* (Massachusetts Institute of Tech.); Raffa, Jesse (Massachusetts Institute of Tech.); Mark, Roger (Massachusetts Institute of Tech.); Nemati, Shamim (Emory Univ. School of Medicine); Chokshi, Falgun (Emory Univ. School of Medicine)

FrPoS-10.5
Can Mixed-Reality Improve the Training of Medical Procedures?
Azmi, Ehsan* (Johns Hopkins University); Winkler, Alexander (Johns Hopkins University); Tucker, Emerson (Johns Hopkins University); Qian, Long (Johns Hopkins University); Doswell, Jayfus (Juxtopia LLC); Navab, Nasser (Technische Universität München); Kazazides, Peter (Johns Hopkins University)

FrPoS-10.6
Definition and Representation of a Process to Engineer a Multi-User Information Management Application for Continuity of Care
Hernandez, Liss (Universidad Politécnica de Madrid); Merino, Beatriz (Universidad Politécnica de Madrid); Fico, Giuseppe* (Universidad Politécnica de Madrid); Casasus, Maria Alonso (Hospital Clínico San Carlos); Rodríguez Machuca, Mª José (Hospital Clínico San Carlos); Ortuño-Soriano, Ismael (Hospital Clínico San Carlos); Fernandez-del-Palacio, Encarnación (Hospital Clínico San Carlos); Cabrera-Umpierrez, Maria Fernanda (Universidad Politécnica de Madrid); Seara-Aguilar, Germán (Hospital Clínico San Carlos); Arredondo, Maria Teresa (Universidad Politécnica de Madrid)

FrPoS-10.7
Evaluating ICU Clinical Severity Scoring Systems and Machine Learning Applications: APACHE II/IVA Case Study
Balkan, Baran (University of Arizona); Essay, Patrick (University of Arizona); Subbian, Vignesh* (University of Arizona)

FrPoS-10.8
A Standing Function Evaluation System based on Virtual Light Touch Contact and Factor Analysis
Sakata, Mami* (Yokohama National University); Kawahara, Dai (Yokohama National University); Shima, Keisuke (Yokohama National University); Izuami, Hiroyuki (University of Occupational and Environmental Health, Japan); Nagara, Tomoyuki (JFE Steel Corp.); Shimatani, Koji (Prefectural University of Hiroshima)

FrPoS-11.1
Personal Health Data: Access and Perceived Value in Denmark
Karampela, Maria* (IT Univ. of Copenhagen); Grundstrom, Casandra (Univ. of Oulu); Minna, Isomursu (IT Univ. of Copenhagen)

FrPoS-11.2
Robust Ensemble Learning to Identify Rare Disease Patients from Electronic Health Records
Colbaugh, Richard (Volv Global); Glass, Kristin* (Volv Global); Rudolf, Christopher (Volv Global); Tremblay, Mike (Volv Global)

FrPoS-11.3
Towards the Establishment of a Biomedical Ontology for the Primary Sjögren's Syndrome
Pezoulas, Vasileios C. (Univ. of Ioannina); Exarchos, Themis P. (Unit of Medical Tech & Intelligent Info); Andronikou, Vassiliki (National Technical Univ. of Athens); Varvarigou, Theodora (National Technical Univ. of Athens); Tzioufas, Athanasios (National and Kapodistrian Univ. of Athens); De Vita, Salvatore (Udine Univ.); Fotiadis, Dimitrios I.* (Univ. of Ioannina)

FrPoS-11.4
A FHIR-Enabled Streaming Sepsis Prediction System for ICUs
Henry, Joel (Georgia Institute of Technology); Lynch, Dennis (Georgia Institute of Technology); Mals, Jeff (Georgia Institute of Technology); Shashikumar, Supreeth Prajwal (Georgia Institute of Technology); Holder, Andre (Emory University School of Medicine); Sharma, Ashish (Emory University); Nemati, Shamim* (Emory University School of Medicine)

FrPoS-11.5
An Empirical Study of Questionnaires for the Diagnosis of Pediatric Obstructive Sleep Apnea
Ahmed, Sadia* (Univ. of Texas at Arlington); Hasani, Sona (Univ. of Texas at Arlington); Koone, Mary (Univ. of Texas at Arlington); Thirumuruganathan, Saravanaan (Qatar Computing Research Institute); Diaz-Abad, Montserrat (Univ. of Maryland School of Medicine); Mitchell, Ron (Univ. of Texas Southwestern Medical Center); Isaia, Amal (Univ. of Maryland School of Medicine); Das, Gautam (Univ. of Texas at Arlington)

FrPoS-11.6
A Distributed Storage Model for Healthcare Big Data Designed on HBase
Zheng, Lu (Research Center for BioMedical Information Technology, Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences); Li, Qi (Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences); Li, Ye (Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences); Cai, Yun-Peng* (SIAT)

FrPoS-11.7
Comparison of Gaussian Processes Methods to Linear Methods for Imputation of Sparse Physiological Time Series
Nickerson, Paul (Univ. of Florida); Baharlipo, Raheleh (Univ. of Florida); Dawoudi, Anis* (Univ. of Florida); Bihorac, Azra (Univ. of Florida); Rashidi, Parisa (Univ. of Florida)

FrPoS-11.8
Effects of Consecutive Moderately Cold Days on Cardiovascular Disease Mortality in Shenzhen, China: A Preliminary Study
Chen, Runge (Shenzhen Institutes of Advanced Tech., Chinese Academy of Sciences); Miao, Fen (Shenzhen Institutes of Advanced Tech., Chinese Academy of Sciences); Zheng, Jing (Shenzhen Medical Information Center); Wu, Yongsheng (Shenzhen Center for Disease Control and Prevention); Li, Ye* (Shenzhen Institutes of Advanced Tech., Chinese Academy of Sciences)

FrPoS-11.9
SMCT – An Innovative Tool for Mental Health Analysis of Twitter Data
Watkins, Nathan G. (University of New South Wales); Lovell, Nigel H. (University of New South Wales); Larsen, Mark Erik* (University of New South Wales)
Endoscopic Images of Multiple Databases
Network Features Learnt from White Light and Narrow Band
Localisation of Colorectal Polyps by Convolutional Neural
Images using a Transferring Convolutional Neural Network

Magnetic Resonance Imaging Connectivity Networks
Adapted K-Core Decomposition and Visualization for Functional
Radiomics: A Novel CT-Based Method of Predicting
Postoperative Recurrence in Ovarian Cancer
Multimodal Analysis
Exploring Different Impaired Speed of Genetic-Related Brain
Function and Structures in Schizophrenic Progress using
Automatic Tooth Segmentation of Dental Mesh using a
Transverse Plane

AutoSurgical Suturing with Depth Constraints:
Image-Based Metrics to Assess Skill
Surgical Suturing with Depth Constraints:
Image-Based Metrics to Assess Skill
Kil, Irfan* (Clemson University); Groff, Richard E (Clemson University); Singapou, Ravikiran (Clemson University)

Exploring Different Impaired Speed of Genetic-Related Brain
Function and Structures in Schizophrenic Progress using

Design, Fabrication and Validation of a Precursor Pulsed
Electromagnetic Field Device for Bone Fracture Repair
Daish, Christian* (RMIT Univ.); Blanchard, Romane (Univ. of Melbourne); Duch, Serena (St Vincent’s Dept. of Surgery, Univ. of Melbourne); Onofrillo, Carmine (St Vincent’s Dept. of Surgery, Univ. of Melbourne); Augustine, Cheryl (St Vincent’s Dept. of Surgery, Univ. of Melbourne); Fox, Kate (RMIT Univ.); Pivonka, Peter (St Vincent’s Dept. of Surgery, Univ. of Melbourne); Pirogova, Elena (RMIT Univ.)

A Steerable Endoscope for Transnasal Skull Base Surgery
Kwon, Seong-il (Univ. of Science & Technology, Korea Institute of Science & Technology); Ryu, Geunwoong (Korea Institute of Science and Technology); Kim, Kent* (Korea Institute of Science and Technology)

A Reference-Less Time-Division-Duplex Transceiver IC for a 5-Fr 6-Electrode Renal Denervation Catheter in 0.18-μm 70-V BCDMOS
Yang, Jaehyeok* (KAIST); Jung, Seohyun (KAIST); Hwang, Gunpil (KAIST); Kwon, Kyeongha (KAIST); Jeon, Sejun (KAIST); Bae, Hyeon-Min (KAIST)

A Phantom Study to Create Synthetic CT from Orthogonal Two-Dimensional Cine MRI and Evaluate the Effect of Irregular Breathing
Müller, Marco* (University of Sydney); Paganelli, Chiara (Politecnico di Milano); Keall, Paul John (University of Sydney)

Two-Dimensional Cine MRI and Evaluate the Effect of Irregular Breathing
Müller, Marco* (University of Sydney); Paganelli, Chiara (Politecnico di Milano); Keall, Paul John (University of Sydney)

A Steerable Endoscope for Transnasal Skull Base Surgery
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Yang, Jaehyeok* (KAIST); Jung, Seohyun (KAIST); Hwang, Gunpil (KAIST); Kwon, Kyeongha (KAIST); Jeon, Sejun (KAIST); Bae, Hyeon-Min (KAIST)

An Energy Efficient Programmable Neuro-Mimicking Stimulator IC for Implantable Electroceuticals Systems
Lee, Hyungwoo* (Samsung Advanced Institute of Technology); Kim, Sang Joon (Samsung Electronics)

Electrical Characterization of Human Biological Tissue for Irreversible Electroproportion Treatments
Beitel-White, Natalie* (Virginia Polytechnic Institute and State University); Bhonsle, Suyashree (Virginia Tech); Martin, Robert C. G. (University of Louisville); Davalos, Rafael (Virginia Tech)
A 32-Channel Wireless Configurable System for Electrical Stimulation of the Stomach

AbuKhalaf, Zaid (New York Institute of Technology); Javan Khoshkhalgh, Amir (New York Institute of Technology); Airofati, Wahib (New York Institute of Technology); Farajdavar, Aydin* (New York Institute of Technology)

Impact of Electrode Number on the Performance of High-Definition Transcranial Direct Current Stimulation (HD-dTCS)

Wang, Yushan* (Univ. of California Los Angeles); Zhou, Hanyue (Univ. of California Los Angeles); Li, Ying (Univ. of California Los Angeles); Liu, Wentai (Univ. of California Los Angeles)

Uterosacral Nerve Stimulation via Cuff Electrode: A Preliminary Animal Study for Potential Application to Treatment of Preterm Labor

Lee, Ye Jae (Korea Institute of Science and Technology); Eom, Kyu shik (Korea Institute of Science and Technology); Kim, Hee Youn (Dept. of Obstetrics and Gynecology, Korea University Medical Center); Ahn, Ki Hoon (Dept. of Obstetrics and Gynecology, Korea University Medical Center); Lee, Soo Hyun* (Korea Institute of Science and Technology)

Ionic Conduction in Biological Nanopores Created by Ultrashort, High-Intensity Pulses

Qiu, Hao (Fort Valley state University); Wang, Xiaping* (Southeast Missouri State University); Choi, Anthony (Mercer University); Xie, Fei (Mount Vernon Nazarene University); Zhao, Wenbing (Cleveland State University)

Simulation of pH-Regulated Electrokinetic Ion Transport in Nanopores with Polyelectrolyte Brushes

Qiu, Hao (Fort Valley state University); Wang, Xiaping* (Southeast Missouri State University); Choi, Anthony (Mercer University); Zhao, Wenbing (Cleveland State University)

Cell Attachment on Inside-Outside Surface and Cell Encapsulation in Wall of Microscopic Tubular Scaffolds for Vascular Tissue-Like Formation

Duong Van, Thuy (University of Ulsan); Lee, Yeasol (University of Ulsan); Dang, Thi Thao (University of Ulsan); Nguyen, Trung (University of Ulsan); Phan, Huu Lam (Ulsan University); Shin, Daehyeon (University of Ulsan); Lee, YongKwan (University of Ulsan); Park, Hodersong (Ulsan University); Koo, Kyomin* (University of Ulsan); Hwang, Changho (Ulsan University Hospital); Lee, HyoSeok (University of Ulsan); Son, Hyewon (Dept. of BioMedical Engineering, University of Ulsan); Jang, Hojeong (Dept. of BioMedical Engineering, University of Ulsan); Back, Sung Hoon (University of Ulsan); Oh, Soek (University of Ulsan)

Application of Electrically Charged Carbon Nanodots@glass in DNA and Cell Engineering

Xie, Yingqi* (Nazarbayev University); Nurkesh, Ayana A. (Nazarbayev University); Keneshkanova, Zhilek (Nazarbayev University); Altaiykzy, Akerke (Nazarbayev University); Fan, Haiyan (Nazarbayev University)

Exploring New Treatment for Spinalized Rats by Synergising Robotic Rehabilitation System and Regenerative Medicine

Anopas, Dollaporn* (Nanyang Technological University); Lin, Junquian (Nanyang Technological University); Milbreta, Ulla (Nanyang Technological University); Lin, Vincent Po Hen (Nanyang Technological University); Chiu, Ching Shin (Nanyang Technological University); Wei, Seng Kwee (Tan Tock Seng Hospital); Er, Tow Peh (Tan Tock Seng Hospital); Chew, Sing Yian (Nanyang Technological University); Ang, Wei Tech (Nanyang Technological University)

Ultrashort, High-Intensity Pulses Ionic Conduction in Biological Nanopores Created by HD-dTCS

Silva, Luis Filipe Branco Alves da (ChongQing Tech & Business Univ., Univ. College of Southeast Norway, Norwegian Univ. of Life Sciences); Pires, Nuno M. M. (Univ. College of Southeast Norway and Institute of Applied Micro-Nano Science and Technology); Dong, Tao* (Univ. College of Southeast Norway - HSN, TekMar); Teien, Hans-Christian (Norwegian Univ. of Life Sciences); Yang, Yili (Nanyang City Center Hospital); Storebakke, Trond (Norwegian Univ. of Life Sciences); Salbu, Brit (Centre for Environmental Radioactivity (CERAD CoE), Norwegian Univ. of Life Sciences)

Calcium Mineralization and Osteopontin Expression by Osteoblasts Onto Graphene Oxide Coating on Anodized Titanium

Zeng, Qi (Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences); Zhang, Yi (Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences); Wu, Tianzhun* (Shenzhen Institutes of Advanced Technology (SIAT), Chinese Academy of Sciences (CAS)); Sun, Bin (Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, Shenzhen, China); Xia, Kai (Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences); Humayun, Mark (University of Southern California)

3D Nano-Crystal Platinum for High-Performance Neural Electrode

Chen, Zhicheng (Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences); Zhang, Jiajun (Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences), Wu, Tianzhun* (Shenzhen Institutes of Advanced Technology (SIAT), Chinese Academy of Sciences (CAS)); Sun, Bin (Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, Shenzhen, China); Xia, Kai (Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences); Humayun, Mark (University of Southern California)

Reduction the Initial-Burst Release of Doxorubicin from Polymeric Depot as a Local Drug Delivery System for Cancer Treatment

Thedrattanawong, Chintanit (Mahidol University); Thanapongpibul, Chalaisom (Mahidol University); Nittayacharn, Pinunt (Mahidol University); Nasongklakorn, Norased* (Faculty of Engineering, Mahidol University)

Control of Hydroxyapatite Film Orientation by RF Magnetron Sputtering

Kubota, Takaumi* (Doshisha University); Hirata, Keishiro (Doshisha University); Takayanagi, Bhabani Prasad (Medical College And Hospital, Kolkata); Roy, Ram Mohan (Medical College And Hospital, Kolkata); Mukhopadhyay, Jayanta (Dept. of Computer Science & Engineering, IIT Kharagpur); Mahadevappa, Manjunatha* (Indian Institute of Technology Kharagpur)
17:15-19:00 FrPoS-16.2
HOLOBALANCE: An Augmented Reality Virtual Trainer
Solution for Balance Training and Fall Prevention
Kouris, Ioannis* (National Technical Univ. of Athens); Sarafidis, Michalis (National Technical Univ. of Athens); Androutsou, Thelma (National Technical Univ. of Athens); Koutoulis, Dimitrios (BioMedical Engineering Lab, School of Electrical and Computer Engineering, National Technical Univ. of Athens)

17:15-19:00 FrPoS-16.3
An Automatic Cycling Performance Classifier System based on the Crank Arm Force Measurement Data
Vieira Pigatto, Andre (Federative University of Rio Grande do Sul (UFRGS)); Ruschel dos Santos, Raphael* (Universidade Federal do Rio Grande do Sul); Babbinot, Alexandre (Federative University of Rio Grande do Sul (UFRGS))

17:15-19:00 FrPoS-16.4
Comparing Manual and Machine Annotations of Emotions in Non-Acted Speech
Deshpande, Gauri (Tata Research Development and Design Center, Tata Consultancy Services); Viraraghavan, Venkata Subramanian* (Tata Consultancy Services Ltd.); Duggiralal, Mayuri (Tata Research Development and Design Center, Tata Consultancy Services); Yem pada, Ramu Reddy (TCS Research & Innovation Lab); Patel, Sachin (Tata Research Development and Design Center, Tata Consultancy Services)

17:15-19:00 FrPoS-16.5
The Analytical Study in the Assessment of Body Segment Composition using Electrical Impedance in Patients with Schizophrenia
Huang, Ji-Jer* (Southern Taiwan Univ. of Science and Technology); Huang, Min-Wei (National Cheng Kung Univ.); Yang, Chiu-Yueh (Dept. of Nursing, National Yang-Ming Univ.)

17:15-19:00 FrPoS-16.6
Walk Identification using a Smart Carpet and Mel-Frequency Cepstral Coefficient (MFCC) Features
Muheidat, Fadi* (University of the Pacific); Tyrer, Harry (University of Missouri - Columbia); Popescu, Mihail (University of Missouri)

17:15-19:00 FrPoS-16.7
Parkinson’s Disease Classification of mPower Walking Activity Participants
Pittman, Benjamin (Univ. of Washington); Hosseini Ghom, Reza (Univ. of Washington); Si, Dong* (Univ. of Washington)

17:15-19:00 FrPoS-16.8
Electrochemical Glucose Sensors
Preliminary Finite Element Model for Hydrogen-Based Gauges on Medical Needles
Schaefer, Pierre-Loup* (Laboratoire TIMC-IMAG); Chagnon, Grégory (Université de Grenoble); Moreau-Gaudry, Alexandre (Université Joseph Fourier - Grenoble University Hospital)

17:15-19:00 FrPoS-17.5
Harmonic Error Cancellation for Accurate Square-Wave-Based Bio-Impedance Measurements
Subhan, Saqib* (New York University Abu Dhabi); Ha, Sohmyung (New York University Abu Dhabi)

17:15-19:00 FrPoS-17.6
Inkjet Printed Parallel Plate Capacitors using PVP Polymer Dielectric Ink on Flexible Polyimide Substrates
Mohapatra, Ankita (University of Memphis); Tuli, Sayema (University of Memphis); Liu, Kwei (University of Memphis); Fujikawa, Tomoko (University of Memphis); Hewitt, Robert (University of Memphis); Andrasik, Frank (University of Memphis); Morshed, Bashir* (University of Memphis)

17:15-19:00 FrPoS-17.7
Carbon Nanospikes on Silicon Wafer for Amperometric Biosensing Applications
Shanta, Aysha Siddique (Univ. of Tennessee); Shamsir, Samira* (Univ. of Tennessee Knoxville); Song, Yang (Oak Ridge National Lab); Hensley, Dale (Oak Ridge National Lab); Rondinone, Adam (Oak Ridge National Lab); Islam, Syed Kamrul (Univ. of Tennessee); McFarlane, Nicole (Univ. of Tennessee)

17:15-19:00 FrPoS-17.1
Monitoring Sucking Abilities in Newborns: Design and Validation on Adult of a Wearable System for Non-Invasive Deglutition Detection
Del Fabbro Arcopitno, Micaela (Università Campus Bio-Medico di Roma); Tosi, Jacopo (Università Campus Bio-Medico di Roma); Formica, Domenico (Campus Bio-Medico University); Taffoni, Fabrizio* (Campus Bio-Medico University)

17:15-19:00 FrPoS-17.2
A High-Throughput Impedimetric Platform for Biological Analysis: Design, Implementation and Experimental Results
Giancarlo, Ayala-Charca (York University); Muniadasa, Samal (York University); Magierowski, Sebastian (York University); Ghafor-Zadeh, Ebrahim* (York University)

17:15-19:00 FrPoS-17.3
Piezoelectric Tooth Aligner for Accelerated Orthodontic Tooth Movement
Bani-Hani, Muath (Jordan University of Science and Technology); Karami, M. Amin* (State University of New York at Buffalo)

17:15-19:00 FrPoS-17.4
Geometry-Based Model for U-Shaped Strain
Gauges on Medical Needles
Kouris, Ioannis* (National Technical Univ. of Athens); Sarafidis, Michalis (National Technical Univ. of Athens); Androutsou, Thelma (National Technical Univ. of Athens); Koutoulis, Dimitrios (BioMedical Engineering Lab, School of Electrical and Computer Engineering, National Technical Univ. of Athens)

17:15-19:00 FrPoS-17.8
Carbon Nanospikes on Silicon Wafer for Amperometric Biosensing Applications
Shanta, Aysha Siddique (Univ. of Tennessee); Shamsir, Samira* (Univ. of Tennessee Knoxville); Song, Yang (Oak Ridge National Lab); Hensley, Dale (Oak Ridge National Lab); Rondinone, Adam (Oak Ridge National Lab); Islam, Syed Kamrul (Univ. of Tennessee); McFarlane, Nicole (Univ. of Tennessee)
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<tr>
<td>17:15-19:00</td>
<td>Flexible Non-Contact Electrodes for Bioelectrical Signal Monitoring</td>
<td>Exhibit Hall 2</td>
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<tr>
<td>17:15-19:00</td>
<td>Disposable Stiffness Sensor for Endoscopic Examination</td>
<td>Physiological Monitoring – Poster (Theme 7) (Poster Session)</td>
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<td>17:15-19:00</td>
<td>A Wrist-Worn Strap with an Array of Electrodes for Robust Physiological Sensing</td>
<td>Physiological Monitoring – Poster (Theme 7) (Poster Session)</td>
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<td>17:15-19:00</td>
<td>Low-Cost, USB Connected and Multi-Purpose Biopotential Recording System</td>
<td>Physiological Monitoring – Poster (Theme 7) (Poster Session)</td>
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<td>17:15-19:00</td>
<td>Unconstrained Monitoring of Biological Signals using an Aortic Pulse Wave Sensor</td>
<td>Physiological Monitoring – Poster (Theme 7) (Poster Session)</td>
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<td>Children Activity Recognition: Challenges and Strategies</td>
<td>Physiological Monitoring – Poster (Theme 7) (Poster Session)</td>
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<td>17:15-19:00</td>
<td>Psychophysiological Stress Assessment among On-Duty Firefighters</td>
<td>Physiological Monitoring – Poster (Theme 7) (Poster Session)</td>
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<td>17:15-19:00</td>
<td>System Level Framework for Assessing the Accuracy of Neonatal EEG Acquisition</td>
<td>Poster Session</td>
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<td>17:15-19:00</td>
<td>A Pilot Study of an Unobtrusive Bed-Based Sleep Quality Monitor for Severely Disabled Autistic Children</td>
<td>Poster Session</td>
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<td>17:15-19:00</td>
<td>A System for Assessment of Canine-Human Interaction during Animal-Assisted Therapies</td>
<td>Poster Session</td>
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<td>17:15-19:00</td>
<td>Positive Airway Pressure Therapy</td>
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<td>Neonatal EEG Acquisition</td>
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Stable Contactless Sensing of Vital Signs using RGB-Thermal Image Fusion System with Facial Tracking for Infection Screening Negishi, Toshiaki* (The Univ. of Electro-Communications); Sun, Guanghao (The Univ. of Electro-Communications); Liu, He (Harbin Univ. of Science and Technology); Sato, Shohei (Huawei Technologies Japan K.K.); Matsui, Takemi (Tokyo Metropolitan Univ.); Kiritomo, Tetsuo (The Univ. of Electro-Communications)

Bed Sensor System with Multiple Weight Sensor Units for Urine Accumulation Measurement in Bladder Noyori, Shuhel* (University of Tokyo); Noguchi, Hiroshi (University of Tokyo); Nakagami, Gojoro (University of Tokyo); Mor, Taketoshi (University of Tokyo); Sanada, Hiromi (University of Tokyo)

Data Compression via Low Complexity Delta Transition Lossless Encoding for Remote Physiological and Environmental Monitoring Felton, Christopher* (Mayo Clinic); Gilbert, Barry (Mayo Clinic College of Medicine); Haider, Clifton (Mayo Clinic)

Human Activity Recognition from Inertial Sensor Time-Series using Batch Normalized Deep LSTM Recurrent Networks Zebin, Tahmina (Univ. of Manchester); Serrin, Matthew (Univ. of Manchester); Peek, Niels (Univ. of Manchester); Casson, Alexander James* (Univ. of Manchester)

Development of a Lightweight Flexible Construction Work Assist Suit using Pneumatic Rubber Artificial Muscles Ogawa, Kazunori* (Daiya Industry Co., Ltd.); Ono, Ayumu (Daiya Industry Co., Ltd.); Fukuda, Yoshiyuki (Daiya Industry Co., Ltd.); Tsuneyasu, Kosuke (Hiroshima University); Kurita, Yuichi (Hiroshima University)

Capacitive Sensors Array for Planter Pressure Measurement Insole Fabricated with Flexible PCB Aquveque, Pablo* (University of Concepcion); Pastene, Francisco (University of Concepcion); Osorio, Rodrigo (University of Concepcion); Saavedra, Francisco (University of Concepcion); Pino, Esteban J (University of Concepcion)

Wearable Fetal Monitoring Solution for Improved Mobility during Labor and Delivery Nguyen, Kristen* (Farus, LLC); Elizabeth, Bamgbose (University of San Diego); Cox, Brian (Farus, LLC); Huang, Sean Po-Hsiang (Farus, LLC); Mierzw, Andrzei (Farus, LLC); Hutchins, Susie (University of San Diego); Caso, Brand (Tenacore Holdings, Inc.); Culjat, Martin (Dthera Sciences); Connelly, Cynthia (University of San Diego); Lacoursiere, Yvette (University of California, San Diego); Singh, Rahul (Farus, LLC)

Pre-Impact Alarm System for Fall Detection using MEMS Sensors and HMM-Based SVM Classifier Zhao, Guoru* (Shenzhen Institutes of Advanced Technology Chinese Academy of Sciences, Shenzhen, China); Liang, Shengyun (Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences)

Wearable EMG Shirt for Upper Limb Training Pino, Esteban J* (Univ. de Concepcion); Arias, Yerko (Univ. de Concepcion); Aquveque, Pablo (Univ. de Concepcion)
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<td>17:15-19:00</td>
<td>FrPoS-23.1</td>
<td>Detection of Echinocyte during Perfusion with Oxygenator based on Continuous Blood Viscosity Monitoring</td>
<td>Okahara, Shigeki* (Juntshin Gakuen University); Miyamoto, Satoshi (Hiroshima University Hospital); Soh, Zu (Dept. of System Cybernetics, Institute of Engineering, Hiroshima University); Tsujl, Toshio (Hiroshima University)</td>
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<td>17:15-19:00</td>
<td>FrPoS-23.2</td>
<td>Considering Plasma Insulin Concentrations in Adaptive Model Predictive Control for Artificial Pancreas Systems</td>
<td>Hajizadeh, Iman (Illinois Institute of Technology); Rashid, Mudassir (Illinois Institute of Technology); Cinar, Ali* (Illinois Institute of Technology)</td>
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<td>17:15-19:00</td>
<td>FrPoS-23.3</td>
<td>Clinical Decision Support for Early Detection of Prediabetes and Type 2 Diabetes Mellitus using Wearable Technology</td>
<td>Baig, Mirza Mansoor* (Auckland Univ. of Technology); Mirza, Farhaan (Auckland Univ. of Technology); Ghoham Hosseini, Hamid (Auckland Univ. of Technology); Gutierrez, Jairo (Auckland Univ. of Technology); Ullah, Ehsan (Auckland District Health Board)</td>
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<td>17:15-19:00</td>
<td>FrPoS-23.4</td>
<td>Towards an ASIC-Based Fluoroscopic Capsule for the Early Cancer Detection in the Small Intestine</td>
<td>Varnava, Giorgos (Univ. of Cyprus); Demosthenous, Panayioti (Univ. of Cyprus); Koulouzidou, Anastasios (The Royal Infirmary of Edinburgh); Georgiou, Julius* (Univ. of Cyprus)</td>
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<td>17:15-19:00</td>
<td>FrPoS-24.1</td>
<td>Achieving Ultra-Conformability with Polyimide-Based ECoG Arrays</td>
<td>Vomero, Maria* (University of Freiburg); Porto Cruz, Maria Francisca (University of Freiburg); Zucchini, Elena (Istituto Italiano di Tecnologia); Shabanian, Ardavan (Lab for Design of Microsystems - IMTEK); Delfino, Emanuela (Italian Institute of Technology - Ferrara); Carli, Stefano (Istituto Italiano di Tecnologia); Fadiga, Luciano (Università degli Studi di Ferrara, Ferrara, Italia); Ricci, Davide (Istituto Italiano di Tecnologia - RBCS); Stieglitz, Thomas (University of Freiburg)</td>
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<td>17:15-19:00</td>
<td>FrPoS-24.2</td>
<td>Impact of Reactive Obstacle on Molecular Communication between Nanomachines</td>
<td>Al-Zübi, Muneer* (University of Technology Sydney); Mohan, Ananda (University of Technology Sydney); Ling, Sai Ho, Steve (University of Technology Sydney)</td>
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<td>17:15-19:00</td>
<td>FrPoS-24.3</td>
<td>Direct Measurement of Mass Transport in Actuation of Conducting Polymers Nanotubes</td>
<td>Eslamian, Mohammadjavad* (University of Houston); Antensteiner, Martin (University of Houston); Abidian, Mohammad Reza (University of Houston)</td>
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<td>17:15-19:00</td>
<td>FrPoS-24.4</td>
<td>Single Molecule Free Solution Hydrodynamic Separation for Size Profiling of Serum Cell-Free DNA</td>
<td>Li, Andrew (Johns Hopkins University); Friedrich, Sarah (Johns Hopkins University); Wang, Tza-Huei* (Johns Hopkins University)</td>
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<td>17:15-19:00</td>
<td>FrPoS-24.5</td>
<td>Focused Ion Beam-Based Milling, Imaging and Analysis of 3D Tumor Spheroids</td>
<td>Almarshad, Hassan* (Aljouf Univ.); Hoshino, K. (Univ. of Connecticut); Madhavan, Mathangi (Univ. of Connecticut, Storrs)</td>
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Development of an Intelligent Ventricular Assist Device with a Function of Sensorless Thrombus Detection
Maruyama, Takuro (Tokyo Institute of Technology); Murashige, Tomotaka (Tokyo Institute of Technology); Sakota, Daisuke (National Institute of Advanced Industrial Science and Technology); Maruyama, Osamu (National Institute of Advanced Industrial Science and Technology (AIST)); Hikjaka, Wataru* (Tokyo Institute of Technology)

In Vivo Feasibility Study of an Intra-Atrial Blood Pump for Partial Support of the Left Ventricle
Smith, Peter Alex* (Texas Heart Institute); Wang, Yaxin (Texas Heart Institute); Bieritz, Shelby (Rice University); Conger, Jeff L. (Texas Heart Institute); Sampaio, Luiz C. (Texas Heart Institute); Cohn, William E. (Texas Heart Institute); Frazier, Q. H. (Texas Heart Institute @ St. Luke’s Hospital)

In Silico Analysis of Stent Deployment – Effect of Stent Design
Karanasiou, Georgia (Institute of Molecular Biology and Biotechnology, FORTH); Rigas, Georgios (University of Ioannina); Kyriakidis, Savvas (Institute of Molecular Biology and Biotechnology, FORTH); Tachos, Nikolaos (Unit of Medical Technology and Intelligent Information Systems, Dept. of Materials Science and Engineering, University of Ioannina); Sakellarios, Antonis (Unit of Medical Technology and Application Systems, Dept. of Material Science, University of Ioannina); Fotiadis, Dimitrios I.* (University of Ioannina)

A Fully Discrete Open Source Framework for the Simulation of Vascular Remodelling
Osborne, James* (University of Melbourne); Bernabeu, Miguel O. (The University of Edinburgh)

A Clinical Decision Support Platform for the Risk Stratification, Diagnosis, and Prediction of Coronary Artery Disease Evolution
Sakellarios, Antonis (Unit of Medical Technology and Application Systems, Dept. of Material Science, Univ. of Ioannina); Tachos, Nikolaos (Unit of Medical Technology and Intelligent Information Systems, Dept. of Materials Science and Engineering, Univ. of Ioannina); Kigka, Vassiliki (Univ. of Ioannina); Tsompou, Panagioti (FORTH-IMBB); Georgiadis, Eleni I. (Univ. of Ioannina); Andrikos, Ioannis (Univ. of Ioannina); Karanasiou, Georgia (Institute of Molecular Biology and Biotechnology, FORTH); Rocchiccioli, Silvia (Institute of Clinical Physiology, National Research Council); Correia, Joao (Biotronics3D); Pelosi, Guillermo (Institute of Clinical Physiology, National Research Council); Stofella, Paolo (Exprivia, Moffetta (Bari)); Filipovic, Nenad (Univ. of Kragujevac); Parodi, Oberdan (CNR Clinical Physiology Institute - Milan); Fotiadis, Dimitrios I.* (Univ. of Ioannina)

A Stochastic and Mathematically Integrative Model of the Gender Modulation of Cardiorespiratory Activity
BuSha, Brett* (The College of New Jersey); Stella, Martha (The College of New Jersey)

A Preliminary Computational Model for Hypoxic Acidosis in Cardiac Myocytes
Shimayoshi, Takao* (Kyushu University); Yamamoto, Yuta (Kyoto University); Matsuda, Tetsuya (Kyoto University)

Fluid-Structure Interaction in the Cerebral Venous Transverse Sinus
Shim, Eun Bo (Kangwon National University); Heldt, Thomas* (Massachusetts Institute of Technology)

In Vivo Hemodynamic Evaluation of Right Ventricle–Pulmonary Artery Continuity Reconstruction through a Trileaflet Expanded Polytetrafluoroethylene Valved Conduit
Chen, Wei-Ling (Kaohsiung Veterans General Hospital); Kan, Chung-Dann* (Natl. Chang Kung Univ. Hospital, Dept. of Surgery)

In Silico Analysis of Stent Deployment – Effect of Stent Design
Karanasiou, Georgia (Institute of Molecular Biology and Biotechnology, FORTH); Tachos, Nikolaos (Unit of Medical Technology and Intelligent Information Systems, Dept. of Materials Science and Engineering, Univ. of Ioannina); Pennati, Lorenzo (Dept. of Civil and Environmental Engineering, Politecnico di Milano); Edelman, Elazer (Institute for Medical Engineering and Science, Massachusetts Institute of Technology, Cambridge, MA and Cardiovascular Division); Fotiadis, Dimitrios I.* (Univ. of Ioannina)
Continuous Wearable and Convenient Cuff-Less Blood Pressure Monitoring by Sensing Pulse Transit Time Inside Eyeglasses

Holz, Christian* (Microsoft Research)
17:15-19:00 FrPoS-28.19
Quantitative Analysis on Remaining Thickness of Adult Dentin using OCT and in Vitro Study
Zheng, Haoteng (Shenzhen University); Gao, Qingfeng (Shenzhen University); Ding, Jiangfeng (Nanshan Hospital of Shenzhen University); Lu, Minhua* (Shenzhen University)

17:15-19:00 FrPoS-28.20
Sleep Complexity: A New Metric for Sleep Analysis
Zhang, Wei* (EPEF); Paraschiv-Ionescu, Ansoara (Ecole Polytechnique Federale); Mellone, Sabato (Univ. of Bologna); Taraldsen, Kristin (Dept. of NeuroMedicine and Movement Science, Norwegian Univ. of Science and Technology); Mikolaizak, A. Stefanie (Robert Bosch Foundation for Medical Research); Pijnappels, Mirjam (Dept. of Human Movement Sciences, Vrije Univ. Amsterdam, Amsterdam Movement Sciences); Aminian, K (Ecole Polytechnique Federale de Lausanne)

17:15-19:00 FrPoS-28.21
Quantifying Pelvic Floor Muscle Elasticity under Normal and Prolapse Conditions by Ultrasound
Hu, Lixia (Shenzhen University); Li, Ling (Eastern Hospital of Shanghai); Wang, Hufang (Shenzhen Second People's Hospital); Bi, Zuyue (Shenzhen University); Zhang, Xiao (Shenzhen University); Lu, Minhua* (Shenzhen University)

17:15-19:00 FrPoS-28.22
Three-Dimensional Scaffolds for Organs-on-Chips Systems by Two-Photon Polymerization
Ding, Haibo (Southeast University); Zhu, Chenxu (Southeast University); Gu, Hongcheng (Southeast University); Gu, Min (RMIT University); Gu, Zhong-Ze* (Southeast University)

17:15-19:00 FrPoS-28.23
Continuous Cuffless Systolic Blood Pressure Monitoring Scheme using PPG Sensor and Doppler Radar
Ohata, Tomoyuki* (The University of Electro-Communications); Ishibashi, Koichiro (The University of Electro-Communications); Sun, Guanghao (The University of Electro-Communications)

17:15-19:00 FrPoS-28.24
Evaluation Trial for Characteristics Body Temperature Change of Persons with Spinal Cord Injury
Takishima, Atsushi* (National Rehabilitation Center for Persons with Disabilities); Takizawa, Kenta (Tokyo Institute of Technology, National Rehabilitation Center for Persons with Disabilities); Suzukawa, Jun (Research Institute of National Rehabilitation Center for Persons with Disabilities); Higuchi, Yukihiro (National Rehabilitation Center for Persons with Disabilities); Tamura, Toshiyo (Waseda Univ.); Kurabayashi, Daisuke (Tokyo Institute of Technology); Inoue, Takenobu (Research Institute of National Rehabilitation Center for Persons with Disabilities); Ogata, Toru (National Rehabilitation Center for Persons with Disabilities)

17:15-19:00 FrPoS-28.25
Classification of Aggressive Movements using Unilateral and Bilateral Smartwatches
Tchuente Kemdjo, Franck Fabrice* (University of Ottawa); Lemaire, Edward (The Ottawa Hospital Rehab Centre); Baddour, Natalie (University of Ottawa)

17:15-19:00 FrPoS-28.26
Evaluation of Sequential Feature Selection in Heterogeneous Data using Simulated Subgroup Structures
Anderson, Ronald* (Texas Tech University); Baker, Mary (Texas Tech University)

17:15-19:00 FrPoS-28.27
Online Phase Analysis of Neurophysiological Signals for Real-Time Feedback in Magnetoencephalography
Tseng, Chih-Hsin (Graduate Institute of BioMedical Electronics and Bioinformatics, National Taiwan Univ.); Hsu, Shen-Mou (Imaging Center for integrated Body, Mind, and Culture Research, National Taiwan Univ.); Chen, Yih-Hong* (National Taiwan Univ.)

17:15-19:00 FrPoS-28.28
Cell Viability Increasement of the Alginate-Gelatin Scaffold
Nguyen, Trung* (University of Ulsan); Duong Van, Thuy (University of Ulsan); Dang, Thi Thao (University of Ulsan); Lee, Yeasol (University of Ulsan); Phan, Huu Lam (University of Ulsan); Lee, HyeSeok (University of Ulsan); Son, Hyewon (Dept. of BioMedical Engineering, University of Ulsan); Jang, Hojeong (Dept. of BioMedical Engineering, University of Ulsan); Oh, Seok (University of Ulsan); Hwang, Changho (Ulsan University Hospital); Koo, Kyo (University of Ulsan)

17:15-19:00 FrPoS-28.29
Multivariate Analysis Method using Cross Recurrence Plot and Convolutional Neural Network
Kobayashi, Yuya* (University of Tokyo); Gu, Feng (University of Tokyo); Koltani, Kiyoshi (University of Tokyo); Jimbo, Yasuhiro (University of Tokyo)

17:15-19:00 FrPoS-28.30
On the Efficiency of SVD based T-Wave Alternans Detection
Sato, Shunsuke (Hosei University); Nakamura, Sho (Hosei University); Koizumi, Anna (Hosei University); Kamimoto, Michiaki (Hosei University); Yama, Kazuo* (Hosei University); Ono, Takuya (Nippon Medical School)

17:15-19:00 FrPoS-28.31
Real-Time Control of an Assistive Robotic Arm using a Wireless Finger Motion Sensor
Gosselin, Benoît* (Laval University); Gosselin, Clément (Université Laval); Cheikh Latyr, Fall (Université Laval); Campeau-Lecours, Alexandre (Université Laval); Robitaille, Tristan (Collège International Sainte-Anne)

17:15-19:00 FrPoS-28.32
Assistive Scanning Brace for Improved 3D Tomographic Ultrasound Neck Scans
Gomes, Almeida, Elmer Jeto* (Otto-von-Guericke Universität); Ziegler, Jens (Otto-von-Guericke Universität); Kalmar, Marco (Otto-von-Guericke Universität); Boese, Axel (Dept. of Medical Engineering, Otto-von-Guericke-University of Magdeburg, Germany); Friebe, Michael (Otto-von-Guericke-University)

17:15-19:00 FrPoS-28.33
Data Augmentations Role in Apnea Detection using Deep Learning
Olsen, Mads* (Technical Univ. of Denmark); Jennum, Poul (Univ. of Copenhagen, Denmark); Mignot, Emmanuel (Stanford Univ.); Sorensen, Helge B D (Technical Univ. of Denmark)

17:15-19:00 FrPoS-28.34
A Method for the Reduction of Variability in Drug Delivery
Carpenter III, George W.* (Louisiana Tech University); Myers, Holly (Louisiana Tech University); Sherer, Eric A. (Louisiana Tech University); Evans, Katie (Louisiana Tech University); O'Neal, D. Patrick (Louisiana Tech University)

17:15-19:00 FrPoS-28.35
Analysis of Gait Characteristics with Various Levels of Weight Bearing using Wearable Motion Measurement Device
Araki, Keisuke* (Doshisha Univ.); Tsujuchi, Nobutaka (Doshisha Univ.); Ito, Akihito (Doshisha Univ.); Ohira, Yoshinobu (Doshisha Univ.); Kamibayashi, Kiyotaka (Doshisha Univ.)

17:15-19:00 FrPoS-28.36
Multi-Wavelength Laser Speckle Contrast Imaging System based on Wavelength Tunable Laser
Kim, Jeong Won (Pusan National University); Jang, Hansol (Pusan National University); Kim, Gyeong Hun (Pusan National University); Kim, Chang-Seok* (Pusan National University)
17:15-19:00 FrPoS-29.7 Characterization of Mitochondrial Transport using Probabilistic Feature-Based Tracking
Serrano, Claudia (Universitat Politècnica de Catalunya-BarcelonaTech); Vallmitjana, Alex (University of California Irvine); Civera-Tregon, Azahara (Neurogenetics and Molecular Medicine, Sant Joan de Deu Research Foundation, Barcelona); Hoenicka, Janet (Instituto de Recerca Hospital Sant Joan de Deu, Barcelona); Palau, Francesc (Neurogenetics and Molecular Medicine, Sant Joan de Deu Research Foundation, Barcelona); Benitez, Raúl* (Universitat Politècnica de Catalunya)

17:15-19:00 FrPoS-29.8 Addition-Only Vein Recognition Algorithm for Ultrasonic Vein-Pattern Sensor
Kim, Nam-Kyu (Hannam University); Choi, Sung-Phyo (Hannam University); Um, Ji-Yong* (Hannam University)

17:15-19:00 FrPoS-29.9 Development of Magnetic Nondirectional Capsule Type Implantable Element for Hyperthermia Therapy
Yokoshita, Yuta* (Tohoku Gakuin Univ.); Kato, Yuta (Tohoku Gakuin Univ.); Abe, Takuma (Tohoku Gakuin Univ.); Miyahara, Satoshi (Tohoku Gakuin Univ.); Sato, Fumihiro (Tohoku Gakuin Univ.); Ishikawa, Kazumi (Tohoku Gakuin Univ.)

17:15-19:00 FrPoS-29.10 Finite Element Analysis on Expansion of Cutting Balloon in Calcified Coronary Artery in Comparison with Conventional Balloon
Zhu, Xiaodong (Waseda Univ.); Umezuo, Mitsuo (Waseda Univ. Graduate School); Iwasaki, Kiyotaka* (Waseda Univ.)

17:15-19:00 FrPoS-29.11 Towards Optical Measurement of Blood Alcohol Concentration with Higher Accuracy: Comparison of Signal-to-Noise Ratio for Finger Photo-Plethysmogram with and without Electromagnetic Shielding
Kabashima, Shogo (Fukuoka Institute of Technology); Harada, Ippei (Fukuoka Institute of Technology); Kusaba, Shihori (Fukuoka Institute of Technology); Fukumoto, Yuto (Fukuoka Institute of Technology); Lee, Jiyoung (Fukuoka Institute of Technology); Shibata, Masahiro (Shibaura Institute of Technology); Yamakoshi, Takehiro* (Fukuoka Institute of Technology)

17:15-19:00 FrPoS-29.12 Design of a Paradigm to Elicit Gait-Related Symptoms of Parkinson’s Disease: A Case Study
Naghavi, Nader* (University of Tennessee, Knoxville); Wade, Eric (University of Tennessee)

17:15-19:00 FrPoS-29.13 Particle Filter-Based Method for Estimation of a Vein Area from Cross-Sectional Ultrasound Image Sequence of an Arm
Noguchi, Hiroshi* (University of Tokyo); Noyori, Shuhei (University of Tokyo); Takahashi, Toshiaki (University of Tokyo); Sanada, Hiromi (University of Tokyo); Mori, Taketoshi (University of Tokyo)

17:15-19:00 FrPoS-29.14 Changes of Brain Activity during Ventricular Fibrillation
Kim, Hyein (Seoul National University); Kim, Hee Chan* (Seoul National University)

17:15-19:00 FrPoS-29.15 Photoacoustic Strain Imaging on Human in Vivo Wrist
Sumi, Chikayoshi* (Sophia University)

17:15-19:00 FrPoS-29.16 Automated Hidden Peak Extraction in Raman Spectra for Fibrotic Skin Tissues
Muley, Saylee (Indian Institute of Technology Kharagpur); Ghosh, Biswajoy* (IIT Kharagpur); Chatterjee, Jyotirmoy (Indian Institute of Technology Kharagpur)

17:15-19:00 FrPoS-29.17 Attenuation Normalization in Tissue Optical Coherence Tomography
Ghosh, Biswajoy* (IIT Kharagpur); Muley, Saylee* (Indian Institute of Technology Kharagpur); Chatterjee, Jyotirmoy (Indian Institute of Technology Kharagpur)

17:15-19:00 FrPoS-29.18 Transformations of Noncontact Electrocardiogram Waveform and Body Proximity Signals in Nocturnal Measurements during Sleep
Takano, Mayuko* (Tokyo Denki University); Ueno, Akinori (Tokyo Denki University)

17:15-19:00 FrPoS-29.19 Wireless Transcutaneous Powering of Ensembles of Chipscale Sensors at Microwaves Frequencies
Lee, Jihun (Brown University); Laiwalla, Farah (Brown University); Leung, Vincent (Qualcomm Institute); Jeong, Joosoo (Brown University); Kilfoyle, Chester (Brown University); Larson, Lawrence (Brown University); Nummikko, Arto* (Brown University)

17:15-19:00 FrPoS-29.20 Wearable Noninvasive Tissue Oxygen Metabolism Sensing System
Lee, Seung Yup* (Georgia Institute of Technology/Emory University); Zheng, Corey (Georgia Institute of Technology); Buckley, Erin (Georgia Institute of Technology/Emory University)

17:15-19:00 FrPoS-29.21 An Investigation of Accuracy of Instantaneous Heart Rate Measurement by Wrist-Worn Fitness Tracking Devices
Turki, Ahmad Fawzi (University of Texas at Arlington/ King AbdulAziz University); Jani, Mahshri (University of Texas at Arlington); Basava, Vijay Sunil (University of Texas); Soltan zadi, Armin (University of Texas at Arlington); Dakhave, Supriya (University of Texas at Arlington); Ding, Kan (The University of Texas Southwestern Medical Center); Zhang, Rong (University of Texas Southwestern Medical Center at Dallas); Behbehani, Khosrow* (University of Texas at Arlington)

17:15-19:00 FrPoS-29.22 A Preliminary Analysis on Dependence of the Tidal Volume with Split in Second Heart Sounds
Burgoni, Cameron (San Diego State Univ.); Horondi, Alex (San Diego State Univ.); Power, Brendan (San Diego State Univ.); Rath, Sasmita (San Diego State Univ.); Keeranagi, Veena (San Diego State Univ.); Bailey, Alex Cameron (San Diego State Univ.); Buono, Michael (San Diego State Univ.); Töreyin, Hakan* (San Diego State Univ.)

17:15-19:00 FrPoS-29.23 Design and Test of a Non-Enzymatic Glucose Sensor for Continuous Glucose Monitoring Device
Lee, Ji Soo (SNU); Bo, Hankil (UXN Co., Ltd.); Chang, Rae Kyu (UXN Co., Ltd.); Lee, Jongmin (UXN Co., Ltd.); Kim, Hee Chan* (Seoul National University)

17:15-19:00 FrPoS-29.24 Development of Microphone Preamplifier for Recording Hearts Sound of Esophageal Stethoscope
Jung, Sunhyung (Daelim Univ.); Kang, Yewon (Daelim Univ.); Lee, Deuk Yong (Daelim Univ.); Shin, Hang Suk (Chonnam National Univ.); Yun, Yonghyeon* (Daelim Univ.)

17:15-19:00 FrPoS-29.25 Windowed Wavelet Filter: A New Approach to Identify Event-Related Potentials in Disorders of Consciousness
Toppi, Jelena (University of Rome “Sapienza”); Mattia, Donatella (Fondazione Santa Lucia IRRCS); Cinotti, Febo (Sapienza University of Rome); Formisano, Rita (IrrcS Fondazione Santa Lucia, Rome, Italy); Astolfi, Laura* (University of Rome Sapienza)
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<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
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<td>17:15-19:00</td>
<td>FrPoS-30.7</td>
<td>Classification of ECG Beat using the Entropy of Ordinal Patterns</td>
<td>Bidias à Mougoufan, Bertin (Université de Yaoundé I); Tchoumbiap Fohom, Daniele Raissa (University of Yaounde I); Eybe Fouda, Jean Sire Armand (Université de Yaounde I); Tchuente, Maurice (Université de Yaounde I); Korn, Martin (Université de Yaounde I); Jacquier, Sabir* (Laboratoire LE2i UMR CNRS 6306, Université de Bourgogne)</td>
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<td>17:15-19:00</td>
<td>FrPoS-30.8</td>
<td>Electronic Skin using a Liquid Metal Droplet as a Sensible Electrode for Wearable Electronics</td>
<td>Kim, Minsung (Gachon Univ.); Seo, Soonmin* (Gachon Univ.)</td>
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<td>17:15-19:00</td>
<td>FrPoS-30.9</td>
<td>Load Analysis of Omega Plates for Pelvic Fracture Fixation</td>
<td>Dzupa, Valer* (3rd Faculty of Medicine, Charles University, and University Hospital Královské Vinohrady); Horák, Zdeněk (College of Polytechnics Jihlava); Sram. Jaroslav (Traumatology and Orthopaedics Centre, Liberec Hospital); Krbek, Martin (Dept. of Orthopaedics and Traumatology, 3rd Faculty of Medicine, Charles University, and University Hospital Královské Vinohrady)</td>
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<td>17:15-19:00</td>
<td>FrPoS-30.10</td>
<td>Numerical Simulation of Plate Loading for Symphysial Fracture Fixation</td>
<td>Baca, Vaclav* (College of Polytechnics Jihlava); Sram, Jaroslav (Traumatology and Orthopaedics Centre, Liberec Hospital); Dzupa, Valer (3rd Faculty of Medicine, Charles University, and University Hospital Královské Vinohrady); Krbek, Martin (Dept. of Orthopaedics and Traumatology, 3rd Faculty of Medicine, Charles University, and University Hospital Královské Vinohrady)</td>
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<td>17:15-19:00</td>
<td>FrPoS-30.11</td>
<td>Using Smart Cities for Early MCI and Frailty Detection</td>
<td>Abril-Jimenez, Patricia* (Universidad Politécnica de Madrid); de los Ríos, Silvia (Universidad Politécnica de Madrid); Rojo, Javier (Technical University of Madrid); Páramo, Miguel (Universidad Politécnica de Madrid); Arredondo, María Teresa (Universidad Politécnica de Madrid); Guillen, Sergio (MYSPHAERA S.L.)</td>
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<td>17:15-19:00</td>
<td>FrPoS-30.12</td>
<td>Anatomically Accurate Modelling of Hepatic Perfusion in Human Liver</td>
<td>Ma, Renfei* (University of Auckland); Hunter, Peter (University of Auckland); Sahaei, Sorosh (University of Auckland)</td>
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<td>17:15-19:00</td>
<td>FrPoS-30.13</td>
<td>Electrodermal Activity Sensing Device</td>
<td>Lam, Lawrence* (University of Washington Bothell); Szypula, Austen (University of Washington Bothell)</td>
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<td>17:15-19:00</td>
<td>FrPoS-30.14</td>
<td>Development of a Cardiovascular Simulator for the Study of Renal Artery Stenosis</td>
<td>Lee, Min-Woo (Sangji University Oriental Biomedical Engineering); Lee, Ju-Yeon (Institute of Applied Medical Engineering, Helmholtz Institute, RWTH Aachen University); Shin, Sang-Hoon* (Sangji University, Oriental Biomedical Engineering)</td>
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<td>17:15-19:00</td>
<td>FrPoS-30.15</td>
<td>Heart Rate Variability based Machine Learning Models for Risk Prediction of Septic Patients in the Emergency Dept.</td>
<td>Chiew, Calvin (Singapore General Hospital); Liu, Nan* (National University of Singapore); Tagami, Takashi (Nippon Medical School Tama Nagayama Hospital); Wong, Ting Hwa (Singapore General Hospital); Koh, Zhi Xiong (Singapore General Hospital); Ong, Marcus Eng Hock (Singapore General Hospital)</td>
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<td>17:15-19:00</td>
<td>FrPoS-30.16</td>
<td>A Predictor for Severity of OSA via Auditory-Coupled Electroencephalography</td>
<td>Winkler, Jeff (University of Manitoba); Duke, Tyler (University of Manitoba); Ng, Marcus (University of Manitoba); Moussavi, Zahra (University of Manitoba)</td>
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<td>17:15-19:00</td>
<td>FrPoS-30.17</td>
<td>Estimation of Worker's Proficiency using EEG Data in Manufacturing Operations</td>
<td>Higashi, Yuichiro (Omrone Corp.); Kotake, Yasuyu (Omrone Corp.); Nakajima, Hiroshi (Omrone Corp.); Yokota, Yusuke (National Institute of Information and Communications Technology); Naruse, Yasushi* (National Institute of Information and Communications Technology)</td>
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<td>17:15-19:00</td>
<td>FrPoS-30.18</td>
<td>Detection of Rhythmic Synchronized Double Neuronal Discharges</td>
<td>Martin del Campo Vera, Roberto* (Univ. of Southern California); Jonckheere, Edmond (Univ. of Southern California)</td>
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<td>17:15-19:00</td>
<td>FrPoS-30.19</td>
<td>Identifying Appropriate Dynamic Time Warping, DTW, Metrics to Evaluate the Quality of Vocoder Time-Stretched Speech Phrases</td>
<td>Tanaka, Mai (University of Calgary, Electrical and Computer Engineering); Smith, Michael (University of Calgary)</td>
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<td>17:15-19:00</td>
<td>FrPoS-30.20</td>
<td>A Smart Intra-Gastric Balloon with the Functions for Monitoring Food Intake and Deflating the Balloon Noninvasively</td>
<td>Ohita, Hidetoshi* (Sapporo Orthopedics and Cardiovascular Hospital)</td>
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<td>17:15-19:00</td>
<td>FrPoS-30.21</td>
<td>Cableless Measurement for Heart Rate through Handgrip</td>
<td>Wang, Tianyi* (Osaka University); Jeong, Hieyong (Osaka University); Guo, An (Osaka University); Ohno, Yuku (Osaka University Graduate School of Medicine)</td>
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<td>17:15-19:00</td>
<td>FrPoS-30.22</td>
<td>EEG Artifact Attenuation with Artifact Subspace Reconstruction for Android</td>
<td>Blum, Sarah* (Carl von Ossietzky Universität Oldenburg); Debener, Stefan (University of Oldenburg)</td>
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<td>17:15-19:00</td>
<td>FrPoS-30.23</td>
<td>Robotic Tomographic System for Nuclear Imaging</td>
<td>Vera Tizatl, Pamela Patricia* (UPIITA-IPN); Santos-Cuevas, Clara Leticia (ININ); Luviano Juárez, Alberto (UPIITA); Chairez Oria, Isaac (UPIBI-IPN)</td>
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<td>17:15-19:00</td>
<td>FrPoS-30.24</td>
<td>Forceps Manipulator with Circular Telescopic Guiding</td>
<td>Masatuke, Atsuta* (Osaka Institute of Technology); Han, SeungSeong (Osaka Institute of Technology); Kawai, Toshikazu (Osaka Institute of Technology); Nishikawa, Atsushi (Shinshu Univ.); Nishizawa, Yuji (Dept. of Gastroenterological Surgery, Faculty of Medicine, Kagawa Univ.); Nakamura, Tatsuo (Kyoto Univ.)</td>
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<td>17:15-19:00</td>
<td>FrPoS-30.25</td>
<td>Multiple Object Separation using a Single Antenna Continuous Wave Doppler Radar with Quadrature Channel Architecture</td>
<td>Whitworth, Avon* (University of Hawaii); Ishmael, Khaldoon (University of Hawaii); Yavari, Ehsan (University of Hawaii at Manoa); Boric-Lubecke, Olga (University of Hawaii at Manoa)</td>
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17:15-19:00 FrPoS-30.26
Hip Joint Adjustment Mechanism based on the Positions of Hip Joints for the Walking Assist Device
Lee, Minhyung* (Samsung Advanced Institute and Technology); Lee, Younbaek (SAIT (Samsung Advanced Institute of Technology)); Lee, Jongsun (Samsung Electronics Co., Ltd.); Choi, Byungju (Samsung Advanced Institute of Technology); Roh, Se-gon (Samsung Advanced Institute of Technology); Shim, Youngbo (Samsung Advanced Institute of Technology); Kim, Jeonghun (SAIT (Samsung Advanced Institute of Technology))

17:15-19:00 FrPoS-30.27
WPW Syndrome Identification from QRS Projected in a Phase Space
Mahamat, Hassan Adam* (Laboratoire LE2I UMR CNRS 6306, Université Bourgogne Franche-Comté); Jacquir, Sabir (Laboratoire LE2I UMR CNRS 6306, Université de Bourgogne); Khalil, Cliff (University Hospital of Dijon); Laurent, Gabriel (LE2I UMR CNRS 5158, Université de Bourgogne, France); Binczak, Stéphane (Université de Bourgogne)

17:15-19:00 FrPoS-30.28
Longitudinal Performance of an Epicortical Microelectrode Array in Evoking Visual Sensations
Oswalt, Denise* (Arizona State University); Datta, Proyag (Louisiana State University); Talbot, Neil (Second Sight Medical Products); Mirzadeh, Zaman (Barrow Neurological Institute); Greger, Bradley (Arizona State University)

17:15-19:00 FrPoS-30.29
Ternary Near-Infrared Spectroscopy BCI using Prefrontal Hemodynamic Changes Induced by Breath-Holding
Shin, Jaeyoung (Hanyang University); Kwon, Jinuk (Hanyang University); Im, Chang-Hwan* (Hanyang University)

17:15-19:00 FrPoS-30.30
Preliminary Study on the Cloud System with Non-Contact Uroflowmeter
Kanayama, Yoshiro (NEC Solution Innovators, Ltd.); Nakajima, Kazuki* (University of Toyama)

17:15-19:00 FrPoS-30.31
Biometric Authentication based on Feature Extraction of Bioelectric Transfer Characteristics of Fingers
Noh, Hyung Wook* (Electronics and Telecommunications Research Institute); Sim, Joo Yong (Electronics and Telecommunications Research Institute); Chung, Kwang Hyo (Electronics and Telecommunications Research Institute); Kim, Bong Kyu (Electronics and Telecommunications Research Institute); Ahn, Chang-Geun (Electronics and Telecommunications Research Institute)

17:15-19:00 FrPoS-30.32
Development of a 79 GHz Millimeter-Wave Radar System for Remote Monitoring of Vital Sign
Sun, Guanghao* (The University of Electro-Communications); Nakamura, Takahiro (Hitachi Ltd.); Suzuki, Satoshi (Kansai University); Kobayashi, Mai (The University of Electro-Communications); Kirimoto, Tetsuo (The University of Electro-Communications)

17:15-19:00 FrPoS-30.33
Estimation of Motor Unit Territory during Elbow Flexion
Akazawa, Jun* (Meiji University of Integrative Medicine); Okuno, Ryuhei (Setsunan University)

17:15-19:00 FrPoS-30.34
Takahashi, Shunsuke* (Tokyo University of Science); Shiba, Kenji (Tokyo University of Science)

17:15-19:00 FrPoS-30.35
Modeling of an Equivalent Circuit for Air-Core Transcutaneous Transformers Embedded in a Biological Tissue: Proposal of Circuit with Bioelectrical Impedance on the Primary Side
Sunada, Shohel* (Tokyo University of Science); Shiba, Kenji (Tokyo University of Science)

17:15-19:00 FrPoS-30.36
Wrist Ring Transcutaneous Energy Transmission for Ventricular Assist Devices: Miniaturization of the Receiving Coil and Analysis of the Biological Effects Around the Transformer
Kawaguchi, Daisuke* (University of Science); Shiba, Kenji (Tokyo University of Science)

17:15-19:00 FrPoS-30.37
Improved Acoustic-Resolution Photoacoustic Microscopy using Minimum-Variance Beamformer
Choi, Wonseok (Pohang University of Science and Technology (POSTECH)); Jeon, Seongwan (Pohang University of Science and Technology); Park, Eunyeong (Pohang University of Science and Technology (POSTECH)); Kim, Chulhong* (Pohang University of Science and Technology)

17:15-19:00 FrPoS-30.38
Breathing Pattern Prediction for Tumor Motion Management in Radiation Therapy
Tang, Xiaoli* (Memorial Sloan Kettering Cancer Center); Ou, Yuejie (Columbia Univ.); Saleh, Ziad (Memorial Sloan Kettering Cancer Center); Jeong, Jeho (Memorial Sloan Kettering Cancer Center); Cai, Weixing (Memorial Sloan Kettering Cancer Center); Song, Yulin (Memorial Sloan-Kettering Cancer Ctr); Zhang, Miao (Memorial Sloan Kettering Cancer Center); Chan, Maria (Memorial Sloan-Kettering Cancer Center); Shi, Chengyu (Memorial Sloan Kettering Cancer Center)

17:15-19:00 FrPoS-30.39
Enhancing Therapeutic Potential of MSC Spheroids with Perfusion
Yasui, Osamu* (UC Davis); Leach, Kent (UC Davis)

17:15-19:00 FrPoS-30.40
A Wireless Pacing System Miniaturized for Vascular Implantation
Abiri, Parinaz* (Univ. of California Los Angeles); Youssefi, Alireza (Univ. of California Los Angeles); Chou, Tzu-Chieh (California Institute of Technology); Tai, Yu-Chong (California Institute of Technology); Markovic, Dejan (UCLA); Hsieh, John T. K. (USC)

17:15-19:00 FrPoS-30.41
Digital Micromirror Device-Based Stereolithography of Three-Dimensional Vascular Constructs
Wadmap, Soham (Texas Tech University); Zhang, Zhengyi (HuaZhong University of Science and Technology); Xu, Changxue* (Texas Tech University)

17:15-19:00 FrPoS-30.42
Nail Tip Sensor: Novel Wearable Sensor Attaching to Fingernail
Ishii, Kohei* (National Institute of Technology, Kagawa College); Hiraoka, Nobuaki (National Institute of Technology, Kagawa College)

17:15-19:00 FrPoS-30.43
EmotionNet: A Model for Emotion Classification based on EEG
Wang, Qing (Beijing University of Posts and Telecommunications); Du, Li (Beijing University of Posts and Telecommunications); Zhao, Zhicheng* (Beijing University of Posts and Telecommunications); Su, Fei (Beijing University of Posts and Telecommunications)

17:15-19:00 FrPoS-30.44
Evaluation of PWTT based Blood Pressure Fluctuation using Body Area Network
Tanaka, Hirokazu* (Hiroshima City University); Hatakeyama, Yasutaka (Hiroshima City University); Komori, Tatsuya (Toshiba Development & Engineering Corp.); Saho, Satomi (Toshiba Development Engineering Corp.); Shiode, Nobuo (Dept. of Cardiology, Hiroshima City Hiroshima Citizen Hospital)
A Miniature MSM Photosensor Chip for Hydrogen Peroxide and Biomolecular Sensing with Chemiluminescence
Lin, Ching Chang* (National Chiao Tung Univ.); Sun, Wen-Hsien (Industrial Technology Research Institute); Tsai, Tsgung Tso (National Chiao Tung Univ.); Du, Bowie (National Chiao Tung Univ.)

Surgical Tool Manipulator with Gimbal-Mounted Parallel Linkage and Telescopic Sliders for Laparoscopic Surgery
Han, SeungSeong* (Osaka Institute of Technology); Kawata, Toshikazu (Osaka Institute of Technology); Nishikawa, Atsushi (Shinshu University); Nishizawa, Yuji (Dept. of Gastroenterological Surgery, Faculty of Medicine, Kagawa University); Nakamura, Tatsuo (Kyoto University)

Electrocardiogram Monitoring System using Electrodes Installed in Backrest Cushion Toward Practical Measurement of Heart Rate Variability in a Bath
Motoi, Kosuke* (Shizuoka Institute of Science and Technology); Yamakoshi, Yushiro (Showa University School of Medicine); Tanaka, Naoto (Kanazawa University); Sakai, Hiroaki (Spinal Injuries Center); Yamakoshi, Ken-ichi (Kanazawa University)

Recognition of Falls and ADLs using Decision Tree Method
Lee, Chang Min (Korea Institute of Science and Technology); Park, Ji Su (Korea Institute of Science and Technology); Kim, Choong Hyun* (Korea Institute of Science and Technology)

Waveform Analysis of Peripheral Pulse Wave in Healthy Controls and Patients with Sleep Apnea Hypopnea Syndrome
Zeng, Ling-Zi (Sun Yat-Sen Univ., Guangzhou, China); Huang, Shao-Xiong (School of Engineering, Sun Yat-Sen Univ.); ZhouGuolin, Zhou (School of Engineering, Sun Yat-sen Univ.); Liao, Yuanjuan (Sun Yat-Sen Univ., Guangzhou City, Guangdong Prov., China); Luo, Yu-Xi* (Sun Yat-Sen Univ.)

Detecting Missteps during Step Descent from EMG Signals using Bidirectional LSTM-Based Recurrent Neural Networks
Katsumata, Koki* (University of Tokyo); Ishikawa, Shunya (University of Tokyo); Hoshino, Takayuki (University of Tokyo)

A Preliminary Study on Personal Identification by Toilet Seat ECG
Nakagawa, Arata (University of Toyama); Kanayama, Yoshio (NEC Solution Innovators, Ltd.); Kim, Juhyon (University of Toyama); Nakajima, Kazuki* (University of Toyama)

Urine Absorption Evaluation of Dog’s Posture Change in Smart Diaper Cover
Yamamoto, Shintaro (University of Toyama); Kim, Juhyon (University of Toyama); Nakajima, Kazuki* (University of Toyama)

Readily Available Varifocal Microscope Imaging System
Wang, Lihui* (University of Tokyo); Cui, Jianjiang (Northeastern University); Tabata, Satoshi (University of Tokyo); Ishikawa, Masatoshi (University of Tokyo)
Deep Neural Network-Based Breathing Classification
Method for Wheeze Sounds
Choe, Soyeon* (Yonsei Univ.); Shin, Seung-chul (Yonsei Univ.); Won, Sul Mui (College of Medicine, The Catholic Univ. of Korea); Lee, Hye Jin (Seoul Saint Mary's Hospital); Kim, Kyunghoon (Dept. of Pediatrics, College of Medicine, The Catholic Univ. of Korea, Seoul); Yoon, Jong-seo (College of Medicine, The Catholic Univ. of Korea); Kang, Hong-Goo (Yonsei Univ.)

17:15-19:00 FrPoS-31.11

High-Speed Fluorescence Imaging System for Neural Activity Recording
Kim, Raeyoung (KAIST); Kang, Hongki (KAIST); Nam, Yoonkey* (Korea Advanced Institute of Science and Technology)

17:15-19:00 FrPoS-31.12

Quantitative Analysis and Evaluation of Skin Texture Aging using Smartphone Image
Moon, Cho-i (University of Soochonhyang); Hong, Gee Yun (The Medical IT Engineering Dept., University of Soochonhyang); Lee, Jiwon (The Medical IT Engineering Dept., University of Soochonhyang); Lee, Onseok* (Soochonhyang University)

17:15-19:00 FrPoS-31.13

A Preliminary Study on Excreta Identification using a Gas Sensor
Ikuni, Takahiro (Univ. of Toyama); Inoue, Daishu (Univ. of Toyama); Kanayama, Yoshio (NEC Solution Innovators, Ltd.); Kim, Juhyun (Univ. of Toyama); Nakajima, Kazuki* (Univ. of Toyama)

17:15-19:00 FrPoS-31.14

A Robust Detection Method of Atrial Fibrillation
Hu, Jing* (Guangzhou Shiyuan Electronic Technology Co., Ltd.); Zhao, Wei (Guangzhou Shiyuan Electronics Co., Ltd.); Xu, Yanwu (Guangzhou Shiyuan Ltd. Co.); Jia, Dongya (CVTE, Guangdong Province, China); Yan, Cong (Guangzhou Shiyuan Electronics Co., Ltd.); Wang, Hongmei (Guangzhou Shiyuan Electronics Co., Ltd.); You, Tianyuan (Guangzhou Shiyuan Electronics Co., Ltd.)

17:15-19:00 FrPoS-31.15

Activity Monitoring System using “Smart Clothing” for Rehabilitation
Ogasawara, Takayuki* (NTT Device Innovation Center); Mukaino, Masahiko (Asahikawa Medical Univ.); Matsuura, Hirotaka (Fujita Health Univ.); Hirono, Satoshi (Fujita Health Univ.); Matsunaga, Kenichi (NTT Device Innovation Center); Oshima, Shouichi (NTT Device Innovation Center); Togo, Hiroyoshi (NTT Device Innovation Center); Nakashima, Hiroshi (Materials Science Research Lab, NTT Basic Research Labs); Saitoh, Eiichi (Fujita Health Univ.); Tsukada, Shingo (NTT Basic Research Labs)

17:15-19:00 FrPoS-31.16

Probabilistic Prediction of Neural Responses in Area MST during Smooth Pursuit using Tuning Functions
Costalaga Meruelo, Alicia* (Ludwig-Maximilians-Universität München); Brostek, Lukas (Ludwig-Maximilians-Universität München); Mustari, Michael J. (Washington National Primate Research Center); Glaser, Stefan (Ludwig-Maximilians-Universität München)

17:15-19:00 FrPoS-31.17

Development of Computer Vision Techniques to Inspect the Cytoskeletal Rearrangement during Stem Cell Aggregation in Time-Lapse Microscopy
Jiang, Ching-Fen* (I-Shou University); Hsu, Shan-hui (Institute of Polymer Science and Engineering, National Taiwan University); Tsai, Ming-Hong (Dept. of BioMedical Engineering, I-Shou University); Tseng, Ting-Chen (Institute of Polymer Science and Engineering, National Taiwan University)

17:15-19:00 FrPoS-31.18

Laryngeal Elevation Detection for Dysphagia Rehabilitation by Stretchable Strain Sensors
Katsuno, Yuki* (Kobe University); Nakamoto, Hiroyuki (Kobe University); Yamamoto, Akio (Kobe University); Umehara, Ken (Kobe University); Bessho, Yusuke (Bando Chemical Industries, Ltd.); Terada, Tsutomu (Kobe University); Kobayashi, Futoshi (Kobe University); Ishikawa, Akira (Kobe University)

17:15-19:00 FrPoS-31.19

Evaluation of Voided Volume by a Raised Toilet Seat Equipped with Non-Contact Thermal Sensors
Ikegami, Shinzuke (Univ. of Toyama); Ikuni, Takahiro (Univ. of Toyama); Kanayama, Yoshio (NEC Solution Innovators, Ltd.); Kim, Juhyun (Univ. of Toyama); Nakajima, Kazuki* (Univ. of Toyama)

17:15-19:00 FrPoS-31.20

Matsumura, Naoki (Fujita Health University); Teramoto, Atsushi* (Fujita Health University); Fujita, Hiroshi (SfI University); Saito, Kuniaki (Fujita Health University)

17:15-19:00 FrPoS-31.21

Analysis of Cerebral Autoregulation in Postural Tachycardia Syndrome
Song, Soohwa* (Gachon University Gil Medical Center); Shin, Dong Hoon (Gachon University Gil Medical Center)

17:15-19:00 FrPoS-31.22

Multi-Modal Operation Input System for Shoulder Prosthesis
Sebike, Masashi* (Chiba University); Shimomura, Yoshihiro (Chiba University); Yu, Wenwei (University of Chiba)

17:15-19:00 FrPoS-31.23

RONDA: A Robotic Gym for Neurorehabilitation of Stroke Patients
Giudetti, Guido (Scuola Superiore S.Anna, The Biorobotics Institute); Carpaneto, Jacopo (Scuola Superiore Sant’Anna); Crea, Simona (Scuola Superiore Sant’Anna); Baldoni, Andrea (Scuola Superiore Sant’Anna); Emilio, Trigili (Scuola Superiore Sant’Anna); Giorgia, Ercolini (Scuola Superiore Sant’Anna); Nicola, Mastronadiva (Scuola Superiore Sant’Anna); Fabio, Stroppa (Scuola Superiore Sant’Anna); Daisie, Stefania (Scuola Superiore Sant’Anna); Bertolucci, Federica (Neurorehabilitation Unit, AOUP, Pisa); Spalletti, Cristina (Consiglio Nazionale delle Ricerche, Istituto di Neuroscienze); Panarese, Alessandro (Scuola Superiore Sant’Anna di Pisa); Postararo, Federico (AUXIL Coy Vitae Hospital); Caleo, Matteo (Consiglio Nazionale delle Ricerche, Istituto di Neuroscienze); Frisoli, Antonio (SSSUP); Carmelo, Chisari (Neurorehabilitation Unit, AOUP, Pisa); Vitello, Nicola (Scuola Superiore Sant’Anna); Micera, Silvestro* (Scuola Superiore Sant’Anna)

17:15-19:00 FrPoS-31.24

A Less-Biased Regression Method to Quantify Receptor Density from the Logon Graphical Analysis in Positron Emission Tomography
Shigwedha, Paulus Kapundjia* (Kogakuin University); Kimura, Yuichi (Faculty of Biology-Oriented Science and Technology, Kyushu University); Fukuoka, Yutaka (Kogakuin University)

17:15-19:00 FrPoS-31.25

Studying Protein Adsorption with Single Molecule Imaging
Asatomi, Fumiya* (I-Shou University); Hsu, Shun (Institute of Polymer Science and Engineering, National Taiwan University); Tsai, Ming-Hong (Biomedical Engineering, I-Shou University); Tseng, Ting-Chen (Institute of Polymer Science and Engineering, National Taiwan University)

17:15-19:00 FrPoS-31.26

The Exercise Promotion using Sound Feedback Wearable Devices
Asatomi, Fumiya* (I-Shou University); Hsu, Shun (Institute of Polymer Science and Engineering, National Taiwan University); Tsai, Ming-Hong (Biomedical Engineering, I-Shou University); Tseng, Ting-Chen (Institute of Polymer Science and Engineering, National Taiwan University)

17:15-19:00 FrPoS-31.27

Sleep Stage Estimation using Head Motion
Yoshihi, Motoki* (Ritsumeikan Univ., College of Science and Engineering); Nochino, Teruaki (Osaka Univ.); Okada, Shima (Ritsumeikan Univ.); Makikawa, Masaaki (Ritsumeikan Univ.)

17:15-19:00 FrPoS-31.28

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### July 20 Friday

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<td>Effects of Inattention on ERPs during Simulated Driving</td>
<td>Lee, Chang Won* (Hyundai Mobis); Kim, Taekyung (Hyundai Mobis); Lim, Hyunjun (Hyundai Mobis Co., Ltd.); Park, Ki-Hee (Hyundai Mobis Co., Ltd.); Hwang, Jong Ho (Hanyang University); Park, Jinsick (Hanyang University); Kim, In Young (Hanyang University); Byun, Ohsung (Hyundai Mobis Co., Ltd.)</td>
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<td>17:15-19:00</td>
<td>FrPoS-32.15</td>
<td>The Promotion of Muscle Protein Synthesis of Skeletal Muscle Cells Due to ROS Generation by Exposure to Ultrasound</td>
<td>Furuya, Motohide; Okamoto, Chihiro (Doshisha University); Ichikawa, Hiroshi (Doshisha University); Akaiyama, Iwaki* (Doshisha University)</td>
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<td>Adaptive Heart Rate Estimation from Face Videos</td>
<td>Sharma, Utkarsh* (NEC Corp.); Umematsu, Terumi (NEC Corp.); Tsujikawa, Masanori (NEC Corp.); Onishi, Yoshifumi (NEC Corp.)</td>
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<td>The Development of Blood Pressure Measurement System and Algorithm during Driving</td>
<td>Kim, Chan-II (Keimyung University); Kim, Hyung Jin (Gumi Electronics and Information Technology Research Institute); Lee, Jong-Ha* (Keimyung University, School of Medicine)</td>
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<td>17:15-19:00</td>
<td>FrPoS-32.18</td>
<td>Gait Identification using 3-Axis Accelerometer</td>
<td>Lee, SeungJae (Hanyang University); Kim, Dohyun (Hanyang University); Ahn, Hyun Jun (Hanyang University); Kim, Min Seong (Hanyang University); Park, Cheoljun (Hanyang University); Choi, Jaeyoung (Hanyang University); Lee, Jong-Shill* (Hanyang University); Kim, Sun I. (Osong Medical Innovation foundation)</td>
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<td>17:15-19:00</td>
<td>FrPoS-32.19</td>
<td>Classification of Knee Osteoarthritis with Cyclogram of Joint Angles</td>
<td>Lee, hyojin (BioMedical Engineering Dept., Univ. of Hanyang); Ahn, Hyun Jun (Hanyang Univ.); Kim, Sunae (Dept. of BioMedical Engineering Hanyang Univ.); Choi, Jaeyoung (Hanyang Univ.); Yook, Sunhyun (Hanyang Univ.); Park, Jinsick (Hanyang Univ.); Kim, Sun I. (Osong Medical Innovation foundation); Jang, DongPyo* (Hanyang Univ.)</td>
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<td>17:15-19:00</td>
<td>FrPoS-32.20</td>
<td>Sleep State Estimation using Wearable ECG Measurement Device</td>
<td>Matsumoto, Hirotaka* (Ritsumeikan Univ.); Okada, Shima (Ritsumeikan Univ.); Makikawa, Masaaki (Ritsumeikan Univ.)</td>
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<td>17:15-19:00</td>
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<td>Development of Pulse Wave Measuring Device using Barometric Pressure Sensor</td>
<td>Lee, Jaehun (Yonsei University); Kwon, Soon-II (Yonsei University); Yoon, Young-ro* (Yonsei University)</td>
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<td>17:15-19:00</td>
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<td>Desorption of DMPC Molecules from the Microbubble Surface under Ultrasound Irradiation</td>
<td>Nakata, Makiko (Doshisha University); Tanimura, Nozomi (Doshisha University); Koyama, Daisuke* (Doshisha University); Krafft, Marie Pierre (Institut Charles Saderon)</td>
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<td>Classification of Obstructive Sleep Apnea using Non-Contact Respiratory Monitoring System</td>
<td>Park, Jonguk (Yonsei Univ.); Kang, KyuMin (Yonsei Univ.); Urtnasan, Erdenebayar (Yonsei Univ.); Choi, Ho Seon (Daewon Univ. College); Lee, Kyoung Joung* (Yonsei Univ.)</td>
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<td>17:15-19:00</td>
<td>FrPoS-32.24</td>
<td>On-Demand Automatic Registration Method between CT and Electromagnetic Tracking Device using RGB-D Camera</td>
<td>Choi, Min Hyuk* (Seoul National University); Yi, WonJin (Seoul National University, School of Dentistry)</td>
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<td>Analysis of Driver’s Attention State using Heart Rate Variability and Electroencephalography</td>
<td>Hong, Sung Jun (Hanyang University); Hwang, Jong Ho (Hanyang University); Lee, hyojin (BioMedical Engineering Dept., University of Hanyang); Park, Cheoljun (Hanyang); Lim, Hyunjun (Hyundai Mobis Co., Ltd.); Park, Jinsick (Hanyang University); Jang, DongPyo (Hanyang University); Kim, Taekyung (Hyundai Mobis); Lee, Chang Won (Hyundai Mobis); Park, Ki-Hee (Hyundai Mobis Co., Ltd.); Kim, In Young* (Hanyang University)</td>
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<td>Whole Brain Analysis of Brain Areas Altered by Internet Addiction using Permutation Test</td>
<td>Okaizaki, Yasuomi* (Waseda University); Oshiro, Ryotaro (Waseda University); Kuriki, Shinya (Tokyo Denki University); Kobayashi, Hiroshi (Tokyo Denki University); Nakayama, Hideki (National Hospital Organization Kurihama Medical and addiction center); Mihrara, Satoko (National Hospital Organization Kurihama Medical and addiction center); Higuchi, Susumu (National Hospital Organization Kurihama Medical and addiction center); Ishiyama, Atsushi (Waseda University)</td>
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<td>Interlocking Control of Blood Viscosity and Red Blood Cell Aggregation Degree under Alkaline Condition</td>
<td>Sato, Takayuki* (Tokyo Metropolitan University)</td>
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<td>Localization of Brain Areas with Altered Functional Connectivity by Internet-Use Addiction</td>
<td>Oshiro, Ryotaro* (Waseda Univ.); Okazaki, Yasuomi (Waseda Univ.); Ono, Yumie (Meiji Univ.); Ishiyama, Atsushi (Waseda Univ.); Mihara, Satoko (National Hospital Organization Kurihama Medical and addiction center); Higuchi, Susumu (National Hospital Organization Kurihama Medical and addiction center); Kobayashi, Hiroshi (Tokyo Denki Univ.); Kuriki, Shinya (Tokyo Denki Univ.); Nakayama, Hideki (National Hospital Organization Kurihama Medical and addiction center)</td>
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<td>Finite Element Analysis of Potential Migration of a Stent Graft into Thoracic Aortic Aneurysm</td>
<td>Kozaki, Junya (Waseda Univ.); Zhu, Xiaodong (Waseda Univ.); Shukuzawa, Kota (Waseda Univ.); Umezu, Mitsuo (Waseda Univ. Graduate School); Iwasaki, Kiyotaka* (Waseda Univ.)</td>
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<td>Objective Evaluation of Fundamental Perception Characteristics of Cartilage Conduction by Brain Magnetic Field Measurement</td>
<td>Yap, Gaik Sean* (Chiba University); Otsuka, Sho (Chiba University); Yamoto, Masato (Graduate School of Medicine, University of Tokyo); Nakagawa, Seiji (Chiba University)</td>
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<td>Development of Stable Electrocardiogram Measurement System using Multi Capacitance Coupling Electrodes</td>
<td>Kato, Daiki* (Ritsumeikan University); Nochino, Teruaki (Osaka University); Makikawa, Masaaki (Ritsumeikan University); Okada, Shima (Ritsumeikan University)</td>
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<td>Development of Socks to Prevent an Inversion Sprain in Futsal</td>
<td>Sato, Yuuya* (Ritsumeikan University); Okada, Shima (Ritsumeikan University)</td>
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**Saturday, 21 July 2018**

**SaAT1: 08:00-09:30**
**Meeting Room 311**
**Neural Interfaces (III) (Theme 6) (Oral Session)**
Chair: Lee, Hyunjo Jenny (Korea Advanced Institute of Science and Technology (KAIST))

08:00-08:15
**SaAT1.1**
Flexible MRI Compatible Brain Probes
Ahmadi, Mahdi (University of Minnesota); Cruttenden, Corey (University of Minnesota); Zhu, Xiao-Hong (University of Minnesota); Chen, Wei (University of Minnesota); Rajamani, Raja (University of Minnesota)

08:15-08:30
**SaAT1.2**
Electrophysiological Detection of Cortical Neurons under Gamma-Aminobutyric Acid and Glutamate Modulation based on Implantable Microelectrode Array Combined with Microinjection
Song, Yilin (State Key Lab of Transducer Technology, Institute of Electronics, Chinese Academy of Sciences); Xiao, Guihua (University of Chinese Academy of Sciences); Li, Ziyue (Chinese Academy of Sciences, Institutes of Electronics); Gao, Fei (Chinese Academy of Sciences, Institutes of Electronics); Wang, Mixia (Institute of Electronics, Chinese Academy of Sciences); Xu, Shengwei (Institute of Electronics, Chinese Academy of Sciences); Cai, Xinxia (Institute of Electronics, Chinese Academy of Sciences)

08:30-08:45
**SaAT1.3**
Micro-Folded 3D Neural Electrodes Fully Integrated in Polyimide
Rehberger, Frank (Univ. of Freiburg); Steiglitz, Thomas (Univ. of Freiburg); Eickenscheidt, Max (Univ. of Freiburg)

08:45-09:00
**SaAT1.4**
3D Printed Cranial Window System for Chronic μECoG Recording
Bent, Brinnaae (Duke University); Williams, Ashley (Duke University); Bolick, Ryan (RJB Design); Chiang, Ken Chia-Han (Duke University); Trumpis, Michael (Duke University); Viventi, Jonathan (Duke University)

09:00-09:15
**SaAT1.5**
Implantable Glass Waveguides and Coating Materials for Chronic Optical Medical Applications
Alt, Marie Theresa (University of Freiburg); Mittnacht, Annette (University of Freiburg); Steiglitz, Thomas (University of Freiburg)

09:15-09:30
**SaAT1.6**
Application of Parylene-Based Flexible Multi-Electrode Array for Recording from Subcortical Brain Regions from Behaving Rats
Xu, Huijing (University of Southern California); Scholten, Kee (University of Southern California); Meng, Ellis (University of Southern California); Berger, Theodore (USC); Song, Dong (University of Southern California)

**SaAT2: 08:00-09:30**
**Meeting Room 312**
**Physiological Systems Modeling: Multivariate Signal Processing (Theme 1) (Oral Session)**
Chair: Faes, Luca (University of Palermo)
Co-Chair: Bianchi, Anna Maria (Politecnico di Milano)

08:00-08:15
**SaAT2.1**
Graph-Based Dimensionality Reduction of EEG Signals via Functional Clustering and Total Variation Measure for BCI Systems
Mohammadi, Arash* (Concordia University); Kalantar, Golnar (Concordia University)

08:15-08:30
**SaAT2.2**
Multiscale Decomposition of Cardiovascular and Cardiorespiratory Information Transfer under General Anesthesia
Faes, Luca* (University of Palermo); Bari, Vlaja (IRCCS PoliClinico San Donato); Ranucci, Marco (Dept. of Cardiothoracic, Vascular Anesthesia and Intensive Care, IRCCS PoliClinico San Donato, Milan); Porta, Alberto (Università degli Studi di Milano)

08:30-08:45
**SaAT2.3**
A New Modelling Framework to Study Time-Varying Directional Brain-Heart Interactions: Preliminary Evaluations and Perspectives
Catrambone, Vincenzo* (Università di Pisa); Greco, Alberto (Università di Pisa); Nardelli, Mimma (Università di Pisa); Ghiasi, Shadi (Università di Pisa); Vanello, Nicola (Università di Pisa); Scilingo, Enzo Pasquale (Università di Pisa); Valenza, Gaetano (Università di Pisa)

08:45-09:00
**SaAT2.4**
Exploration of Commercial Web-Sites Affects Autonomic Responses Related to Unconscious Emotions
Riccardo, Lolatto (Politecnico di Milano); Tacchino, Giulia (Politecnico di Milano); Bettiga, Debora (Politecnico di Milano); Lamberti, Lucio (Politecnico di Milano); Cerutti, Sergio (Politecnico di Milano); Bianchi, Anna Maria* (Politecnico di Milano)

09:00-09:15
**SaAT2.5**
Human-Machine Interaction Assessment by Neurophysiological Measures: A Study on Professional Air Traffic Controllers
Arico, Pietro (Fondazione Santa Lucia); Reynal, Maxime (ENAC French Civil Aviation Univ., Toulouse Univ.); Imbert, Jean-Paul (ENAC); Horuter, Christophe* (ENAC French Civil Aviation Univ., Toulouse Univ.); Borghini, Gianluca (Sapienza Univ. of Rome); Di Fumeri, Gianluca (Univ. of Rome Sapienza); Sciaraffa, Nicolina (Dept. of Computer, Control and Management Engineering, Univ. of Rome Sapienza); Di Florio, Antonio (Dept. Molecular Medicine, Univ. of Rome “Sapienza”); Terenzi, Michela (Deep Blue); Ferreira, Ana (Deep Blue); Pozzi, Simone (Deep Blue); Bettì, Viviana (Dept. Psychology, Rome); Matteo, Marucci (BrainTrends srl); Pavone, Enea (BrainTrends srl, Rome); C. Telea, Alexandru (Dept. of Mathematics and Computing Science, Univ. of Groningen); Babiloni, Fabio (Univ. of Rome)

09:15-09:30
**SaAT2.6**
A Framework for Physiological Response Prediction with Joint Activity State Optimization
Gonzalez, Laura* (North Carolina State University); Zhong, Boxuan (North Carolina State University); Lobaton, Edgar (North Carolina State University)

08:00-08:15
**SaAT3.1**
Isometry Invariant Shape Descriptors for Abnormality Detection on Brain Surfaces Affected by Alzheimer’s Disease
Tu, Yanshuai* (Arizona State Univ.); Wen, Chengfeng (Stone Brook Univ.); Zhang, Wen (School of Computing, Informatics, and Decision Systems Engineering, Arizona State Univ.); Wu, Jianfeng (Arizona State Univ.); Zhang, Jie (Arizona State Univ.); Chen, Kewei (Shanghai Jiao Tong Univ.); Caselli, Richard (Dept. of Neurology, Mayo Clinic Arizona); Reiman, Eric (Banner Alzheimer’s Institute); Gu, David Xianfeng (State Univ. of New York at Stony Brook); Wang, Yalin (Arizona State Univ.)

08:15-08:30
**SaAT3.2**
Discriminating ADHD from Healthy Controls using a Novel Feature Selection Method based on Relative Importance and Ensemble Learning
Yao, Dongren (Institute of Automation, Chinese Academy of Sciences); Guo, Xiaoie (Peking Univ.); Zhao, Qihua (Peking Univ.); Liu, Lu (Peking Univ.); Cao, Qingjiu (Institute of Mental Health, Peking Univ., China); Wang, Yufeng (Peking Univ.); Calhoun, Vince (The Mind Research Network/Univ. of New Mexico); Sun, Li (Peking Univ.); Sui, Jing* (Institute of Automation, Chinese Academy of Sciences)

08:30-08:45
**SaAT3.3**
QRS Detection and Measurement Method of ECG Paper based on Convolutional Neural Networks
Yu, Runze (Peking University); Gao, Yingguo (Peking University); Duan, Xiaohui* (Peking University); Zhu, Tiangang (Peking University People’s Hospital); Wang, Zhihong (Peking University People’s Hospital); Jiao, Bingli (Peking University)
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<th>Time</th>
<th>Session</th>
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<tr>
<td>08:00-09:30</td>
<td>SaAT4.5</td>
<td>Analysis of Cellular Feature Differences of Astrocytomias with Distinct Mutational Profiles using Digitized Histopathology Images</td>
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<td>08:00-09:30</td>
<td>SaAT4.6</td>
<td>Carbon Nanotube-Cellulose Pellicle for Glucose Biofuel Cell</td>
<td>Hasan, Md Qumrul (University of Maryland Baltimore County); Yuen, Jonathan (U.S. Naval Research Lab); Slaughter, Gymama (University of Maryland Baltimore County)</td>
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<tr>
<td>08:00-09:30</td>
<td>SaAT4.3</td>
<td>Development of a Contactless Energy Harvesting System Driven by Contraction of Skeletal Muscle for Implantable Medical Devices</td>
<td>Mochida, Takumi (Tokyo Institute of Technology); Hijikata, Wataru (Tokyo Institute of Technology)</td>
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<td>08:00-09:30</td>
<td>SaAT4.2</td>
<td>Subcutaneous Solar Energy Harvesting for Self-Powered Wireless Implantable Sensor Systems</td>
<td>Wu, Taiyang (Monash University); Redouté, Jean-Michel (Monash University); Yuce, Mehmet (Monash University)</td>
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<tr>
<td>08:00-09:30</td>
<td>SaAT4.4</td>
<td>Blood-Separating Device without Energy Source for Implantable Medical Devices</td>
<td>Otsuki, Hinako (Keio University); Ota, Takashi (Keio University); Miki, Norihisa (Keio University)</td>
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<td>08:00-09:30</td>
<td>SaAT4.1</td>
<td>Motor Attempt EEG Paradigm as a Diagnostic Tool for Disorders of Consciousness</td>
<td>Schneider, Christoph (EPFL); Perdikis, Serafeim (EPFL; École Polytechnique Fédérale de Lausanne); Silva, Marina (Acute Neurorehabilitation Unit, Division of Neurology, Dept. of Clinical NeuroSciences, Centre Hospitalier Universitaire Va)</td>
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<td>08:00-09:30</td>
<td>SaAT4.5</td>
<td>Preparation-Free Measurement of Event-Related Potential in Oddball Tasks from Hairy Parts using Candle-Like Dry Microneedle Electrodes</td>
<td>Yoshida, Yuru (Keio University); Kudo, Yuta (Keio University); Hoshino, Eichi (Keio University); Minagawa, Yasu (Keio University); Miki, Norihisa (University)</td>
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<tr>
<td>08:00-09:30</td>
<td>SaAT6.2</td>
<td>Effect of Botulinum Toxin on the Spatial Distribution of Biceps Brachii EMG Activity using a Grid of Surface Electrodes: A Case Study</td>
<td>Afsharpoor, Babak (Northwestern University); Chandra, Sourav (Shirley Ryan AbilityLab); Son, Jongsang (Shirley Ryan AbilityLab (formerly Rehabilitation Institute of Chicago)); Rymer, William Zev (Northwestern &amp; Rehab Inst of Chicago); Suresh, Nina (Rehabilitation Institute of Chicago)</td>
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<td>08:00-09:30</td>
<td>SaAT4.7</td>
<td>Toward Lung Tumor Localization based on Strain Variability of Lung Surface during Video-Assisted Thoracoscopic Surgery</td>
<td>Chopra, Nikita (Western University); Nicholson-Smith, Chloé (The University of Western Ontario); Shahbazi, Mahya (The University of Western Ontario, Canadian Surgical Technologies and Advanced Robotics (CSTAR)); Malthaner, Richard A. (London Health Sciences Centre, University of Western Ontario)</td>
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<td>08:00-09:30</td>
<td>SaAT4.8</td>
<td>Analysis of Cellular Feature Differences of Astrocytomias with Distinct Mutational Profiles using Digitized Histopathology Images</td>
<td>Roy, Mousumi (Stony Brook University); Wang, Fusheg (Stony Brook University); Teodoro, George (University of Brasilia); Velázquez Vega, José E. (Emory University); Brat, Daniel (Emory University); Kong, Jun (Emory University)</td>
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<td>08:00-09:30</td>
<td>SaAT4.9</td>
<td>Development of a Contactless Energy Harvesting System Driven by Contraction of Skeletal Muscle for Implantable Medical Devices</td>
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<td>SaAT4.10</td>
<td>Subcutaneous Solar Energy Harvesting for Self-Powered Wireless Implantable Sensor Systems</td>
<td>Wu, Taiyang (Monash University); Redouté, Jean-Michel (Monash University); Yuce, Mehmet (Monash University)</td>
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<td>Blood-Separating Device without Energy Source for Implantable Medical Devices</td>
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<td>08:00-09:30</td>
<td>SaAT4.12</td>
<td>Motor Attempt EEG Paradigm as a Diagnostic Tool for Disorders of Consciousness</td>
<td>Schneider, Christoph (EPFL); Perdikis, Serafeim (EPFL; École Polytechnique Fédérale de Lausanne); Silva, Marina (Acute Neurorehabilitation Unit, Division of Neurology, Dept. of Clinical NeuroSciences, Centre Hospitalier Universitaire Va)</td>
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<td>08:00-09:30</td>
<td>SaAT4.13</td>
<td>Preparation-Free Measurement of Event-Related Potential in Oddball Tasks from Hairy Parts using Candle-Like Dry Microneedle Electrodes</td>
<td>Yoshida, Yuru (Keio University); Kudo, Yuta (Keio University); Hoshino, Eichi (Keio University); Minagawa, Yasu (Keio University); Miki, Norihisa (University)</td>
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<tr>
<td>08:00-09:30</td>
<td>SaAT4.14</td>
<td>Effect of Botulinum Toxin on the Spatial Distribution of Biceps Brachii EMG Activity using a Grid of Surface Electrodes: A Case Study</td>
<td>Afsharpoor, Babak (Northwestern University); Chandra, Sourav (Shirley Ryan AbilityLab); Son, Jongsang (Shirley Ryan AbilityLab (formerly Rehabilitation Institute of Chicago)); Rymer, William Zev (Northwestern &amp; Rehab Inst of Chicago); Suresh, Nina (Rehabilitation Institute of Chicago)</td>
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<td>08:00-09:30</td>
<td>SaAT5.1</td>
<td>Improving EEG Source Localization with a Novel Regularization: Spatiotemporal Graph Total Variation (STGTV) Method</td>
<td>Zhou, Hanyue (University of California Los Angeles); Wang, Yushan (University of California Los Angeles); Li, Ying (University of California Los Angeles); Ruan, Dan (University of California Los Angeles); Liu, Wentai (University of California Los Angeles)</td>
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<td>08:00-09:30</td>
<td>SaAT5.2</td>
<td>A Comparison of Point and Complete Electrode Models in a Finite Difference Model of Invasive Electrode Measurements</td>
<td>Hyde, Damon (Boston Children’s Hospital and Harvard Medical School); Tomas-Fernandez, Xavier (Harvard University); Stone, Scellig (Boston Children’s Hospital and Harvard Medical School); Peters, Jurriaan (Boston Children’s Hospital); Warfield, Simon K. (Harvard Medical School)</td>
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<tr>
<td>08:00-09:30</td>
<td>SaAT5.3</td>
<td>Motor Attempt EEG Paradigm as a Diagnostic Tool for Disorders of Consciousness</td>
<td>Schneider, Christoph (EPFL); Perdikis, Serafeim (EPFL; École Polytechnique Fédérale de Lausanne); Silva, Marina (Acute Neurorehabilitation Unit, Division of Neurology, Dept. of Clinical NeuroSciences, Centre Hospitalier Universitaire Va)</td>
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<td>Yoshida, Yuru (Keio University); Kudo, Yuta (Keio University); Hoshino, Eichi (Keio University); Minagawa, Yasu (Keio University); Miki, Norihisa (University)</td>
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<td>08:00-09:30</td>
<td>SaAT5.5</td>
<td>Automatic Independent Component Scalp Map Analysis of Electroencephalogram during Motor Preparation</td>
<td>Cheema, Maninderpal Singh (SUNY Buffalo); Dutta, Anirban (University at Buffalo SUNY)</td>
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<td>08:00-09:30</td>
<td>SaAT6.1</td>
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<td>08:00-09:30</td>
<td>SaAT6.2</td>
<td>Inter-Limb Muscle Synergy of Hands-and-Knees Crawling in Typical Developing Infants and Infants with Developmental Delay</td>
<td>Xiong, Qiliang (Chongqing University); Hou, Wensheng (Bioengineering Inst of Chongqing University)</td>
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08:00-09:30 Meeting Room 318A

Neural Stimulation (IV) (Theme 6) (Oral Session)

08:08-08:15
A Neuroprotective Brain Stimulation for Vulnerable Cerbellar Purkinje Cell after Ischemic Stroke: A Study with Low-Intensity Focused Ultrasound

Baek, Hongchae (Korea Institute of Science and Tech.); Sariev, Anvar (KIST); Kim, Min-Ju (Korea Institute of Science and Tech.); Lee, Hojin (Korea Institute of Science and Tech.); Kim, Jinhyun (Korea Institute of Science and Tech.); Kim, Hyungmin* (Korea Institute of Science and Tech.)

08:15-08:30
Characterizing Stimulation Artifact Behavior in Simultaneous Electrocorticography Grid Stimulation and Recording

Lim, Jeffrey* (Univ. of California, Irvine); Wang, Po T. (Univ. of California Irvine); Karimi-Bidhendi, Alireza (Univ. of California Irvine); Arasteh, Omid M. (Univ. of California, Irvine); Shaw, Susan J. (Univ. of Southern California); Armacost, Michelle (Rancho Los Amigos National Rehabilitation Center); Gong, Hui (Univ. of Southern California); Liu, Charles Y. (Keck Hospital of the Univ. of Southern California); Do, An H. (Univ. of California Irvine); Heydari, Payam (Univ. of California Irvine); Nenadic, Zoran (Univ. of California Irvine)

08:30-08:45
Simulations of a Birdcage Coil B1+ Field on a Human Body Model for Designing a 3T Multichannel TMS/MRI Head Coil Array

Navarro de Lara, Lucia Isabel* (Martinos Center - MGH); Golestanirad, Laleh (University of Southern California); Makarov, Sergey (Electrical and Computer Engineering, Worcester Polytechnic Institute); Stockmann, Jason P. (Athinoula A. Martinos Center for Biomedical Imaging, Dept. of Radiology, Massachusetts General Hospital); Wald, Lawrence L. (A. A. Martinos Center for Biomedical Imaging, Dept. of Radiology); Nummenmaa, Aapo (Massachusetts General Hospital)

08:45-09:00
Characterizing Cortical Responses Evoked by Electrical Stimulation of the Mouse Infraorbital Nerve

Suminski, Aaron* (University of Wisconsin-Madison); Ness, Jared P. (University of Wisconsin-Madison); Novello, Joseph (University of Wisconsin-Madison); Brondick, Sarah (University of Wisconsin-Madison); Pisanelli, Jane (University of Wisconsin-Madison); Dingle, Aaron (University of Wisconsin-Madison); Poore, Samuel (University of Wisconsin-Madison); Lake, Wendell B. (University of Wisconsin-Madison); Williams, Justin (University of Wisconsin)

09:00-09:15
PEDOT: PSS Electrodes for Acute Experimental Evaluation of Vagus Nerve Stimulation on Rodents

Kergoat, Loïg (INS, Institut de NeuroSciences des Systèmes, Inserm, Aix Marseille Université); Dieuset, Gabriel (LTSI, Inserm UMR 1099, Rennes, France; University Rennes 1, France); Le Rolle, Virginie (University of Rennes 1); Millarais, George (École Nationale Supérieure des Mines, CMP-EMSE, MOC); Martin, Benoit (INSERM, Université de Rennes 1; LTSI); Bernard, Christophe (The Laboratoire de Neurophysiologie et Neuropsychologie); Hernández, Alfredo I* (University of Rennes 1 and INSERM U1099)

09:15-09:30
Transcranial Direct Current Stimulation of the Leg Motor Area – Is it Partly Somatosensory?

Abadi, Zeynab Rezaee Hassan (University at Buffalo SUNY); Dutta, Anirban* (University at Buffalo SUNY)
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<th>Time</th>
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<tr>
<td>08:00-08:15</td>
<td>SaAT10.1</td>
<td>Personalised Meal Eating Behaviour Analysis via Semi-Supervised Learning</td>
<td>Papadopoulos, Alexandros (Aristotle University of Thessaloniki); Kyritsis, Konstantinos (Aristotle University of Thessaloniki); Sarafis, Ioannis (Aristotle University of Thessaloniki); Delopoulos, Anastasios* (Aristotle University of Thessaloniki)</td>
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<td>08:15-08:30</td>
<td>SaAT10.2</td>
<td>Wavelet De-Noising Method with Adaptive Threshold Selection for Photoacoustic Tomography</td>
<td>Zhou, Meng (ShanghaiTech University); Xia, Haibo (Chinese Academy of Sciences); Lan, Hengrong (ShanghaiTech University); Duan, Tingyang (ShanghaiTech University); Zhong, Hongtao (ShanghaiTech University); Gao, Fei* (ShanghaiTech University)</td>
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<td>08:30-08:45</td>
<td>SaAT10.3</td>
<td>Optical Resolution Photoacoustic Microscopy with Fast Laser Scanning and Fixed Photoacoustic Detector</td>
<td>Ishikawa, Kodai (Tohoku Univ.); Shintate, Ryo (Tohoku Univ.); Nagaoka, Ryo (Tohoku Univ.); Sajjo, Yoshifumi* (Tohoku Univ.)</td>
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<td>09:00-09:15</td>
<td>SaAT10.4</td>
<td>Hybrid Multi-Wavelength Photoacoustic Imaging</td>
<td>Tu, Zhi (ShanghaiTech University); Lan, Hengrong (ShanghaiTech University); Zhong, Hongtao (ShanghaiTech University); Zhou, Meng (ShanghaiTech University); Zhang, Ruochong (Nanyang Technological University); Gao, Fei* (ShanghaiTech University)</td>
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<td>08:00-08:15</td>
<td>SaAT9.1</td>
<td>Ultrasound Imaging – Photoacoustic / Optoacoustic / Thermoacoustic (Theme 1) (Oral Session)</td>
<td>Duan, Tingyang (ShanghaiTech University); Lan, Hengrong (ShanghaiTech University); Zhong, Hongtao (ShanghaiTech University); Zhou, Meng (ShanghaiTech University); Zhang, Ruochong (Nanyang Technological University); Gao, Fei* (ShanghaiTech University)</td>
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<td>08:15-08:30</td>
<td>SaAT9.2</td>
<td>Brain Monitoring of Sedation in the Intensive Care Unit using a Recurrent Neural Network</td>
<td>Sun, Haoqi (Massachusetts General Hospital); Nagaraj, Sunil Belur (Massachusetts General Hospital); Akeju, Oluwaseun (Massachusetts General Hospital); Purdon, Patrick L (Massachusetts General Hospital); Westover, Brandon* (Massachusetts General Hospital); Westover, Brandon (MGH / Harvard Medical School)</td>
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<td>08:30-08:45</td>
<td>SaAT9.3</td>
<td>Deep Unsupervised Representation Learning for Abnormal Heart Sound Classification</td>
<td>Aminparian, Shahin* (University of Augsburg); Schmitt, Maximilian (University of Passau); Cummins, Nicholas (University of Augsburg); Qian, Kun (Technical University of Munich); Dong, Fangqun (Shenzhen University General Hospital); Schuller, Bjorn (Imperial College London)</td>
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<td>08:45-09:00</td>
<td>SaAT9.4</td>
<td>Classifying Treated vs. Untreated MDD Adolescents from Anatomical Connectivity using Nonlinear SVM</td>
<td>Chu, Shu-Hsien* (University of Minnesota); Lenglet, Christophe (University of Minnesota); Westlund Schreiner, Melinda (University of Minnesota); Klimes-Dougan, Bonnie (University of Minnesota); Cullen, Kathryn R. (University of Minnesota); Parhi, Keshab (University of Minnesota)</td>
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<td>09:00-09:15</td>
<td>SaAT9.5</td>
<td>Convolutional Neural Networks for Pathological Voice Detection</td>
<td>Wu, Huiy* (University of Strathclyde); Soraghan, John J (University of Strathclyde); Lowit, Anja (Strathclyde University); Di Caterina, Gaetano (University of Strathclyde)</td>
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<td>09:15-09:30</td>
<td>SaAT9.6</td>
<td>Validating an Algorithm for Automatic Scoring of Inspiratory Flow Limitation within a Range of Recording Settings</td>
<td>Camassa, Alessandra* (Institut d'Investigacions Biomèdiques August Pi Sunyer (IDIBAPS), Barcelona); Franciosini, Angelo (INT); Sands, Scott Aaron (Brigham and Women's Hospital and Harvard Medical School); Zhi, Ying Xuan (University of Toronto); Yadollahi, Azadeh (University of Toronto); Bianchi, Anna Maria (Politecnico di Milano); Wellman, David Andrew (Harvard Medical School); Redline, Susan (Rainbow Babies and Children's Hospital); Azarbarzin, Ali (The University of Manitoba); Mariani, Sara (Brigham and Women's Hospital, Harvard Medical School)</td>
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<td>08:00-08:15</td>
<td>SaAT12.1</td>
<td>Optical Spectroscopic Ultrasound Displacement Imaging</td>
<td>Malik, Avinash* (University of Auckland); Trew, Mark L. (University of Auckland); Peng, Tommy (University of Auckland)</td>
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<td>08:15-08:30</td>
<td>SaAT12.2</td>
<td>Wavelet De-Noising Method with Adaptive Threshold Selection for Photoacoustic Tomography</td>
<td>Zhou, Meng (ShanghaiTech University); Xia, Haibo (Chinese Academy of Sciences); Lan, Hengrong (ShanghaiTech University); Duan, Tingyang (ShanghaiTech University); Zhong, Hongtao (ShanghaiTech University); Gao, Fei* (ShanghaiTech University)</td>
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<td>08:00-08:15</td>
<td>SaAT11.1</td>
<td>Individual Working Memory Capacity Traced from Multivariate Pattern Classification of EEG Spectral Power</td>
<td>Astrand, Elaine* (Mälardalen University)</td>
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<td>08:15-08:30</td>
<td>SaAT11.2</td>
<td>Decoding Synergy-Based Hand Movements using Electroencephalography</td>
<td>Patel, Vrajeshri (Stevens Institute of Technology); Burns, Martin (Stevens Institute of Technology); Pei, Dingyi (Stevens Institute of Technology); Vinjamuri, Ramana* (Stevens Institute of Technology)</td>
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<td>08:30-08:45</td>
<td>SaAT11.3</td>
<td>Estimation of Finger Joint Angle based on Neural Drive Extracted from High-Density Electromyography</td>
<td>Dai, Chenyun* (University of North Carolina at Chapel Hill); Cao, Yizhou (University of North Carolina at Chapel Hill); Hu, Xiaogang (University of North Carolina-Chapel Hill)</td>
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<td>08:45-09:00</td>
<td>SaAT11.4</td>
<td>Semi-Simulation Experiments for Quantifying the Performance of SSVEP-Based BCI after Reducing Artifacts from Trapezius Muscles</td>
<td>Kanoga, Suguru* (National Institute of Advanced Industrial Science and Technology (AIST)); Nakanishi, Masaki (University of California San Diego); Murai, Akihiko (National Institute of Advanced Industrial Science and Technology (AIST)); Tada, Mitsunori (National Institute of Advanced Industrial Science and Technology (AIST)); Kanemura, Atsunori (National Institute of Advanced Industrial Science and Technology (AIST))</td>
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08:15-08:30 SaAT13.2
Follow the Light – From Low-Energy Defibrillation to Multi-Site Photostimulation
Diaz-Maue, Laura (Max Planck Institute for Dynamics and Self-organization); Schweitzer, Michael (Univ. of Freiburg); Ruther, Patrick (Univ. of Freiburg); Luther, Stefan (Max Planck Institute for Dynamics and Self-Organization); Richter, Claudia* (Max Planck Institute for Dynamics and Self-Organization)

08:30-08:45 SaAT13.3
Invasive Optical Pacing in Perfused, Optogenetically Modified Mouse Heart using Stiff Multi-LED Optical Probes
Ayub, Suleman* (IMTEK, Univ. of Freiburg); Ruther, Patrick (Univ. of Freiburg); Paul, Oliver (Univ. of Freiburg); Kohl, Peter (Univ. of Oxford); Johnston, Callum Michael (Univ. of Auckland)

09:00-09:30 Meeting Room 321B
Cardiovascular Signal Processing (Theme 5) (Oral Session)

08:00-08:15 SaAT13.1
The Accuracy of Atrial Fibrillation Detection from Wrist Photoplethysmography. A Study on Post-Operative Patients
Tarniceriu, Adrian* (PulseOn SA); Harju, Jarkko (Tampered University Hospital); Rezaeiyousefi, Zeinab (PulseOn Ltd.); Vehkoajo, Antti (Tampered University of Technology); Parak, Jakub (Tampered University of Technology); Yli-Hankala, Arvi (University of tampere); Korhonen, Ilkka (Tampered University of Technology)

08:15-08:30 SaAT13.2
Short-Term Model-Based Multiscale Complexity Analysis of Cardiac Control Provides Complementary Information to Single-Scale Approaches
Porta, Alberto* (Univ. degli Studi di Milano); De Maria, Beatrice (IRCCS Fondazione Salvatore Maugeri, Milano); Cairo, Beatrice (Univ. degli Studi di Milano); Vaini, Emanuele (IRCCS PoliClinico San Donato); Bari, Vlasta (Univ. Politecnica delle Marche)

08:30-08:45 SaAT13.3
Automatic T-Wave Alternans Identification in Indirect and Direct Fetal Electrocardiography
Marcantoni, Ilaria (Univ. Politecnica delle Marche); Sbrolini, Agnese (Univ. Politecnica delle Marche); Burattini, Luca (Univ. Politecnica delle Marche); Morettini, Micaela (Univ. Politecnica delle Marche); Fioretti, Sandro (Univ. Politecnica delle Marche); Burattini, Laura* (Univ. Politecnica delle Marche)

08:45-09:00 SaAT13.4
Phase Relation between Depolarization and Repolarization Alternans in ECG
Alaeei Varnosferani, Sahar* (University of Kentucky); Wasemiller, David (University of Kentucky); Wang, Siqi (University of Kentucky); Anaya, Paul (University of Kentucky); Patwardhan, Abhijit (University of Kentucky)

09:00-09:15 SaAT13.5
Respiratory Sinus Arrhythmia Quantified with Linear and Non-Linear Techniques to Classify Dilated and Ischemic Cardiomyopathy
Giraldo, Beatriz* (Universitat Politècnica de Catalunya); Pericas, Maria Francisca (Technical University of Catalonia); Schroeder, Rico (University of Applied Sciences Jena); Voss, Andreas (University of Applied Sciences Jena)

09:15-09:30 SaAT13.6
A Novel Artifact Reconstruction Method Applied to Blood Pressure Signals
Giraldo, Beatriz* (Universitat Politècnica de Catalunya); Rodríguez, Javier (Institut de Bioenginyeria de Catalunya (IBEC))
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Chair</th>
<th>Co-Chair</th>
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<tr>
<td>08:15-08:30</td>
<td>SaAT15.2</td>
<td>Estimating the Intensity and Anisotropy of Tumor Treating Fields using Singular Value Decomposition. Towards a More Comprehensive Estimation of Anti-Tumor Efficacy</td>
<td>Korshej, Anders R.* (Aarhus University Hospital); Thielischer, Axel (Copenhagen University Hospital Hvidovre, Denmark &amp; BioMedical Engineering Section)</td>
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<tr>
<td>08:30-08:45</td>
<td>SaAT15.3</td>
<td>Effective Diffusion and Tortuosity in Brain White Matter</td>
<td>Vidotto, Marco*  (Politecnico di Milano); Dini, Daniele  (Imperial College London); De Momi, Elena  (Politecnico di Milano)</td>
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<tr>
<td>08:45-09:00</td>
<td>SaAT15.4</td>
<td>Long-Acting Insulin in Diabetes Therapy: In Silico Clinical Trials with the UVA/Padova Type 1 Diabetes Simulator</td>
<td>Visentin, Roberto* (Univ. of Padova); Schiavon, Michele (Univ. of Padova); Giegerich, Clemens (Sanofi-Aventis Deutschland GmbH, Translational Informatics/Translational Medicine and Early Development, Frankfurt, Germany); Klabunde, Thomas (Sanofi-Aventis Deutschland GmbH, R&amp;D LGC/Structure, Design &amp; Informatics, Frankfurt, Germany); Dalla Man, Chiara (Univ. of Padova); Cobelli, Claudio (Univ. of Padova)</td>
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<tr>
<td>09:00-09:15</td>
<td>SaAT15.5</td>
<td>Automatic Screening to Detect ‘At Risk’ Child Speech Samples using a Clinical Group Verification Framework</td>
<td>Kothalkar, Prasanna (University of Texas at Dallas); Rudolph, Johanna (University of Texas at Dallas); Dallaghan, Christine (University of Texas at Dallas); Mcglothin, Jenny (University of Texas at Dallas); Campbell, Thomas (UTD Callier Center); Hansen, John H.L.* (University of Texas at Dallas)</td>
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<td>09:15-09:30</td>
<td>SaAT15.6</td>
<td>Mapping ADL Motion Capture Data to BLUE SABINO Exoskeleton Kinematics and Dynamics</td>
<td>Bitikofen, Christophor* (University of Idaho); Wobrecht, Eric (University of Idaho); Perry, Joel C. (University of Idaho)</td>
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<td>08:00-08:15</td>
<td>SaAT16.1</td>
<td>A New Fully Automated Random-Forest Algorithm for Sleep Staging</td>
<td>Gradl, Stefan (Technical Univ. of Denmark); Cesari, Matteo (Technical Univ. of Denmark); Olesen, Alexander Neergaard (Technical Univ. of Denmark); Jensen, Pou (Univ. of Copenhagen, Denmark); Soensensen, Helge B D (Technical Univ. of Denmark)</td>
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<td>08:15-08:30</td>
<td>SaAT16.2</td>
<td>Early Identification of Patentable Medical Innovations</td>
<td>Colbaugh, Richard (Volv Global); Glass, Kristin* (Volv Global)</td>
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<td>08:30-08:45</td>
<td>SaAT16.3</td>
<td>A Deep Deterministic Policy Gradient Approach to Medication Dosing and Surveillance in the ICU</td>
<td>Pakbin, Arash* (Texas A&amp;M University); Rafi, Parvez (Texas A&amp;M University); Huretley, Nate (Texas A&amp;M University); Schulz, Wade (Yale University); Krumholz, Harlan (Yale University School of Medicine)</td>
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<td>08:45-09:00</td>
<td>SaAT16.4</td>
<td>Prediction of ICU Readmissions using Data at Patient Discharge</td>
<td>Pakbin, Arash* (Texas A&amp;M University); Rafi, Parvez (Texas A&amp;M University); Huretley, Nate (Texas A&amp;M University); Schulz, Wade (Yale University); Krumholz, Harlan (Yale University School of Medicine); Mortazavi, Bobak (Texas A&amp;M University)</td>
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<td>09:00-09:15</td>
<td>SaAT16.5</td>
<td>Using Machine Learning Algorithms to Enhance the Management of Suicide Ideation</td>
<td>Colic, Sinisa* (University of Toronto); Richardson, Don (Western University); Reilly, James (McMaster University); Hasey, Gary (McMaster University)</td>
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<td>09:15-09:30</td>
<td>SaAT16.6</td>
<td>Undersampling and Bagging of Decision Trees in the Analysis of Cardiorespiratory Behavior for the Prediction of Exubation Readiness in Extremely Preterm Infants</td>
<td>Kanbar, Lara* (McGill University); Onu, Charles Chijioke (McGill University); Shalish, Wissam (McGill University); Brown, Karen (McGill University); SantAnna, Guillerme Mendes (McGill University); Precup, Doina (McGill University); Kearney, Robert Edward (McGill University)</td>
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<td>08:00-08:15</td>
<td>SaAT17.1</td>
<td>Medhere: A Smartwatch-Based Medication Adherence Monitoring System using Machine Learning and Distributed Computing</td>
<td>Woodbridge, Diane* (Univ. of San Francisco); Ma, Jinxin (Univ. of San Francisco); Ovalle, Anaelia (Univ. of San Francisco)</td>
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<td>08:15-08:30</td>
<td>SaAT17.2</td>
<td>Monitoring the Effect of Contact Pressure on Bioimpedance Measurements</td>
<td>Ruiz-Vargas, Albert* (Flinders University); Ivorra, Antoni (Universitat Pompeu Fabra); Arkwright, John (Flinders University)</td>
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<td>08:00-08:15</td>
<td>SaAT17.4</td>
<td>Performance of Conformable, Dry EEG Sensors</td>
<td>Bradford, J. Cortney* (U.S. Army Research Lab); Burke, Benjamin (U.S. Army Research Lab); Nguyen, Christina (U.S. Army Research Lab); Slipher, Geoffrey A. (U.S. Army Research Lab); Mrozek, Randy (U.S. Army Research Lab); Hairston, W. David (U.S. Army Research Lab)</td>
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<td>09:00-09:15</td>
<td>SaAT17.5</td>
<td>Feasibility of Noninvasive Blood Pressure Measurement using a Chest-Worn Patch Sensor</td>
<td>Selvaraj, Nandakumar* (VitalConnect, Inc.); Reddivari, Hithesh (Qualcomm Technologies Inc)</td>
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<td>09:15-09:30</td>
<td>SaAT17.6</td>
<td>Signal Quality and Electro-Skin Impedance Evaluation in the Context of Wearable Electroencephalographic Systems</td>
<td>Zhao, Zhichun (Chengdu Univ. of Technology, Chengdu); Ivanov, Kamen (Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, China); Lubich, Ludwig (Technical Univ. of Sofia); Omisore, Olatunji Mumini* (Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences); Mei, Zhanyang (Shenzhen Institutes of Advanced Technology); Fu, Nan (Shenzhen Institutes of Advanced Technology, Shenzhen, China); Chen, Jining (Chengdu Univ. of Technology); Wang, Lei (Shenzhen Institutes of Advanced Technology)</td>
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08:00-08:15
SaAT18.1
Smartphone-Based Compression-Induced Scope with Temperature Sensor for Inflammatory Breast Cancer Screening
Salehneen, Firdous (Temple University); Goldstein, Jesse (Temple University); Rajan, Reshma (Temple University); Caroline, Dina (Temple University Hospital); Pascarella, Suzanne (Temple University Hospital); Won, Chang-Hee* (Temple University)

08:15-08:30
SaAT18.2
Estimation of Spherical Refractive Errors using Virtual Reality Headset
Goyal, Ashish* (Samsung Research Institute, Bangalore, Karnataka); Bopardikar, Ajit (Samsung Research India, Bangalore, Karnataka); Tiwari, Vijay Narayan (Samsung Research India, Bangalore)

08:30-08:45
SaAT18.3
NOS.E: A New Fast Response Electronic Nose Health Monitoring System
Zhang, Wentian (University of Technology Sydney); Taoping, Liu (University of Technology Sydney); Zhang, Miao (Beijing Institute of Technology); Zhang, Yi (University of Electronic Science and Technology of China); Li, Huqi (Beijing Institute of Technology); Maiken, Ueland (University of Technology Sydney); Shari, Forbes (University of Technology Sydney); Wang, Rosalind (CSIRO); Su, Steven Weidong* (University of Technology, Sydney)

08:45-09:00
SaAT18.4
On the Effective Differentiation and Monitoring of Variable Degrees of Hyperbilirubinemia Severity through Noninvasive Screening Protocols
Baranowski, Gladimir Valerio Guimaraes* (Univ. of Waterloo); Chen, Tenn Francis (Univ. of Waterloo); Varsa, Petri (Univ. of Waterloo)

09:00-09:15
SaAT18.5
EmoSense: Automatically Sensing Emotions from Speech by Multi-Way Classification
Vempada, Ramu Reddy (TCS Research & Innovation Lab); Viraraghavan, Venkata Subramania* (Tata Consultancy Services Ltd.)

09:15-09:30
SaAT18.6
A Data-Driven Human Activity Classification Method for an Intelligent Hospital Bed
Lu, Limin (Zhejiang University); Zhao, Chunhui (Zhejiang University); Fu, Yongji* (Hill-Rom)

08:08-08:15
SaAT19.1
Change Detection of Sleeping Conditions based on Multipoint Ambient Sensing of Comforter on Bed
Umetsumi, Tomohiro* (Kanaz Univ.); Ishii, Mayuko (Kanaz Univ.); Tamura, Yuichi (Kanaz Univ.); Saiwaki, Naoki (Nara Women's Univ.); Yokoyama, Kiyoko (Nagoya City Univ.)

08:15-08:30
SaAT19.2
InstaBP: Cuff Less Blood Pressure Monitoring on Smartphone using Single PPG Sensor
Dey, Jishnu* (Samsung R&D Institute India, Bangalore); Gaurav, Arman (Samsung Research Institute, Bangalore); Tiwari, Vijay Narayan (Samsung Research India, Bangalore)

08:30-08:45
SaAT19.3
Vision-Based Bed Detection for Hospital Patient Monitoring System
Inoue, Madoka* (Aiphone Co., Ltd.); Taguchi, Ryo (Nagoya Institute of Technology); Umezaki, Taizo (Nagoya Institute of Technology)
10:00-10:15 SaBT1.1 In Situ Measurement of Stimulus Induced pH Changes using Thin-Film Embedded IrOx pH Electrodes Pfau, Jennifer* (University of Freiburg, Dept. of Microsystems Engineering IMTEK); Leal Ordonez, Jose (Albert-Ludwigs-University of Freiburg, Dept. of Microsystems Engineering, IMTEK); Steiglitz, Thomas (University of Freiburg)

10:15-10:30 SaBT1.2 Investigating Upper Limb Movement Classification on Users with Tetraplegia as a Possible Neuroprosthetic Interface Fonseca, Lucas* (Universidade de Brasilia); Padilha Lanari Bó, Antônio (Universidade de Brasilia); Guiraud, David (INRIA); Navarro, Benjamin (LRIMM, Montpellier); Gélia, Anthony (PROPARA Clinical Center, Montpellier); Azevedo-Coste, Christine (INRIA/LRIMM)

10:30-10:45 SaBT1.3 A Novel µECoG Electrode Interface for Comparison of Local and Common Averaged Referenced Signals Williams, Ashley* (Duke University); Trupinis, Michael (Duke University); Bent, Brinnae (Duke University); Chiang, Ken Chia-Han (Duke University); Viventi, Jonathan (Duke University)

10:45-11:00 SaBT1.4 In Vitro Reactive-Accelerated-Aging (RAA) Assessment of Tissue-Engineered Electronic Nerve Interfaces (TEENI) Kuliasha, Cary (Univ. of Florida); Judy, Jack* (Univ. of Florida)

11:00-11:15 SaBT1.5 On-Chip Detection of Single Vesicle Release from Neuroblastoma Cells using Monolithic CMOS Bioelectronics White, Kevin A. (University of Central Florida); Mulberry, Geoffrey (University of Central Florida); Sugaya, Kiminobu (University of Central Florida); Kim, Brian N.* (University of Central Florida)

11:15-11:30 SaBT1.6 Carbon Fiber Electrodes for in Vivo Spinal Cord Recordings Cetinkaya, Esma (New Jersey Institute of Technology); Gok, Sinan (New Jersey Institute of Technology); Sahin, Mesut* (New Jersey Institute of Technology)

10:00-10:15 SaBT2.1 A Modified Common Spatial Pattern Algorithm Customized for Feature Dimensionality Reduction in fNIRS-Based BCIs Jiang, Xinyu* (Fudan University); Gu, Xiao (Fudan University); Mei, Zhenning (Fudan University); Ren, Haoran (Fudan University); Chen, Wei (Fudan University)

10:15-10:30 SaBT2.2 Realization of Direction Selective Motor Learning in the Artificial Cerebellum: Simulation on the Vestibulococular Reflex Adaptation Takatori, Shogo (Chubu University); Inagaki, Keiichiro* (Chubu University); Hirata, Yukawa (Chubu University, College of Eng)

10:30-10:45 SaBT2.3 A Randomised Ensemble Learning Approach for Multiclass Motor Imagery Classification using Error Correcting Output Coding Bera, Sutanu (Indian Institute of Technology, Kharagpur); Roy, Rinku (IIT Kharagpur); Sikdar, Debdeep (IIT Kharagpur); Kar, Aupendu (Indian Institute of Technology Kharagpur); Mahadevappa, Manjunatha (Indian Institute of Technology Kharagpur); Mukhopadhyay, Rupsha* (Indian Institute of Technology, Kharagpur)

10:45-11:00 SaBT2.4 A Deep Convolutional Neural Network based Classification of Multi-Class Motor Imagery with Improved Generalization Kar, Aupendu (Indian Institute of Tech. Kharagpur); Bera, Sutanu (Indian Institute of Tech., Kharagpur); Karri, Sri Phani Krishna (Indian Institute of Tech. Kharagpur); Mahadevappa, Manjunatha (Indian Institute of Tech. Kharagpur); Sheet, Debdeep (Indian Institute of Tech. Kharagpur); Ghosh, Sudipta* (Indian Institute of Tech., Kharagpur)

11:00-11:15 SaBT2.5 A Robust Low-Cost EEG Motor Imagery-Based Brain-Computer Interface Yohananand, Shivanthanth* (IBM Research); Kiral-Kornek, Filiz Isbell (IBM Research Australia); Tang, Jianbin (IBM Research Australia); Mashford, Benjamin Scott (IBM Research Australia); Asif, Umar (IBM); Harrer, Stefan (IBM Research)

11:15-11:30 SaBT2.6 Current Source Density Estimates Improve the Discriminability of Scalp-Level Brain Connectivity Features Related to Motor-Imagery Tasks Rathee, Dheeraj* (Ulster University); Cecotti, Hubert (California State University Fresno); Prasad, Girijesh (University of Ulster)

10:00-10:15 SaBT3.1 Group Sparsity based Sparse-Sampling CT Reconstruction Bao, Peng (Sichuan University); Zhou, Jiliu (Chengdu University of Information Technology); Zhang, Yi* (Sichuan University)

10:15-10:30 SaBT3.2 Discrete Heat Kernel Smoothing in irregular Image Domains Chung, Moo K.* (University of Wisconsin-Madison); Wang, Yanii (Institute of Applied Physics and Computational Mathematics, Beijing); Wu, Guorong (University of North Carolina at Chapel Hill)

10:30-10:45 SaBT3.3 A Novel 3D Connection Algorithm of Mitochondria from ATUM-SEM Stacks based on Segmentation Information in Context Li, Wefiu (Institute of Automation, Chinese Academy of Sciences); Liu, Jing (Institute of Automation, Chinese Academy of Sciences); Xiao, Chi (Institute of Automation, Chinese Academy of Sciences); Deng, Hao (Institute of Automation, Chinese Academy of Sciences); Xie, Qiwei* (Institute of Automation, Chinese Academy of Sciences); Han, Hua (Institute of Automation, Chinese Academy of Sciences)

10:45-11:00 SaBT3.4 Compressive Sensing for Breast Microwave Imaging Ambrosanio, Michele* (Univ. of Napoli Parthenope); Pascazio, Vito (Univ. of Napoli Parthenope, Dipartimento di Ingegneria)

11:00-11:15 SaBT3.5 Scanning Acoustic Microscopy Image Super-Resolution using Bilateral Weighted Total Variation Regularization Khalilian-Gourtani, Amirhossein* (New York University); Wang, Yao (Polytechnic Institute of New York University); Mamou, Jonathan (Riverside Research)

11:15-11:30 SaBT3.6 Low-Dose CT Denoising with Dilated Residual Network Gholizadeh-Ansari, Maryam (Ryerson University); Alirezaei, Javad* (Ryerson University, University of Waterloo); Babyn, Paul (University of Saskatchewan)
10:00-10:15
SaBT4.1
A Radiating Near-Field 24 GHz Radar Stethoscope
Aumann, Herbert* (University of Maine); Emanetoglu, Nuri (University of Maine)

10:15-10:30
SaBT4.2
A Model for Waveform Dissimilarities in Dual-Depth Reflectance-PPG
Moco, Andrea* (Eindhoven University of Technology); Stuijk, Sander (TU Eindhoven); de Haan, Gerard (Philips Innovation Group, Philips Research, Eindhoven); Wang, Ruikang (Oregon Health & Science University); Verkruysse, Wim (Philips Innovation Group, Philips Research, Eindhoven)

10:30-10:45
SaBT4.3
BioEssence: A Wearable Olfactory Display that Monitors Cardio-Respiratory Information to Support Mental Wellbeing
Amores Fernandez, Judith* (MIT); Hernandez, Javier (Massachusetts Institute of Technology); Dementyev, Artem (MIT); Wang, Xiqing (MIT Media Lab); Maes, Pattie (MIT Media Lab)

10:45-11:00
SaBT4.4
Evaluation of a Visual Localization System for Environment Awareness in Assistive Devices
Rai, Vijeth* (University of Washington); Rombokas, Eric (University of Washington)

11:00-11:15
SaBT4.5
A New Method to Prevent Unintentional Child Poisoning
Bahar Talukder, Bashir Mohammad Sabquat (University of Alabama in Huntsville); Jovanov, Emil* (University of Alabama in Huntsville); Schwabel, David C (University of Alabama at Birmingham); Evans, William (George Washington University)

11:15-11:30
SaBT4.6
Use of Average Vertical Velocity and Difference in Altitude for Improving Automatic Fall Detection from Trunk Based Inertial and Barometric Pressure Measurements
Musgni, Magnus Michael (Simon Fraser University); Aziz, Omar (Simon Fraser University); Zhaihehzadeh, Shaghayegh (Simon Fraser University); Nazareth, Ginelle Claire (International Submarine Engineering Ltd.); Tae, Chul-Gyu (Bignon Technologies); Park, Edward J.* (Simon Fraser University)

10:00-11:30
Meeting Room 316A
Image Compression and Synthesis (Theme 2) (Oral Session)
Chair: Jovanov, Emil (University of Alabama in Huntsville)

10:00-10:15
SaBT5.1
Pseudo CT Estimation using Patch-Based Joint Dictionary Learning
Yang, Xiaofeng* (Emory University)

10:15-10:30
SaBT5.2
Data-Driven Synthetic Cerebrovascular Models for Validation of Segmentation Algorithms
Nowak, Michael* (Texas A&M University); Choe, Yoonsuck (Texas A&M University)

10:30-10:45
SaBT5.3
Lossless Compression of Angiogram Foreground with Visual Quality Preservation of Background
Ahmadi, Mahdi (Isfahan University of Technology); Emami, Ali (Isfahan University of Technology); Hajabdollahi, Mohsen (Isfahan University of Technology); Soroushmehr, S.M.Reza (University of Michigan, Ann Arbor); Karimi, Nader (Isfahan University of Technology); Samavi, Shadrokh* (McMaster University); Najarian, Kayvan (University of Michigan - Ann Arbor)

10:45-11:00
SaBT5.4
Significant Dimension Reduction of 3D Brain MRI using 3D Convolutional Autoencoders
Arai, Hayato (Hosei University); Chayama, Yusuke (Hosei University); Iyatomi, Hitoshi* (Hosei University); Oishi, Kenichi (Johns Hopkins University School of Medicine)

10:00-11:30
Meeting Room 316B
Neuromuscular Systems II (Theme 6) (Oral Session)
Chair: Perreault, Eric (Northwestern University)

10:00-10:15
SaBT6.1
A Simulated Inverted Pendulum to Investigate Human Sensorimotor Control
Cesonis, Justinas (Technical University of Munich); Franklin, Sae (Institute for Cognitive Systems, Technical University of Munich); Franklin, David W.* (Technical University of Munich)

10:15-10:30
SaBT6.2
Influence of Visual Feedback on the Sensorimotor Control of an Inverted Pendulum
Franklin, Sae (Institute for Cognitive Systems, Technical University of Munich); Cesonis, Justinas (Technical University of Munich); Franklin, David W.* (Technical University of Munich)

10:30-10:45
SaBT6.3
Myoelectric Signals and Pattern Recognition from Implanted Electrodes in Two TMR Subjects with an Osseointegrated Communication Interface
Mastinu, Enzo* (Chalmers - Univ. of technology); Bränemark, Rickard (Gothenburg Univ.); Aszmann, Oskar (Medical Univ. of Vienna); Ortiz-Catalan, Max (Chalmers Univ. of Technology)

10:45-11:00
SaBT6.4
Effects of Mapping Uncertainty on Visuomotor Adaptation to Trial-by-Trial Perturbations with Proportional Myoelectric Control
Lyons, Kenneth* (University of California, Davis); Joshi, Sanjay (University of California, Davis)

11:00-11:15
SaBT6.5
Reconstructing Neural Activity and Kinematics using a Systems-Level Model of Sensorimotor Control
Saxena, Shreya (Columbia Univ.); D’Aleo, Raina (Johns Hopkins Univ.); Schieber, Marc (Univ. of Rochester); Dahleh, munter (MIT); Sarma, Sridevi V.* (Johns Hopkins Univ.)

11:15-11:30
SaBT6.6
Quantification of Upper-Extremity Movement Pattern in Patients with Stroke using Touchscreen: A Pilot Study
Zhang, Xiao (Ruijin Rehabilitation Hospital); Bao, Yong (Dept. of Rehabilitation Medicine, Ruijin Rehabilitation Hospital); Xie, Qing (Ruijin Hospital Shanghai Jiao Tong University School of Medicine); Niu, Chuanxin M.* (Ruijin Hospital, School of Medicine, Shanghai Jiao Tong University)

10:00-10:15
SaBT7.1
A Maximum Likelihood Formulation to Exploit Heart Rate Variability for Robust Heart Rate Estimation from Facial Video
Tsor, Guy* (McGill University); Guarin, Diego Luis (Harvard Medical School); Jowett, Nathan (Harvard University); Kearney, Robert Edward (McGill University)

10:15-10:30
SaBT7.2
Eyelid and Blink Tracking in an Animal Model of Facial Palsy
Tsor, Guy* (McGill University); Guarin, Diego Luis (Harvard Medical School); Jowett, Nathan (Harvard University); Kearney, Robert Edward (McGill University)
10:00-00:15  SaBT13.1  Respiratory Rate Derived from Pulse Photoplethysmographic Signal by Pulse Decomposition Analysis

Lázaro, Jesús* (Univ. of Zaragoza); Kontaxis, Spyridon (BSiCoS Group, 13A, IIS Aragón, Univ. of Zaragoza, Spain); Bailon, Raquel (Univ. of Zaragoza); Laguna, Pablo (Zaragoza Univ. and CIBER-BBN); Gil, Eduardo (Zaragoza Univ. and CIBER-BBN)

10:15-10:30  SaBT13.2  Investigating the Relationship between the Ratings of Perceived Exertion and Tone-Entropy of Heart Rate Variability during a Graded Exercise

Azz, Mouad (Khalifa University); Khandoker, Ahsan H* (Khalifa University of Science, Technology and Research); Jelinke, Herbert Franz (Charles Sturt University)

10:30-10:45  SaBT13.3  Stress Resilience Measurement with Heart-Rate Variability during Mental and Physical Stress

Dong, Suh-Yeon (KIST); Lee, Miran (Korea Institute of Science and Tech.); Park, Heesu (Korea Institute of Science and Tech.); Youn, Inchan* (Korea Institute of Science and Tech.)

10:45-11:00  SaBT13.4  A Fast Principal Component Analysis Method for Calculating the ECG Derived Respiration

Sadr, Nadi* (Univ. of Sydney); de Chazal, Philip (Univ. of Sydney)

11:00-11:15  SaBT13.5  Cardiorespiratory Phase Synchronization Increases during Certain Mental Stimuli in Healthy Subjects

Solà-Soler, Jordi* (Universitat Politècnica de Catalunya); Cuadros, Alba (Universitat Politècnica de Catalunya); Giraldo, Beatriz (Universitat Politècnica de Catalunya)

11:15-11:30  SaBT13.6  Myocardial Ischemia Diagnosis using a Reduced Lead System

Aranda, Alfonso* (Medtronic & Maastricht University); Bonizzi, Pietro (Maastricht University); Karel, Joël (Maastricht University); Peeters, Ralf (Maastricht University)

11:30-11:30  SaBT13.7  In-Vivo Measurements of Tissue Impeditivity by Electrical Impedance Spectroscopy

Meroni, Davide* (Politecnico di Milano); Bovio, Dario (Politecnico di Milano); Guaitieri, Massimo (University of Milan); Aliverti, Andrea (Politecnico di Milano)

10:15-10:30  SaBT14.2  Automated Versatile DIY Microscope Platform

Pylatiuk, Christian* (Karlsruhe Inst. of Tech.;) Vogt, Marcel (Inst. for Automation and Applied Informatics (IAI) - Karlsruhe Inst. of Tech. (KIT)); Schel, Paul (Inst. for Anthropomatics and Robotics (IAR) - Intelligent Process Automation and Robotics Lab (IAR) - Karlsruhe Inst. of); Gotwald, Eric (Inst. of Functional Interfaces (IFG) - Karlsruhe Inst. of Tech. (KIT))

10:30-10:45  SaBT14.3  Clinical Application of Multiple Vital Signs-Based Infection Screening System in a Mongolian Hospital: Optimization of Facial Temperature Measurement by Thermography at Various Ambient Temperature Conditions using Linear Regression Analysis

Dagdunpuruv, Sumiyakh* (Tokyo Metropolitan Univ.); Sun, Guanghao (The Univ. of Electro-Communications); Chomma, Lodoravas (National Univ. of Mongolia); Abe, Shigeto (Takasaki Clinic); Matsu, Takemi (Tokyo Metropolitan Univ.)

10:45-11:00  SaBT14.4  Arterial Pulse Waveform Characteristics Difference between the Three Trimesters in a Healthy Pregnancy

Li, Kunyan (Beijing University of Technology); Zhang, Song (Beijing University of Technology); Chi, Zhenyu (Beijing University of Technology); Yang, Yimin* (Beijing University of Technology); Jiang, Hongping (Haidian Maternal & Child Health Hospital); Yang, Lin (Beijing University of Technology); Wang, Anran (Beijing University of Technology); Zhang, Lei (Beijing University of Technology); Chen, Fei (Southern University of Science and Technology); Zheng, Dingchang (Anglia Ruskin University)

11:00-11:15  SaBT14.5  Optimization of Tetrapolar Impedance Electrodes in Microfluidic Devices for Point of Care Diagnostics using Finite Element Modeling

Hantschke, Martin* (City, University of London); Sideris, Dimitrios (Genetic Microdevices Ltd.); Kyriacou, Panayiotis (City University London); Triantis, Iasonas (City, University of London)

11:15-11:30  SaBT14.6  Low-Cost Mobile Device for Screening of Atherosclerosis and Coronary Arterial Disease

Pignatelli, Niccolò (MIT); Ma, Botong (Massachusetts Institute of Technology); Sengupta, Shantanu* (Sengupta Hospital and Research Institute); Sengupta, Partho (True Vision); Fletcher, Richard Ribon* (Massachusetts Institute of Technology)

11:30-11:45  SaBT14.7  Myocardial Hypertrophy in the Young and the Elderly: A Case-Control Study

Reddy, J.V.R* (KRL Hospital); Eivazi, Amin (Khalifa University); Bovio, Dario (Politecnico di Milano); Aslanides, John (University of Melbourne); Lalloo, Unni (Univ. of Texas)

11:45-12:00  SaBT14.8  Clinical Application of a Computer-Based System for Monitoring ECG Thyroid Function Tests: An Initial Study

Aboobaker, Michael* (King Faisal University); Al-Qudah, Mohammad (Al-Balqa Applied University); Al-Ethari, Abdulrahman (University of Jordan); Al-Humaydi, Mohammad (University of Jordan)
11:15-11:30 SaBT15.6
Active or Passive On-Demand Droplet Merging in a Microfluidic Valve-Based Trap
Babahosseini, Hesam* (National Institutes of Health); DeVoe, Don L. (University of Maryland); Misteli, Tom (National Cancer Institute, National Institutes of Health)

SaBT16: 10:00-11:30 Meeting Room 323B
General and Theoretical Informatics – Predictive Analytics (Theme 10) (Oral Session)
Chair: Vettoretti, Martina (University of Padova)

10:00-10:15 SaBT16.1
Seizure Prediction in EEG Records based on Spatial-Frequency Features and Preictal Period Selection
Wang, Qun* (Beijing Institute of Tech.); Tian, Xin (Beijing Institute of Tech.); Liu, Zhiwen (Beijing Institute of Tech.)

10:15-10:30 SaBT16.2
Importance of Recalibrating Models for Type 2 Diabetes Onset Prediction: Application of the Diabetes Population Risk Tool on the Health and Retirement Study
Vettoretti, Martina* (University of Padova); Longato, Enrico (University of Padova); Di Camillo, Barbara (University of Padova); Facchinetti, Andrea (University of Padova)

10:30-10:45 SaBT16.3
Improving Young Stroke Prediction by Learning with Active Data Augmenter in a Large-Scale Electronic Medical Claims Database
Hung, Chen-Ying* (National Tsing Hua University); Lin, Ching-Heng (Dept. of Medical Research, Taichung Veterans General Hospital); Lee, Chi-Chun (National Tsing Hua University)

10:45-11:00 SaBT16.4
Predictive Value of Prothrombin Time for All-Cause Mortality in Acute Myocardial Infarction Patients
Wang, Xurong (Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences); Chen, Runge (Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences); Li, Ye (Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences); Miao, Fen* (Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences)

11:00-11:15 SaBT16.5
Robust Prediction of Treatment Times in Concurrent Patient Care
Fricks, Rafael* (Duke University); Henry, Tseng (Duke University); Veihl, Marjorie (Duke University Health System); Trivedi, Kishor (Duke University); Barr, Roger (Duke University)

11:15-11:30 SaBT16.6
Cancer Type Prediction and Classification based on RNA-Sequencing Data
Hsu, Yi-Hsin (University of Washington Bothell); Si, Dong* (University of Washington)

SaBT17: 10:00-11:30 Meeting Room 323C
Body Area Networks (Theme 7) (Oral Session)

10:00-10:15 SaBT17.1
Fusing Non-Contact Vital Sign Sensing Modalities – First Results
Leonhardt, Steffen* (RWTH Aachen University); Teichmann, Daniel (RWTH Aachen University)

10:15-10:30 SaBT17.2
Evaluation of a Real-Time Low-Power Cardiorespiratory Sensor for the IoT
Gatouillat, Arthur* (INSA-Lyon); Massot, Bertrand (INSA Lyon); Badr, Youakim (INSA-Lyon); Sejdic, Ervin (University of Pittsburgh); Gehin, Claudine (INSA Lyon)

10:30-10:45 SaBT17.3
Preliminary Investigations for Non-Invasive Temperature Change Detection in Thermotherapy by Means of UWB Microwave Radar
Ley, Sebastian* (Techn. Univ. Ilmenau); Fiser, Ondrej (Czech Tech. Univ. in Prague); Merunka, Ilja (Czech Tech. Univ. in Prague); Vrba, Jan (Czech Tech. Univ. in Prague); Sachs, Jürgen (Technische Univ. Ilmenau); Heilig, Marko (Technische Univ. Ilmenau)

10:45-11:00 SaBT17.4
Wireless Smartphone Control using Electromyography and Automated Gesture Recognition
Dawes, Jacob (Oregon State University); Brian, Makenzie (Oregon State University); Bialek, Hayden (Oregon State University); Johnston, Matthew* (Oregon State University)

11:00-11:15 SaBT17.5
Body Sensor Networks Powered by a NFC-Coupled Smartphone in the Pocket
Masuda, Yuichi* (University of Tokyo); Noda, Akihito (Nanzan University); Shinoda, Hiroyuki (University of Tokyo)

11:15-11:30 SaBT17.6
In-Field Remote Fingerprint Authentication using Human Body Communication and On-Hub Analytics
Das, Debanjali (Purdue Univ.); Main, Shovan* (Purdue Univ.); Chatterjee, Baibhab (Purdue Univ.); Sen, Shreyas (Purdue Univ.)

SaBT18: 10:00-11:30 Meeting Room 324
Point of Care Technologies and Translation (I) (Theme 12) (Oral Session)
Chair: Sacristan, Emilio (Universidad Autónoma Metropolitana)
Co-Chair: Schachter, Steven (Beth Israel Deaconess Medical Center, Harvard Medical School)

10:00-10:15 SaBT18.1
GearVision: Smartphone based Head Mounted Perimeter for Detection of Visual Field Defects
Sircar, Tushar* (Samsung R&D Institute, Bangalore); Mishra, Aarshree (Samsung R&D Institute, Bangalore); Bopardikar, Ajit (Samsung Research India, Bangalore, Karnataka); Tiwari, Vijay Narayan (Samsung Research India, Bangalore)

10:15-10:30 SaBT18.2
High Intraocular Pressure Detection from Frontal Eye Images: A Machine Learning based Approach
Aloudat, Mohammad (Univ. of Bridgeport); Faezipour, Miad* (Univ. of Bridgeport); El-Sayed, Ahmed (Univ. of Bridgeport)

10:30-10:45 SaBT18.3
Sample Entropy of Speed Power Spectrum as a Measure of Laparoscopic Surgical Instrument Trajectory Smoothness
Hutchins, Andrew* (Duke University); Mansour, Roberto (Duke University Medical Center); Zani, Jr., Sabino (Duke University Medical Center); Mann, Brian (Duke University)

10:45-11:00 SaBT18.4
Cranietomy Effects on Resting State Functional Connectivity and Cognitive Performance in Immature Rats
Sargolzaei, Saman* (University of California Los Angeles); Cai, Yan (UCLA Neurosurgery); Hovda, David A. (UCLA Neurosurgery); Harris, Neil G (UCLA); Giza, Christopher (UCLA Brain Injury Research Center, Dept of Neurosurgery and Division of Pediatric Neurology, Mattel Children’s Hospital, Los Angeles); Melissa J., Walker (UCLA Neurosurgery)

11:00-11:15 SaBT18.5
Cancer Detection at your Fingertips: Smartphone-Enabled DNA Testing
Tumer, Robert* (Biological Dynamics, Inc.); Madsen, James (Biological Dynamics); Simon Herrera, Pedro David (Biological Dynamics); Wallace, John (Biological Dynamics); Madrigal, Jonathan (Biological Dynamics); Hinestrosa, Juan (Biological Dynamics); Dobrovolskaia, Irina (Biological Dynamics); Krishnan, Raj (Biological Dynamics, Inc.)
A Novel Modular Headmount Design for Non-Invasive Scalp EEG Recordings in Awake Animal Models
Paulson, Catherine* (Univ. of California Los Angeles); Chien, Daniel (UCLA); Lin, Francis (UCLA); Seiditts, Stephanie (UCLA); Cai, Yan (UCLA Neurosurgery); Sargolzaei, Saman (Univ. of California Los Angeles); Harris, Neil G (UCLA); Giza, Christopher (UCLA Brain Injury Research Center, Dept of Neurosurgery and Division of Pediatric Neurology, Mattel Children's Hospital, Los Angeles)

Resynchronization Therapy: Electromechanical Model to Predict Cardiac Function
Dokos, Socrates (Chair: Cardiovascular Models (Theme 4): 10:00-11:30 Meeting Room 325B)

Velocity: Analysis in Post Stroke Patients
Javed, Farnikh (Örebro University); Thomas, Ilias (Dalarna University); Memedi, Mervudin* (Örebro University)

Mobile Gait Analysis using Personalised Hidden Markov Models for Hereditary Spastic Paraplegia Patients
Martindale, Christine F* (Friedrich-Alexander-Univ. Erlangen-Nürnberg); Roth, Nils (Friedrich Alexander Univ. Erlangen-Nuremberg); Gallsner, Heiko (Univ. Erlangen, Dept. of Molecular Neurology); Jensen, Dennis (Univ. Erlangen, Dept. of Molecular Neurology); Kohl, Zacharias (Univ. Erlangen, Dept. of Molecular Neurology); Eskofler, Bjorn M (Friedrich-Alexander-Univ. Erlangen-Nürnberg)

Artificial Neural Network for Laparoscopic Skills Classification using Motion Signals from Apple Watch
Laverde, Rubenmaida* (Pontifical Bolivarian University); Rueda, Claudia (Pontifical Bolivarian University); Amado, Lusvin (Centro de Investigación en Medicina Integrativa and Pontifical Bolivarian University); Rojas, David (The Wilson Centre); Altuve, Miguel (Pontifical Bolivarian University)

A Binary Classification of Cardiovascular Abnormality using Time-Frequency Features of Cardio-Mechanical Signals
Yang, Chenxi* (Stevens Institute of Technology); Aranoff, Nicole (Yeshiva University); Green, Philip (Columbia University Medical Center); Tavassolian, Negar (Stevens Institute of Technology)

Simple Gait Symmetry Measures based on Foot Angular Velocity: Analysis in Post Stroke Patients
Zhang, Wei* (EPFL); Smuck, Matthew (Stanford University); Legault, Catherine (Stanford Stroke Center, Stanford University); Lth, Ma Agnes (Wearable Health Lab, Dept. of Orthopaedic Surgery, Stanford University); Muaremi, Amir (Novaris); Aminian, Kamiar (École Polytechnique Federale de Lausanne)

Electromechanical Model to Predict Cardiac Resynchronization Therapy
Albatat, Mohammad* (University of Oslo: Oslo University Hospital: King, David Ryan (Virginia Polytechnic Institute and State University); Unger, Laura Anna (Institute of Biomedical Engineering, Karlsruhe Institute of Technology); Arevalo, Hermenegild (Simula Research Lab); Wall, Samuel (Dept. of Scientific Computing, Simula Research Lab); Sundnes, Joakim (Simula Research Lab); Bergsland, Jacob (Intervention Centre, University Hospital Oslo); Balasingham, Ilangko (Oslo University Hospital and Norwegian University of Science and Technology)

Propagation of Parametric Uncertainty in Aliev-Panfilov Model of Cardiac Excitation
Son, Jeongeun (Clarkson University); Du, Yuncheng (Clarkson University); Du, Dongping* (Texas Tech University)
<table>
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| 13:30-13:45   | SaCT1.5 | A Wireless Platform to Support Pre-Clinical Trial of Neural Implant for Spinal Cord Injury  
(University of California Los Angeles); Lo, Yi-Kai (University of California Los Angeles); Wang, Po-Min (UCLA); Liu, Wentai (University of California Los Angeles) |
| 13:45-15:00   | SaCT1.6 | Design and Assessment of Stimulation Parameters for a Novel Peripheral Nerve Interface  
(University of Florida); Kundu, Arita (University of Florida); Delgado, Francisco (University of Florida); Fahmy, Ahmed S. (Cairo University); Madler, Ryan (University of Florida); Maghari, Nima (University of Florida); Bashirullah, Rizwan (University of Florida); Gunduz, Aysegul (University of Florida); Otto, Kevin* (University of Florida) |
| 13:30-13:45   | SaCT2.1 | Real-Time Mental State Recognition using a Wearable EEG  
(Richard, Robert* (Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), Germany); Zhao, Nan (MIT Media Lab); Amores, Judith (MIT Media Lab); Eskofier, B.M. (Friedrich-Alexander-Universität Erlangen-Nürnberg)) |
| 13:45:14:00   | SaCT2.2 | SpiroConfidence: Determining the Validity of Smartphone based Spirometry using Machine Learning  
(University of Washington); Garrison, Jake (University of Washington); Patel, Shwetak (University of Washington) |
| 14:00-14:15   | SaCT2.3 | Smartphone based Real-Time Super Gaussian Single Microphone Speech Enhancement to Improve intelligibility for Hearing Aid Users using Formant Information  
(Shreedhar Bhat, Gautam* (University of Texas at Dallas); Karadagur Ananda Reddy, Chandan (University of Texas at Dallas); Shankar, Nikhil (University of Texas at Dallas); Panahi, Issa (University of Texas at Dallas)) |
| 14:15-14:30   | SaCT2.4 | Effect of Parkinsonism on Proximal Unstructured Movement Captured by Inertial Sensors  
(Phan, Dung* (Deakin University); Horne, Malcolm (Florey Institute of Neuroscience and Mental Health); Pathirana, Pubudu N. (Deakin University); Farzanehfar, Parisa (Florey Institute of Neuroscience and Mental Health)) |
| 14:30-14:45   | SaCT2.5 | End-to-End Learning for Measuring In-Meal Eating Behavior from a Smartwatch  
(Kyrillos, Konstantinos (Aristotle University of Thessaloniki); Diou, Christos (Aristotle University of Thessaloniki); Delopoulos, Anastasios* (Aristotle University of Thessaloniki)) |
| 14:45-15:00   | SaCT2.6 | Robust Estimation of Pulse Rate from a Wrist-Type PPG during Intensive Exercise  
(Pittara, M. (University of Cyprus); Orphanidou, C.* (University of Cyprus)) |
| 13:30-13:45   | SaCT3.1 | Functional MRI of Sensory Substitution in the Blind  
(Chen, Kevin C.* (New York University); Murphy, Matthew (Mayo Clinic); Bang, Ji Won (New York University School of Medicine); Sims, Jeffrey (New York University School of Medicine); Kashkoush, Jasmine (New York University School of Medicine); Nau, Amy C. (University of Pittsburgh)) |
| 13:45-14:00   | SaCT3.2 | Improved Application of Sparse Representation Classifier in fMRI-Based Brain State Decoding  
(Guo, Zhaoxi (Beijing Normal University, State Key Lab of Cognitive Neuroscience and Learning & IDG/McGovern Institute for Brain Research); Long, Zhiying* (Beijing Normal University); Zhang, Jing (Beijing Normal University); State Key Lab of Cognitive Neuroscience and Learning & IDG/McGovern Institute for Brain Research); Xia, Maogeng (Beijing Normal University, State Key Lab of Cognitive Neuroscience and Learning & IDG/McGovern Institute for Brain Research); Li, Yao (College of Information Science and Technology, Beijing Normal University)) |
| 13:30-13:45   | SaCT3.3 | Functional MRI Investigation of Audiovisual Interactions in Auditory Midbrain  
(Dong, Celia M. (University of Hong Kong); Leong, Alex T. L. (University of Hong Kong); Manno, Francis AM (City University of Hong Kong); Lau, Condon (City University of Hong Kong); Ho, Leon C. (University of Hong Kong); Chan, Russell W. (Stanford University); Feng, Yanqiu (Southern Medical University); Gao, Patrick P. (University of Hong Kong); Wu, Ed X.* (University of Hong Kong)) |
| 13:45-14:00   | SaCT3.4 | Auditory-Visual Convergence at the Superior Colliculus in Rat using Functional MRI  
(Lau, Condon (City University of Hong Kong); Manno, Francis AM (City University of Hong Kong); Dong, Celia M. (University of Hong Kong); Chan, Kevin C. (New York University); Wu, Ed X.* (University of Hong Kong)) |
| 14:00-14:15   | SaCT3.5 | A Realistic Neuronal Network and Neurovascular Coupling Model for the Study of Multivariate Directed Connectivity in fMRI Data  
(Duggento, Andrea* (University of Rome "Tor Vergata"); Passamonti, Luca (University of Cambridge); Guerrisi, Maria (University of Rome "Tor Vergata"); Toschi, Nicola (University of Rome "Tor Vergata"); Faculty of Medicine) |
| 14:30-14:45   | SaCT3.6 | Regularized Spatial Filtering Method (R-SFM) for Detection of Attention Deficit Hyperactivity Disorder (ADHD) from Resting-State Functional Magnetic Resonance Imaging (rs-fMRI)  
(M S Aradhyta, Abhay* (Nanyang Technological University); Subbaraju, Vigneshwaran (Agency for Science, Technology and Research, Singapore); Sundaram, Suresh (Nanyang Technological University); Sundararajan, Narasimhan (Nanyang Technological University)) |
| 13:30-13:45   | SaCT4.1 | Influence of Wilson Center Terminal on Fetal Electrocardiography Acquisition  
(Charlier, Pierre* (University of Lille (France)); Logier, Regis (CHRU de Lille); De Jonckheere, Julien (CHRU de Lille)) |
| 13:45-14:00   | SaCT4.2 | A Low-Power, Low-Cost Ingestible and Wearable Sensing Platform to Measure Medication Adherence and Physiological Signals  
(Weeks, William A.* (Proteus Digital Health); Dua, Aditya (Proteus Digital Health); Hutchison, James B. (Proteus Digital Health, Inc.); Joshi, Renu (Proteus Digital Health); Li, Ronny (Proteus Digital Health); Szej, Jessica (Proteus Digital Health); Azevedo, Robert G. (Proteus Digital Health)) |
| 13:30-13:45   | SaCT4.3 | A Low-Power Dynamic-Range Relaxed Analog Front End for Photoplethysmogram Acquisition  
(Zhang, Hao (Shenzhen Institutes of Advanced Technology); Junxiang, Wang (Shenzhen Institutes of Advanced Technology); Li, Ye* (Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences)) |

* Denotes the corresponding author.
14:15-14:30 SaCT6.2
Muscle-Reflex Control and Virtual Model Control
Suzuki, Yasuyuki* (Osaka University); Geyer, Hartmut (Carnegie Mellon University)

14:30-14:45 SaCT4.5
Motion Artefact Free Magnetoplethysmogram
Kumar V, Jagadeesh* (Indian Institute of Technology, Madras); Bai J, Rezuan (Indian Institute of Technology, Madras); Sivaprasakam, Mohanansankar (Indian Institute of Technology Madras)

14:45-15:00 SaCT4.6
A 5-ms Error, 22-uA Photoplethysmography Sensor using Current Integration Circuit and Correlated Double Sampling
Watanabe, Kento* (Kobe University); Izumi, Shintaro (Kobe University); Yano, Yuji (Kobe University); Kawaguchi, Hiroshi (Kobe University); Yoshimoto, Masahiko (Kobe University)

14:15-14:30 SaCT7.3
Reliability of Short-Term Heart Rate Variability Indexes Assessed through Photoplethysmography
Fukuoka, Yutaka* (Kogakuin University); Nozawa, Tatsuya (Kogakuin University); Fukuda, Yusuke (Kogakuin University)

14:00-14:15 SaCT7.1
Heart Rate Variability during Periods of Low Blood Pressure as a Predictor of Short-Term Outcome in Pretermers
Semenova, Oksana* (University College Cork); Carra, Giorgia (Lab of Intensive Care Medicine, KU Leuven); Lightbody, Gordon (University College Cork); Soh, Zu (Dept. of System Cybernetics, Institute of Engineering, Hiroshima Univ.); Sasaoka, Takafumi (Hiroshima Univ.); Yamawaki, Shigeto (Hiroshima Univ.); Tsuji, Toshiho (Hiroshima Univ.)
14:30-14:45 ECG-Derived Sympathetic and Parasympathetic Activity in the Healthy: An Early Lower-Body Negative Pressure Study using Adaptive Kalman Prediction

Valenza, Gaetano* (University of Pisa); Citi, Luca (University of Essex); Wyllie, Vegard Bruun (University of Oslo); Barbieri, Riccardo (Politecnico di Milano)

14:45-15:00 Noise Detection in Electrocardiography Signal for Robust Heart Rate Variability Analysis: A Deep Learning Approach

Ansari, Sardar* (Univ. of Michigan); Gryak, Jonathan (Univ. of Michigan); Najarian, Kayvan (Univ. of Michigan - Ann Arbor)

13:30-13:45 Surface EMG Pattern Recognition using Long Short-Term Memory Combined with Multilayer Perceptron

He, Yunan* (Saga University); Fukushima, Osamu (Saga University); Bu, Nan (NIT, Kumamoto College); Okumura, Hiroshi (Saga University); Yamaguchi, Nobukihiro (Saga University)

13:45-14:00 Rejection of Systemic and Operator Errors in a Real-Time Myoelectric Control Task

Robertson, Jason William (University of New Brunswick); Englehart, Kevin (University of New Brunswick); Scheme, Erik* (University of New Brunswick)

14:00-14:15 Fault-Tolerant Sensor Detection of sEMG Signals: Quality Analysis using a Two-Class Support Vector Machine

Zhang, Guangyi* (Central South University); Morin, Evelyn (Queen's University); Zhang, Yaoxue (Central South University); Etemad, S. Ali (Queen's University)

14:15-14:30 Non-Invasive Detection of Low-Level Muscle Fatigue using Surface EMG with Wavelet Decomposition

Lyu, Bo (Shanghai Jiao Tong Univ.); Sheng, Xinjun* (Shanghai Jiao Tong Univ.); Zhu, Xiangyang (Shanghai Jiao Tong Univ.)

14:30-14:45 Improving Myoelectric Pattern Recognition Robustness to Electrode Shift by Autoencoder

Poosapadi Arjuna, Sridhar* (SRM Institute of Science and Technology); Kant Kumar, Dinesh (RMIT University)

14:45-15:00 Measuring Complexity in Different Muscles during Sustained Contraction using Fractal Properties of SEMG Signal

O'Loughlin, Declan* (National Univ. of Ireland Galway); Oliveira, Bárbara L. (National Univ. of Ireland Galway); Glavin, Martin (National Univ. of Ireland); Jones, Edward (National Univ. of Ireland Galway); O'Halloran, Martin (National Univ. of Ireland, Galway)

13:30-13:45 Effects of Interpatient Variance on Microwave Breast Images: Experimental Evaluation

O'Loughlin, Declan* (National Univ. of Ireland Galway); Oliveira, Bárbara L. (National Univ. of Ireland Galway); Glavin, Martin (National Univ. of Ireland); Jones, Edward (National Univ. of Ireland Galway); O'Halloran, Martin (National Univ. of Ireland, Galway)

13:45-14:00 Principal Component Analysis of Dynamic Thermography Data from Pregnant and Non-Pregnant Women

Falzon, Owen* (Univ. of Malta); Ciantar, Annelie (Univ. of Malta); Sammut, Lara (Mater Dei Hospital); Schembri, Martina (Mater Dei Hospital); Muscat Baron, Yves (Dept. of Obstetrics and Gynaecology); Calleja-Agius, Jean (Faculty of Medicine and Surgery); Demicoli, Pierre (Univ. of Malta); Camilleri, Kenneth Patrick (Univ. of Malta)

14:00-14:15 Registration of Dynamic Thermography Data of the Abdomen of Pregnant and Non-Pregnant Women

Ciantar, Annelie (University of Malta); Falzon, Owen* (University of Malta); Sammut, Lara (Mater Dei Hospital); Maschetti, Mattea (Mater Dei Hospital); Muscat Baron, Yves (Dept. of Obstetrics and Gynaecology); Calleja-Agius, Jean (Faculty of Medicine and Surgery); Demicoli, Pierre (University of Malta); Camilleri, Kenneth Patrick (University of Malta)

14:15-14:30 Multispectral Camera Fusion increases Robustness of ROI Detection for Biosignal Estimation with Nearables in Real-World Scenarios

Scebbia, Gaetano* (ETH Zurich); Tüschan, Laura Margarete (ETH Zurich); Karten, Walter (ETH Zurich)

13:30-13:45 Remote Heart Rate Measurement from RGB-NIR Video based on Spatial and Spectral Face Patch Selection

Kado, Shiika* (Tokyo Institute of Technology); Monno, Yusuke (Tokyo Institute of Technology); Moriwaki, Kenta (Tokyo Institute of Technology); Yoshizaki, Kazunori (Olympus Corp.); Tanaka, Masayuki (National Institute of Advanced Industrial Science and Technology); Okutomi, Masatoshi (Tokyo Institute of Technology)

14:15-14:30 Electrocardiogram Derived Respiratory Signal through the Segmented-Beat Modulation Method

Zhang, Guanyong* (Central South University); Morin, Evelyn (Queen's University); Zhang, Yaoxue (Central South University); Etemad, S. Ali (Queen's University)

14:45-15:00 Measuring Complexity in Different Muscles during Sustained Contraction using Fractal Properties of SEMG Signal

Poosapadi Arjuna, Sridhar* (SRM Institute of Science and Technology); Kant Kumar, Dinesh (RMIT University)

13:30-13:45 Thermal, IR and Microwave Imaging (Theme 2) (Oral Session)

13:30-13:45 Effects of Interpatient Variance on Microwave Breast Images: Experimental Evaluation

O'Loughlin, Declan* (National Univ. of Ireland Galway); Oliveira, Bárbara L. (National Univ. of Ireland Galway); Glavin, Martin (National Univ. of Ireland); Jones, Edward (National Univ. of Ireland Galway); O'Halloran, Martin (National Univ. of Ireland, Galway)

13:45-14:00 Principal Component Analysis of Dynamic Thermography Data from Pregnant and Non-Pregnant Women

Falzon, Owen* (Univ. of Malta); Ciantar, Annelie (Univ. of Malta); Sammut, Lara (Mater Dei Hospital); Schembri, Martina (Mater Dei Hospital); Muscat Baron, Yves (Dept. of Obstetrics and Gynaecology); Calleja-Agius, Jean (Faculty of Medicine and Surgery); Demicoli, Pierre (Univ. of Malta); Camilleri, Kenneth Patrick (Univ. of Malta)

14:00-14:15 Registration of Dynamic Thermography Data of the Abdomen of Pregnant and Non-Pregnant Women

Ciantar, Annelie (University of Malta); Falzon, Owen* (University of Malta); Sammut, Lara (Mater Dei Hospital); Maschetti, Mattea (Mater Dei Hospital); Muscat Baron, Yves (Dept. of Obstetrics and Gynaecology); Calleja-Agius, Jean (Faculty of Medicine and Surgery); Demicoli, Pierre (University of Malta); Camilleri, Kenneth Patrick (University of Malta)

14:15-14:30 Multispectral Camera Fusion increases Robustness of ROI Detection for Biosignal Estimation with Nearables in Real-World Scenarios

Scebbia, Gaetano* (ETH Zurich); Tüschan, Laura Margarete (ETH Zurich); Karten, Walter (ETH Zurich)
13:45-14:00
Center of Gravity Tracker for Operator Fatigue Detection
Owen, Elliot (Massachusetts Institute of Tech.); Maeda, Tomohiro (Massachusetts Institute of Tech.); Jiang, Ziwen (Massachusetts Institute of Tech.); Udotong, Isaiah (Massachusetts Institute of Tech.); Horberger, Erik (Sumitomo Heavy Industries, Ltd.); Morita, Junichi (Sumitomo Heavy Industries, Ltd.); Hom, Gim (Massachusetts Institute of Tech.); Hanumara, Nevan* (Massachusetts Institute of Tech.).

14:00-14:15
A Practical Method to Reduce Electrode Mismatch Artefacts during 4-Electrode Biopotential Spectroscopy Measurements
Montalbét, Amalric (INL UMR-5270 - INSA Lyon); McAdams, Eric* (INSA Lyon).

14:15-14:30
Design and Validation of Front-End Voltage Follower for Capacitive Electrodiagram Measurement using Bootstrapping Technique
Nakamura, Hajime* (Tokyo Denki University); Kato, Yuki (Tokyo Denki University); Ueno, Akinori (Tokyo Denki University).

14:30-14:45
InPhysible: Camouflage against Video-Based Physiological Measurement
McDuff, Daniel Jonathan* (Microsoft); Hurter, Christophe (ENAC French Civil Aviation University, Toulouse University).

14:45-15:00
Qualification of Wrist Functional Performance during Dart Thrower’s Movement
Nguyen, Nhan* (Deakin University); Pham, Trieu H. (Deakin University); Pathirana, Pubudu N. (Deakin University); Babazadeh, Sina (Barwon Orthopaedic Research Unit, Barwon Health, University Hospital Geelong); Page, Richard (Barwon Orthopaedic Research Unit, Barwon Health, University Hospital Geelong); Seneviratne, Aruna (CSIRO’s Data61).

13:30-13:45
Model-Driven Classification of Different Diabetes Types within a Personalized Diabetes Management
Tolks, Christian* (Augsburg University); Ament, Christoph (Augsburg University); Eberle, Claudia (Hochschule Fulda - University of Applied Sciences).

13:45-14:00
A Meta-Analysis of Pulse Arrival Time based Blood Pressure Estimation
Polinski, Artur (Gdansk University of Technology); Pietrewicz, Michal (Gdansk University of Technology); Kociejko, Tomasz (Gdansk University of Technology); Bujnowski, Adam (Gdansk University of Technology); Ruminski, Jack* (Gdansk University of Technology); Wtorek, Jerzy (Gdansk University of Technology).

14:00-14:15
Changes in Differential Expression of Genes in Normal and Metabolically Suppressed Mice in Response to Radiation
Chen, Richard* (Univ. of Alaska Fairbanks); Mora, Jason (California State Univ.); Muwvala, M. (Burrell College of Osteopathic Medicine); Nemeth, Daniel (Palo Alto High School); Wu, Derek (Mission San Jose High School); Giro, Yuri (NASA Ames Research Center).

14:15-14:30
Robust Control Design of Heart Rate Response during Treadmill Exercise under Parametric Uncertainty
Du, Yuncheng (Clarkson Univ.); Du, Dongping* (Texas Tech Univ.).

14:30-14:45
Bioinformatics and Regression Analyses Manifest Tumor-Specific miRNA Expression Dynamics in Pediatric Embryonal Malignancies
Braoudaki, Maria (National and Kapodistrian Univ. of Athens, First Dept. of Pediatrics); Koutsoyi, Dimitrios (BioMedical Engineering Lab, School of Electrical and Computer Engineering, National Technical Univ. of Athens); Kouris, Ioannis* (National Technical Univ. of Athens); Lambrou, George I. (National and Kapodistrian Univ. of Athens); Paidi, Anna (National Technical Univ. of Athens); Koutsou, Georgia (BioMedical Engineering Lab, National Technical Univ. of Athens).

14:45-15:00
Effect of Gating Charges on Mediating the Dual Activation of BK Channels in Smooth Muscle Cells: A Computational Study
Gupta, Suranjana* (IIT Bombay); Manchanda, Rohit (IIT Bombay).
13:30-13:45 SaCT20.1
Discontinuous Galerkin Model of Cellular Electrorepolarization
Sweeney, Daniel* (Virginia Tech); Davalos, Rafael (Virginia Tech)

14:15-14:30 SaCT20.4
Point Process Filtering Estimates of Branching Rate for Neural Dendritic Morphology Generation
Chou, Zane* (University of Southern California); Yu, Gene (University of Southern California); Berger, Theodore (USC)

14:30-14:45 SaCT20.5
Modelling Nerve Compression in Carpal Tunnel Syndrome
Snarrenberg, Shana (Univ. of Illinois at Chicago); Sevak, Brinda Nisith (Univ. of Illinois at Chicago); Patton, James* (Univ. Illinois at Chicago (UIC) & The Shirley Ryan AbilityLab (formerly RIC))

15:00-15:15 SaDT2.1
Investigating the Impact of CNN Depth on Neonatal Seizure Detection Performance
O’Shea, Alison* (University College Cork); Lightbody, Gordon (University College Cork); Boylan, Geraldine (University College Cork); Temko, Andriy (University Illinois at Chicago)

15:15-15:30 SaDT2.2
Deep Learning for Continuous Electronic Fetal Monitoring in Labor
Petrossiello, Alessio (University of Portsmouth); Jordanov, Ivan (University of Portsmouth); Papageorgiou, Aris (Nuffield Dept. of Obstetrics and Gynaecology, John Radcliffe Hospital, University of Oxford); Redman, Christopher WG (University of Oxford); Georgieva, Antoniya* (University of Oxford)

15:30-15:45 SaDT2.3
Signal Separation for Transabdominal Non-Invasive Fetal Pulse Oximetry using Comb Filters
Böltrich, Marcel* (Technische Universität Ilmenau); Husar, Peter (Ilmenau University of Technology)

15:45-16:00 SaDT2.4
Influence of Prenatal Alcohol and Smoke Exposure on Neonatal Vagal Tone in Response to Head-Up Tilt
Pini, Nicolò* (Politecnico di Milano); Lucchini, Maristella (Politecnico di Milano); Fifer, William P. (Dept. of Psychiatry and Pediatrics, Columbia University College of Physicians & Surgeons); Myers, Michael (Columbia University Medical Center); Signorini, Maria G. (Politecnico di Milano)

16:00-16:15 SaDT2.5
Connectivity Measures of Uterine Activity using Magnetoencephalography
Escalona-Vargas, Diana Irazú* (University of Arkansas for Medical Sciences); Zhang, Mengxue (Washington University in St. Louis); Nehorai, Arye (Washington University in St Louis); Esowan, Hari (University of Arkansas for Medical Sciences)

16:15-16:30 SaDT2.6
Extracting Transients from Cerebral Oxygenation Signals of Preterm Infants: A New Singular-Spectrum Analysis Method
O’Toole, John M.* (Univ. College Cork); Dempsey, Eugene (Irish Centre for Fetal and Neonatal Translational Research (INFANT, Univ. College Cork); Boylan, Geraldine (Univ. College Cork)

15:00-16:30 Meeting Room 325B
Models of Cells and Tissues (Theme 4) (Oral Session)
Chair: Patton, James (University Illinois at Chicago (UIC) & The Shirley Ryan AbilityLab (formerly RIC))

13:30-13:45 SaDT2.4
Oximetry using Comb Filters
Signal Separation for Transabdominal Non-Invasive Fetal Pulse Oximetry
Sengupta, Nilapratim* (Indian Institute of Technology Bombay); Brain, Keith L. (Univ. of Birmingham); Manchanda, Rohit (IIT Bombay)

13:45-14:00 SaDT2.5
Understanding Ductal Carcinoma in Situ Invasion using a Multiscale Agent-Based Model
Butner, Joseph (University of New Mexico); Cristini, Vittorio (University of New Mexico); Wang, Zhihu* (University of Texas Health Science Center at Houston McGovern Medical School)

14:15-14:30 SaDT2.6
Hematoma Segmentation using Dilated Convolutional Neural Networks
Extraction of Aortic Knuckle Contour in Chest Radiographs using Deep Learning
Xue, Zhiyun* (National Library of Medicine); Long, L. Rodney (National Library of Medicine); Jaeger, Stefan (National Institutes of Health); Follo, Les (National Institutes of Health Clinical Center); Thoma, George (National Library of Medicine, NIH); Antani, Sameer (National Library of Medicine)

15:00-16:30 Meeting Room 314
Image Segmentation – Machine Learning (Theme 2) (Oral Session)
Chair: Zhao, Jun (Shanghai Jiao Tong University)

15:00-15:15 SaDT3.1
ENS-Unet: End-to-End Noise Suppression U-net for Brain Tumor Segmentation
Meng, Zhu (Beijing Univ. of Posts and Telecommunications); Fan, Zhongyue (Beijing Univ. of Posts and Telecommunications); Zhao, Zhicheng* (Beijing Univ. of Posts and Telecommunications); Su, Fei (Beijing Univ. of Posts and Telecommunications)

15:15-15:30 SaDT3.2
Extraction of Aortic Knuckle Contour in Chest Radiographs using Deep Learning
Xue, Zhiyun* (National Library of Medicine); Long, L. Rodney (National Library of Medicine); Jaeger, Stefan (National Institutes of Health); Follo, Les (National Institutes of Health Clinical Center); Thoma, George (National Library of Medicine, NIH); Antani, Sameer (National Library of Medicine)

15:30-15:45 SaDT3.3
Deep Learning and Multi-Sensor Fusion for Glioma Classification using Multistream 2D Convolutional Networks
Ge, Chenjie* (Chalmers University of Technology); Gu, Irene Y.H. (Chalmers University of Technology); Jakola, Asgeir S. (Sahlgrenska Academy / St. Olavs University Hospital); Yang, Jie (Shanghai Jiao Tong University)

15:45-16:00 SaDT3.4
Automatic Delineation of the Clinical Target Volume in Rectal Cancer for Radiation Therapy using Three-Dimensional Fully Convolutional Neural Networks
Larsson, Rasmus (Shanghai Jiao Tong University); Xiong, Junfeng (Shanghai Jiao Tong University); Song, Ying (West China Hospital); Fu, Ling (Shanghai Jiao Tong University); Chen, Yizhi (Shanghai Jiao Tong University); Xu, Xiaowei (Shanghai Jiao Tong University); Zhang, Puming (Shanghai Jiao Tong University); Zhao, Jun* (Shanghai Jiao Tong University)

16:00-16:15 SaDT3.5
Hematoma Segmentation using Dilated Convolutional Neural Network
Yao, Hemin* (University of Michigan); Williamson, Craig (University of Michigan); Soroushmehr, S.M.Reza (University of Michigan, Ann Arbor); Gryak, Jonathan (University of Michigan); Najarian, Kayvan (University of Michigan - Ann Arbor)

16:15-16:30 SaDT3.6
A Fully Convolutional Deep Neural Network for Lung Tumor Boundary Tracking in MRI
Tahmasebi, Nazanin* (University of Alberta); Boulanger, Pierre (University of Alberta); Noga, Michelle (University of Alberta); Punithakumar, Kumaradevan (University of Alberta)
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<tr>
<th>Time</th>
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<th>Chair/Co-chairs</th>
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<td>15:00-16:30</td>
<td>SaDT4</td>
<td>Meeting Room 315</td>
<td>Novel Methods of Physiological Monitoring (Theme 7) (Oral Session)</td>
<td>Jovanov, Emil (University of Alabama in Huntsville)</td>
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<td>15:00-15:15</td>
<td>SaDT4.1</td>
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<td>Electrode Placement for Calf Bioimpedance Measurements during Hemodialysis</td>
<td>Deliano, Maggie K.* (Swarthmore College); Sodini, Charles G. (Massachusetts Institute of Technology)</td>
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<td>15:15-15:30</td>
<td>SaDT4.2</td>
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<td>AERO: An Objective Peripheral Edema Measurement Device</td>
<td>Williams, Keith (East Carolina University); Han, Muhong (East Carolina University); Hardin, Sonya (East Carolina University); George, Stephanie (East Carolina University); Yao, Jianchu* (East Carolina University)</td>
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<td>15:30-15:45</td>
<td>SaDT4.3</td>
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<td>The Importance of Posture and Skin-Site Selection on Remote Measurements of Neck Pulsations: An Ultrasonographic Study</td>
<td>Moc, Andrea* (Eindhoven University of Technology); Hamelmann, Paul (Eindhoven University of Technology); Stuijk, Sander (TU Eindhoven); de Haan, Gerard (Philips Innovation Group, Philips Research, Eindhoven)</td>
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<td>15:45-16:00</td>
<td>SaDT4.4</td>
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<td>Ambulatory Sensor for Circumference Monitoring of Lower Limbs</td>
<td>Gehin, Claudine* (INSA Lyon); Grenier, Etienne (Sigvars); Chaingneu, Cyril (Sigvars); Massot, Bertrand (INSA Lyon); Claude, Arthur (INSA Lyon); Montalivet, Amalric (INL UMR-5270 - INSA Lyon); McAdams, Eric (INSA Lyon)</td>
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<td>16:00-16:15</td>
<td>SaDT4.5</td>
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<td>Contactless Investigation of Dielectric Samples with a High-Q Millimeter-Wave Sensor</td>
<td>Wessel, Jan (IHP); Schnalz, Klaus (IHP); Jamal, Farabi Ibne (IHP); Kissinger, Dietmar* (IHP)</td>
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<td>16:15-16:30</td>
<td>SaDT4.6</td>
<td></td>
<td>Vital Sign Monitoring using Capacitive Sensing</td>
<td>Jovanov, Emil* (University of Alabama in Huntsville)</td>
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<td>15:00-16:30</td>
<td>SaDT5</td>
<td>Meeting Room 316A</td>
<td>Ophthalmic and Retinal Imaging (II) (Theme 2) (Oral Session)</td>
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<td>15:00-15:15</td>
<td>SaDT5.1</td>
<td></td>
<td>DISCERN: Generative Framework for Vessel Segmentation using Convolutional Neural Network and Visual Codebook</td>
<td>Chutchik, Piotr* (University of Lincoln); Al-Din, Bashir (The University of Lincoln); Caliva*, Francesco (University of Lincoln); Hunter, Andrew (University of Lincoln)</td>
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<td>15:15-15:30</td>
<td>SaDT5.2</td>
<td></td>
<td>Introducing a Novel Layer in Convolutional Neural Network for Automatic Identification of Diabetic Retinopathy</td>
<td>Khosravani, Farhad* (RMIT University); Ahmad, Behzad (RMIT University); Poospadat Arjunan, Sridhar (SRM Institute of Science and Technology); Kant Kumar, Dinesh (RMIT University)</td>
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<td>15:30-15:45</td>
<td>SaDT5.3</td>
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<td>A Unified Optic Nerve Head and Optic Cup Segmentation using Unsupervised Neural Networks for Glaucoma Screening</td>
<td>Ghassabi, Zeinab* (Stein Eye Institute, Univ. of California Los Angeles (UCLA)); Shanbehzadeh, Jamshid (Dept. of Computer Engineering, Kharazmi Univ.); Nourzadeh, kourosh (Stein Eye Institute, Univ. of California Los Angeles (UCLA))</td>
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<td>15:45-16:00</td>
<td>SaDT5.4</td>
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<td>Real-Time Retinal Processing for High-Resolution Optogenetic Stimulation Device</td>
<td>El Zarif, Nizar* (Polystim Neurotech Lab); Montazeri, Leila (Polystim Neurotech Lab); Sawan, Mohamad (Polytechnique Montreal)</td>
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<td>16:00-16:15</td>
<td>SaDT5.5</td>
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<td>Automated Detection of Malarial Retinopathy in Retinal Fundus Images Obtained in Clinical Settings</td>
<td>Joshi, Vinayak* (VisionQuest BioMedical LLC); Wdgahl, Jeffrey (2018); Nemeth, Sheila (Visionquest BioMedical LLC); Manda, Chathona (University of Malawi); Lewallen, Susan (Kilimanjaro Centre for Community Ophthalmology); Taylor, Terrie (Michigan State University); MacCormick, Ian J (The University of Edinburgh); Harding, Simon (University of Liverpool); Soliz, Peter (VisionQuest BioMedical LLC)</td>
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<td>16:15-16:30</td>
<td>SaDT5.6</td>
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<td>Optic Disc Segmentation from Retinal Fundus Images via Deep Object Detection Networks</td>
<td>Sun, Xu (Guangzhou Shiyuan Electronics Co., Ltd. (CVTE)); Xu, Yanwu* (Guangzhou Shiyuan Ltd. Co); Zhao, Wei (Guangzhou Shiyuan Electronics Co., Ltd.); You, Tianyuan (Guangzhou Shiyuan Electronics Co., Ltd.); Liu, Jiang (Ningbo Institute of Materials Technology and Engineering, CAS)</td>
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<td>15:00-16:30</td>
<td>SaDT6</td>
<td>Meeting Room 316B</td>
<td>Neuromuscular Systems (IV) (Theme 6) (Oral Session)</td>
<td>Patton, James (University Illinois at Chicago (UIC) &amp; The Shirley Ryan AbilityLab (formerly RIC))</td>
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<td>15:00-15:15</td>
<td>SaDT6.1</td>
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<td>Development of a Clonus Management System: A Case Study of Sit-to-Stand Learning in a Stroke Patient</td>
<td>Shiraishi, Ryoichiro* (Cyberdyne, Inc.); Kawamoto, Hiroaki (University of Tsukuba); Sankai, Yoshiyuki (University of Tsukuba)</td>
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<td>15:15-15:30</td>
<td>SaDT6.2</td>
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<td>Mechanisms of Bone-Conducted Ultrasonic Perception Assessed by Measurements of Acoustic Fields in the Outer Ear Canal and Vibrations of the Tympanic Membrane</td>
<td>Nakagawa, Seiji* (Chiba University); Ito, Kazuhito (National Institute of Advanced Industrial Science and Technology (AIST))</td>
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<td>15:30-15:45</td>
<td>SaDT6.3</td>
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<td>Synergistic Recruitment of Multi-Scale Myoelectric Oscillations of Upper Limb during Infant Crawling</td>
<td>Hou, Wensheng* (Bioengineering Inst of Chongqing University); Gao, Zhixian (Chongqing University)</td>
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<td>15:45-16:00</td>
<td>SaDT6.4</td>
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<td>On the Impact of Muscle Shortening on Non-Negative Matrix Factorization of Dynamic Surface Electromyograms</td>
<td>Šavc, Martin* (University of Maribor); Holobar, Ales (University of Maribor, Faculty of Electrical Engineering and Computer Science); Glaser, Vojko (University of Maribor, Faculty of Electrical Engineeringand Computer Science)</td>
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<td>16:00-16:15</td>
<td>SaDT6.5</td>
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<td>Characterizing Residual Muscle Properties in Lower Limb Amputees using High Density EMG Decomposition: A Pilot Study</td>
<td>Fylstra, Brett* (North Carolina State University and University of North Carolina - Chapel Hill); Dai, Chenyun (University of North Carolina at Chapel Hill); Hu, Xiaogang (University of North Carolina-Chapel Hill); Huang, He (North Carolina State University and University of North Carolina at Chapel Hill)</td>
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<td>16:15-16:30</td>
<td>SaDT6.6</td>
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<td>Adjacent Features for High-Density EMG Pattern Recognition</td>
<td>Donovan, Ian (San Francisco State University); Okada, Kazunori (San Francisco State University); Zhang, Xiaorong* (San Francisco State University)</td>
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15:00-15:15  
**SaDT7.1**  
*Signal Processing for Atrial Fibrillation (Theme 1)*  
(Oral Session)

**SaDT7: 15:00-16:30**  
**Meeting Room 316C**

15:00-15:15  
**Atrial Fibrillation Detection in Short Single Lead ECG Recordings using Wavelet Transform and Artificial Neural Networks**  
Hernandez, Fabio (UPB Bucaramanga); Méndez Abad, Dilio José (Universidad Pontificia Bolivariana); Amado, Luisvin (Centro Industrial de Mantenimiento Integral and Pontificia Bolivarian University); Altuve, Miguel* (Pontificia Bolivarian University)

15:15-15:30  
**Evaluation of Multiscale Frequency Approach for Visualizing Rotors in Patients with Atrial Fibrillation**  
Ravikumar, Vasanth (Univ. of Minnesota); Annoni, Elizabeth (Univ. of Minnesota); Mulpuru, Siva (Mayo Clinic); Roukoz, Henri (Univ. of Minnesota); Tolkacheva, Elena* (Univ. of Minnesota)

15:30-15:45  
**Intrinsic Mode Function Complexity Index using Empirical Mode Decomposition Discriminates Normal Sinus Rhythm and Atrial Fibrillation on a Single Lead ECG**  
Shivaram, Suganti (Mayo Clinic); Siva Baala Sundaram, Divaakar (Mayo Clinic); Balasubramani, Rogith (Velalar College of Engineering and Technology); Muthyala, Anjani (Mayo Clinic); Poigai Arunachalam, Shivaram* (Mayo Clinic)

15:45-16:00  
**Bispectrum and Histogram Features for the Identification of Atrial Fibrillation based on Electrocardiogram**  
Lin, Yu-Zhe (National Chung Cheng University); Yu, Sung-Nien* (National Chung Cheng University)

16:00-16:15  
**Detection of Atrial Fibrillation from RR Intervals and PQRST Morphology using a Neural Network Ensemble**  
Khamis, Heba* (UNSW Sydney); Chen, Jiayu (Swiss Federal Institute of Technology Zürich); Redmond, Stephen James (Univ. of New South Wales); Lovell, Nigel H. (Univ. of New South Wales)

**SaDT9: 15:00-16:30**  
**Meeting Room 318B**  
**Artefact Removal for Biosignals (Theme 1)**  
(Oral Session)

15:00-15:15  
**Removal of Baseline Wander Noise in ECG Signal using Asymmetrical Frequency-Response Masking Bandpass Filters**  
Shang, Zhongxia* (York University); Zhao, Yang (York University); Lian, Yong (York University)

15:15-15:30  
**Modelling and Synthesizing Motion Artifacts in Unobtrusive Multimodal Sensing using Copulas**  
Berief, Felix Balthasar (RWTH Aachen University); Leonhardt, Steffen (RWTH Aachen University); Hoog Antink, Christoph* (RWTH Aachen University, Aachen, Germany)

15:30-15:45  
**A Blind Source-Based Method for Automated Artifact-Correction in Standard Sleep ECG**  
Waser, Markus* (AIT Austrian Institute of Technology GmbH); Garn, Heinrich (AIT Austrian Institute of Technology GmbH); Jennum, Poul (University of Copenhagen, Denmark); Sorensen, Helge B D (Technical University of Denmark)

15:45-16:00  
**A Novel Algorithm for Removing Artefacts from EEG Data**  
Li, Yongcheng* (University of California, Irvine); Wang, Po T. (University of California Irvine); Vaidya, Mukta (University of Chicago); Liu, Charles Y. (Keck Hospital of the University of Southern California); Slutzky, Marc (Northwestern University); Do, An H. (University of California Irvine)

16:00-16:15  
**Cochlear Implant Artifact Reduction on One Channel Mismatch Negativity Recordings based on Ensemble Empirical Mode Decomposition and Independent Component Analysis**  
Martinez-Camacho, Mauricio Arturo* (Universidad Autónoma Metropolitana-Iztapalapa); Castaneda-Villa, Norma (Universidad Autónoma Metropolitana-Iztapalapa)

**SaDT12: 15:00-16:30**  
**Meeting Room 321A**  
**Sleep Apnea Diagnosis and Therapy (Theme 5)**  
(Oral Session)

15:00-15:15  
**On the Generalizability of ECG-Based Obstructive Sleep Apnea Monitoring: Merits and Limitations of the Apnea-ECG Database**  
Papini, Gabriele* (Eindhoven University of Technology); Fonseca, Pedro (Philips Research and Eindhoven University of Technology); Margarito, Jenny (Philips Research); van Gilst, Merel (Eindhoven University of Technology); Overeem, Sebastiaan (Kempenhaeghe Foundation, Sleep Medicine Centre); Bergmans, Johannes Wilhelmus Maria (Eindhoven University of Technology); Vullings, Rik (Eindhoven University of Technology)

15:15-15:30  
**Optimising the Apnoea Classification Performance of a Neural Network Classifier Processing ECG-Oximetry Signals**  
de Chazal, Philip* (Univ. of Sydney); Naivala Pathirannehelage, Madhuka (Univ. of Sydney); Sadr, Nadi (Univ. of Sydney)

15:30-15:45  
**A Sleep Apnea Therapy Device Uses No Added Pressure**  
Webster, John G* (University of Wisconsin-Madison); Shokoueinejad, Mehdi (University of Wisconsin - Madison); Wang, Fa (University of Wisconsin-Madison)

15:45-16:00  
**Apnea and Hypopnea Events Classification using Amplitude Spectrum Trend Feature of Snores**  
Sun, Jingpeng (Univ. of Chinese Academy of Sciences); Hu, Xiyuan* (Inst. of Automation, Chinese Academy of Sciences, Univ. of Chinese Academy of Sciences); Zhao, Yingying (South Campus of Guangyamen Hospital, China Academy of Chinese Medical); Sun, Shuchen (Guangyamen Hospital, China Academy of Chinese Medical); Chen, Chen (China Academy of Sciences, Univ. of Chinese Academy of Sciences); Peng, Siqiong (Inst. of Automation, Chinese Academy of Sciences, Univ. of Chinese Academy of Sciences)

16:00-16:15  
**Prediction of MAS Therapy Response in Obstructive Sleep Apnoea Patients using Clinical Data**  
Naivala Pathirannehelage, Madhuka* (University of Sydney); de Chazal, Philip (University of Sydney)

16:15-16:30  
**In-Home Sleep Apnea Severity Classification using Contact-Free Load Cells and an AdaBoosted Decision Tree Algorithm**  
Mosquera-Lopez, Clara* (Oregon Health & Science University); Leitschuh, Joseph (Oregon Health & Science University); Condon, John (Pro-tech); Hagen, Chad (Oregon Health & Science University); Hanks, Cody (Portland State University); Jacobs, Peter G. (Oregon Health & Science University)

**SaDT14: 15:00-18:30**  
**Meeting Room 322AB**  
**Therapeutic Ultrasound (II)**  
(Oral Session)

15:00-15:15  
**Gas Embolization in a Rodent Model of Hepatocellular Carcinoma using Acoustic Droplet Vaporization**  
Harmon, Jonah (Tulane Univ.); Kabinejadian, Foad (Tulane Univ.); Seda, Robinson (Univ. of Michigan); Fabiili, Mario (Univ. of Michigan); Kuruvilla, Sibu (Stanford Univ.); Greve, Joan (Univ. of Michigan); Fowlkes, Brian (Univ. of Michigan); Bull, Joseph* (Tulane Univ.)
15:15-15:30  SaDT14.2  
Design of a Novel Wearable LIPUS Treatment Device for Mental Health Treatment  
Qi, Shiang (Univ. of Alberta); Li, Yufeng (Univ. of Alberta); Zhang, Wei (Univ. of Alberta); Chen, Jie* (Univ. of Alberta)

15:30-15:45  SaDT14.3  
Transcranial Ultrasound Improves Behavioral Performance via Anti-Neuroinflammation  
Yang, Feng-Yi* (National Yang-Ming University); Chen, Tao-Tao (National Yang-Ming University)

15:45-16:00  SaDT14.4  
Ultrasound-Induced Insulin Release as a Potential Novel Treatment for Type 2 Diabetes Mellitus  
Singh, Tania* (George Washington Univ.); Suarez Castellanos, Ivan (George Washington Univ.); Klimas, Aleks (George Washington Univ.); Entcheva, Emilia (Stony Brook Univ.); Cohen, Joshua (GW Medical Faculty Associates); Chatterjee Bhowmick, Diti (George Washington Univ.); Jeremic, Aleksandar (George Washington Univ.); Zderic, Vesna (George Washington Univ.)

16:00-16:15  SaDT14.5  
Histotripsy for Non-Invasive Ablation of Hepatocellular Carcinoma (HCC) Tumor in a Subcutaneous Xenograft Murine Model  
Wortlik, Tejaswi* (University of Michigan); Vlaisavljevich, Eli (Virginia Tech); Gerhardson, Tyler (University of Michigan); Greve, Joaun (University of Michigan); Wen, Shanshan (NYU Langone Health); Kuruvilla, Sibu (Stanford University); Lundt, Jonathan (University of Michigan); Ives, Kimberly (University of Michigan); Hall, Timothy (University of Michigan); Welling, Theodore (NYU Langone Health); Lee Jr., Fred T. (University of Wisconsin-Madison); Xu, Zhen (University of Wisconsin-Madison)

16:15-16:30  SaDT14.6  
Real-Time Optical Imaging of Microbubble Destruction with an Acoustic Lens Attached Ultrasonic Diagnostic Probe in Microfluidic Capillary Models  
Oh, Min Tack (Korea Institute of Science and Technology); Kim, Hong Nam (Korea Institute of Science and Technology); Ko, Hanseok (Korea Univ.); Lee, Seunghyun (Seoul National Univ. Hospital); Kim, Jung Hoon (Seoul National Univ. Hospital); Lee, Byung Chul* (Korea Institute of Science and Technology)

15:45-16:00  SaDT15.4  
Fabrication and Testing of Multielectrode Matrix of Disordered Si Nanowires for Brain Tissue Sensing  
Quiroga-González, Enrique* (Benemérita Univ. Autónoma de Puebla); Arzola Flores, Jesús Andrés (Benemérita Univ. Autónoma de Puebla); Soto Egubal, Enrique (Benemérita Univ. Autónoma de Puebla); Ortega Ramírez, Audrey Magdalena (Benemérita Univ. Autónoma de Puebla); González Petticarlo, Octavio (Benemérita Univ. Autónoma de Puebla)

16:00-16:15  SaDT15.5  
Cross-Linked Electrospun Gelatin Nanofibers for Cell-Based Assays  
Ghassemi, Zahra (UMBC); Slaughter, Gymama* (University of Maryland Baltimore County)

15:15-15:30  SaDT15.1  
Physical Activity and Sleep Analysis of Heart Failure Patients using Multi-Sensor Patches  
O’Donnell, Johanna (University of Oxford); Velardo, Carmelo (University of Oxford); Shah, Syed Ahmar (Postdoctoral Scientist, University of Oxford); Salvi, Dario* (Postdoctoral Scientist, Mayo Clinic); Rahimi, Kazem (University of Oxford); Tarassenko, Lionel (University of Oxford)

15:30-15:45  SaDT15.2  
Key Marker Selection for the Detection of Early Parkinson’s Disease using Importance-Driven Models  
Xiao, Chun (Univ. of Sydney); Liu, Yingchao (Dept. of Neurosurgery, Provincial Hospital Affiliated to Shandong Univ., China); Feng, Dagan (Univ. of Sydney); Wang, Xiu Ying* (Univ. of Sydney)

15:45-16:00  SaDT15.4  
Onset Detection of Epileptic Seizures from Accelerometry Signal  
Kusnacar, Shilanshu* (Univ. of Melbourne); Karmakar, Chandan (Deakin Univ.); Yan, Bernard (The Royal Melbourne Hospital); O’Brien, Terence (The Royal Melbourne Hospital); Muthuganapathy, Ramanathan (Indian Institute of Technology Madras); Palaniswami, Marimuthu (Univ. of Melbourne)

16:00-16:15  SaDT16.5  
A Machine Learning Approach for the Prediction of the Progression of Cardiovascular Disease based on Clinical and Non-Invasive Imaging Data  
Kigka, Vassiliki (Univ. of Ioannina); Georga, Eleni I. (Univ. of Ioannina); Sakellarios, Antonis (Unit of Medical Technology and Application Systems, Dept of Material Science, Univ. of Ioannina); Tachos, Nikolaos (Unit of Medical Technology and Intelligent Information Systems, Dept. of Materials Science and Engineering, Univ. of Ioannina); Andrakos, Ioannis (Univ. of Ioannina); Tsompou, Panagioti (Unit of Medical Technology and Intelligent Information Systems, Dept. of Materials Science and Engineering, Univ. of Ioannina); Rocchiccioli, Silvia (Institute of Clinical Physiolog, National Research Council); Pelosi, Gualtiero (Institute of Clinical Physiolog, National Research Council); Parodi, Oberdan (CNR Clinical Physiolog Institute - Milan); Michallis, Lampros (Univ. of Ioannina); Fotsadis, Dimitrios I.* (Univ. of Ioannina)

16:15-16:30  SaDT15.6  
Deploying Predictive Models in a Healthcare Environment – An Open Source Approach  
Murphree, Dennis* (Mayo Clinic); Quest, Daniel (Mayo Clinic); Allen, Ryan (Mayo Clinic); Ngufor, Che (Mayo Clinic); Storlie, Curtis (Mayo Clinic)
15:00-15:15 SaDT19.1
A Multi-Domain Continuum Model of Electrical Stimulation of Healthy and Degenerate Retina
Alqahtani, Abdulrahman (Univ. of New South Wales); Al Abed, Amir (Univ. of New South Wales); Anderson, Emily Elizabeth* (Univ. of New South Wales); Lovell, Nigel H. (Univ. of New South Wales); Dokos, Socrates (Univ. of New South Wales)

15:15-15:30 SaDT19.2
A Cerebellar Spiking Neural Model for Phase Reversal of Vestibulo-Ocular Reflex
Zhou, Zhanhong (City Univ. of Hong Kong); Zhai, Xiaolong (City Univ. of Hong Kong); Tin, Chung* (City Univ. of Hong Kong)

15:30-15:45 SaDT19.3
Clustering based Kernel Reinforcement Learning for Neural Adaptation in Brain-Machine Interfaces
Zhang, Xiang* (The Hong Kong University of Science and Technology); Principe, Jose (University of Florida); Wang, Yiwen (Hong Kong University of Science and Technology)

15:45-16:00 SaDT19.4
Modeling Nonlinear Synaptic Dynamics: A Laguerre-Volterra Network Framework for Improved Computational Efficiency in Large Scale Simulations
Hu, Eric* (University of Southern California); Yu, Gene (University of Southern California); Bouteiller, Jean-Marie Charles (University of Southern California); Berger, Theodore (University of Southern California)

16:00-16:15 SaDT19.5
A Tractography Analysis for Electroconvulsive Therapy
Riel, Stefanie (Technical Univ. of Munich); Bashiri, Mohammad (Technical Univ. of Munich); Hemmert, Werner (Technical Univ. of Munich); Bai, Siwei* (Technical Univ. of Munich)

16:15-16:30 SaDT19.6
Decoding Position to Analyze Spatial Information Encoding in a Large-Scale Neuronal Network Model of Rat Dentate Gyrus
Yu, Gene* (University of Southern California); Bouteiller, Jean-Marie Charles (University of Southern California); Song, Dong (University of Southern California); Berger, Theodore (University of Southern California)

15:00-16:30 Meeting Room 325A
Models of Neurons and Neural Tissues (Theme 4) (Oral Session)
Chair: Makarov, Sergey (Electrical and Computer Engineering, Worcester Polytechnic Institute)
Co-Chair: Bomzon, Ze’ev (Novacure Ltd.)

15:00-15:15 SaDT20.1
Simulating the Outcome of Heart Allocation Policies using Deep Neural Networks
Medved, Dennis* (Lund University); Nguess, Pierre (Lund University); Nilsson, Johan (Dept. Clinical Sciences Lund, CardioThoracic Surgery, Lund University, Lund)

15:15-15:30 SaDT20.2
Influence of the Cochlear Implant Electrode Array Placement on the Current Spread in the Cochlea
Schäfer, Friederike (Technical University of Munich); Enke, Jörg (Technical University of Munich); Böhnke, Frank (Technical University of Munich); Hemmert, Werner (Technical University of Munich); Bai, Siwei* (Technical University of Munich)
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