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\* Author Name – Corresponding Author • \* Following Paper Title – Paper not Available

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**Co-Chair:** Sassi, Roberto (*Università degli Studi di Milano*)

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**Chair:** Toschi, Nicola (*University of Rome*)

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09:45-10:00 WeA12.6  
**Whole Brain in-Vivo Axonal Diameter Mapping in Multiple Sclerosis** ..... 204-207  
 De Santis, Silvia (*Universidad Miguel Hernandez de Elche*); Herranz, Elena (*Athinoula A. Martinos Center for Biomedical Imaging, Boston, MA*); Treaba, Constantina (*Dept. of Radiology, Athinoula A. Martinos Center for Biomed*); Barletta, Valeria (*Martinos Center for Biomedical Imaging (MGH) & Harvard Medical*); Mehndiratta, Ambica (*Martinos Center for Biomedical Imaging (MGH) & Harvard Medical*); Mainero, Caterina (*Dept. of Radiology, Athinoula A. Martinos Center for Biomed*); Toschi, Nicola\* (*University of Rome "Tor Vergata", Faculty of Medicine*)

WeA14: 08:30-10:00 R3 – Level 3  
**Signal Processing and Classification of Acoustic and Auditory Signals** (Oral Session)  
**Chair:** Ambrosini, Emilia (*Politecnico di Milano*)  
**Co-Chair:** Celler, Branko George (*University of New South Wales*)

08:30-08:45 WeA14.1  
**Blood Pressure Estimation using Time Domain Features of Auscultatory Waveforms and GMM-HMM Classification Approach** ..... 208-211  
 Celler, Branko George\* (*University of New South Wales*); Le, Phu N. (*University of New South Wales*); Argha, Ahmadreza (*University of New South Wales*); Ambikairajah, E (*University of New South Wales*)



08:45-09:00	WeA14.2
<b>Automatic Speech Analysis to Early Detect Functional Cognitive Decline in Elderly Population</b> .....	212-216
Ambrosini, Emilia* ( <i>Politecnico di Milano</i> ); Caielli, Matteo ( <i>Politecnico di Milano</i> ); Milis, Marios ( <i>Signal GeneriX Ltd</i> ); Loizou, Christos ( <i>Signal GeneriX Ltd</i> ); Azzolino, Domenico ( <i>Fondazione IRCCS Cà Granda Ospedale Maggiore Policlinico</i> ); Damanti, Sarah ( <i>Fondazione IRCCS Cà Granda Ospedale Maggiore Policlinico</i> ); Bertagnoli, Laura ( <i>Fondazione IRCCS Cà Granda Ospedale Maggiore Policlinico</i> ); Cesari, Matteo ( <i>Fondazione IRCCS Cà Granda Ospedale Maggiore Policlinico</i> ); Moccia, Sara ( <i>Unviersità Politecnica delle Marche</i> ); Cid, Manuel ( <i>Consejería de Sanidad y Políticas Sociales, Junta de Extremadura</i> ); Galán de Isla, Carmen ( <i>Consejería de Sanidad y Políticas Sociales, Junta de Extremadura</i> ); Salamanca, Paula ( <i>Consejería de Sanidad y Políticas Sociales, Junta de Extremadura</i> ); Borghese, Nunzio Alberto ( <i>Univ. of Milan</i> ); Ferrante, Simona ( <i>Politecnico di Milano</i> )	
09:00-09:15	WeA14.3
<b>Automatic Identification of Cough Events from Acoustic Signals</b> .....	217-220
Pramono, Renard Xaviero Adhi* ( <i>Imperial College London</i> ); Imtiaz, Syed Anas ( <i>Imperial College London</i> ); Rodriguez-Villegas, Esther ( <i>Imperial College London</i> )	
09:15-09:30	WeA14.4
<b>Regression between EEG and Speech Signals for Spoken Vowels</b> .....	221-224
Sikdar, Debdeep ( <i>IIT Kharagpur</i> ); Roy, Rinku ( <i>IIT Kharagpur</i> ); Mahadevappa, Manjunatha* ( <i>Indian Institute of Technology Kharagpur</i> )	
09:30-09:45	WeA14.5
<b>Automated Verbal and Non-Verbal Speech Analysis of Interviews of Individuals with Schizophrenia and Depression</b> .....	225-228
Xu, Shihao* ( <i>Nanyang Technological University, School of Electrical &amp; Elect</i> ); Yang, Zixu ( <i>Institute of Mental Health</i> ); Chakraborty, Debsubhra ( <i>Institute for Media Innovation, Nanyang Technological University</i> ); Yi Han Chua, Victoria ( <i>Nanyang Technological University, School of Electrical &amp; Elect</i> ); Dauwels, Justin ( <i>NTU</i> ); Thalmann, Daniel ( <i>Ecole Polytechnique Fédérale de Lausanne (EPFL)</i> ); Magnenat Thalmann, Nadia ( <i>Institute for Media Innovation, Nanyang Technological University</i> ); Tan, Bhing-Leet ( <i>Health &amp; Social Sciences, Singapore Institute of Technology</i> ); Lee, Jimmy ( <i>Institute of Mental Health</i> )	
09:45-10:00	WeA14.6
<b>Combining Electrodermal Activity and Speech Analysis Towards a more Accurate Emotion Recognition System</b> .....	229-232
Greco, Alberto* ( <i>University of Pisa</i> ); Marzi, Claudia ( <i>National Research Council of Italy</i> ); Lanata', Antonio ( <i>University of Pisa</i> ); Scilingo, Enzo Pasquale ( <i>University of Pisa</i> ); Vanello, Nicola ( <i>University of Pisa</i> )	

WeA15: 08:30-10:00	M3 – Level 3
<b>Bioinformatics – Bioinformatics for Health Monitoring (Oral Session)</b>	
<b>Co-Chair:</b> Smith, Michael ( <i>University of Calgary</i> )	

08:30-08:45	WeA15.1
<b>Evaluating the Accuracy of Consensus Nanopore Squiggles Generated by Dynamic Time Warp Barycentre Averaging (DBA)</b> .....	233-237
Smith, Michael* ( <i>University of Calgary</i> ); Chan, Rachel S. L. ( <i>Electrical &amp; Computer Engineering, University of Calgary</i> ); Gordon, Paul ( <i>Bioinformatics, Alberta Children's Hospital Research Institute</i> )	
08:45-09:00	WeA15.2
<b>Patient-Specific Debye Parameters for Human Blood</b> .....	238-242
Santorelli, Adam* ( <i>National Univ. of Ireland Galway</i> ); O'Halloran, Martin ( <i>National Univ. of Ireland, Galway</i> )	
09:00-09:15	WeA15.3
<b>MOTA: Multi-Omic Integrative Analysis for Biomarker Discovery</b> .....	243-247
Fan, Ziling ( <i>Georgetown Univ.</i> ); Zhou, Yuan ( <i>Georgetown Univ.</i> ); Resson, Habtom* ( <i>Georgetown Univ.</i> )	

09:15-09:30 WeA15.4  
**Simulation of a Cellular Automaton with Markov Chains: Applications in Self-Organized Dynamical Systems** ..... 248-251  
 Lambrou, George I. (*National & Kapodistrian University of Athens*); Ioannidou, Pinelopi (*Dept. of Biomedical Research, Institute of Molecular Biology*); Bizopoulos, Paschalis\* (*National Technical University of Athens*); Toumpaniaris, Petros (*National Technical University of Athens*); Kepentzis, Stavros (*National Technical University of Athens*); Koutsouris, Dimitrios (*Biomedical Engineering Laboratory, School of Electrical & Comp*)

09:30-09:45 WeA15.5  
**A Cross-Platform Comparison of Affymetrix, Agilent, and Illumina Microarray Reveals Functional Genomics in Colorectal Cancer Progression** ..... 252-255  
 Lim, Hendrick Gao-Min\* (*Taipei Medical University*); Lee, Yuan-Chii Gladys (*Taipei Medical University*)

09:45-10:00 WeA15.6  
**A Queryable Graph Representation of Vascular Connectivity in the Whole Mouse Brain** ..... 256-260  
 Nowak, Michael\* (*Texas A&M University*); Lee, Junseok (*Texas A&M University, Dept. of Computer Science & Enginee*); Choe, Yoonsuck (*Texas A&M University*)

WeA16: 08:30-10:00 M5 – Level 3  
**Data-Driven Translational Biomedicine** (Oral Session)  
 Chair: Molteni, Erika (*King's College London*)

08:30-08:45 WeA16.1  
**A Full-Body Model of Burn Pathophysiology and Treatment using the BioGears Engine** ..... 261-264  
 McDaniel, Matthew\* (*Applied Research Associates*); Baird, Austin (*Applied Research Associates*)

08:45-09:00 WeA16.2  
**A Minimal Model Approach for the Description of Postprandial Glucose Responses from Glucose Sensor Data in Diabetes Mellitus** ..... 265-268  
 Eichenlaub, Manuel M.\* (*University of Warwick*); Hattersley, John Glenn (*University Hospitals Coventry & Warwickshire/University of War*); Khovanova, Natasha (*University of Warwick*)

09:00-09:15 WeA16.3  
**Comparison of Multi-Class Machine Learning Methods for the Identification of Factors Most Predictive of Prognosis in Neurobehavioral Assessment of Pediatric Severe Disorder of Consciousness through LOCFAS Scale** ..... 269-272  
 Molteni, Erika\* (*King's College London*); Colombo, Katia (*Scientific Institute, IRCCS E. Medea*); Beretta, Elena (*IRCCS "E.Medea", Associazione La Nostra Famiglia, Bosisio Parini*); Galbiati, Susanna (*IRCCS Eugenio Medea Scientific Institute*); Dos Santos Canas, Liane (*King's College London*); Modat, Marc (*King's College London*); Strazzer, Sandra (*IRCCS*)

09:15-09:30 WeA16.4  
**Modeling of Combination Chemotherapy and Immunotherapy for Lung Cancer** ..... 273-276  
 Curtis, Louis (*University of Louisville*); Frieboes, Hermann\* (*University of Louisville*)

09:30-09:45 WeA16.5  
**STAR-Liège Clinical Trial Interim Results: Safe and Effective Glycemic Control for All** ..... 277-280  
 Uyttendaele, Vincent\* (*Univ. of Canterbury*); Knopp, Jennifer L. (*Univ. of Canterbury*); Pirotte, Marc (*Univ. of Liege*); Morimont, Philippe (*Univ. Hospital of Liège*); Lambermont, Bernard (*Univ. of Liege*); Shaw, Geoffrey M (*Christchurch Hospital*); Desaive, Thomas (*Univ. of Liege*); Chase, J. Geoffrey (*Univ. of Canterbury*)

09:45-10:00 WeA16.6  
**Joint and Long Short Term Memory Regression of Clinical Scores for Alzheimer's Disease using Longitudinal Data** ..... 281-284  
 Yang, Mengya (*Shenzhen Univ.*); Elazab, Ahmed (*Shenzhen Univ.*); Yang, Peng (*Shenzheng Univ.*); Xia, Zaimin (*Shenzhen Univ.*); Wang, Tianfu (*Shenzhen Univ.*); Lei, Baiying\* (*Shenzhen Univ.*)

WeA17: 08:30-10:00 R12 – Level 3  
**Atrial Fibrillation and Cardiac Electrophysiology** (Oral Session)  
**Co-Chair:** Chon, Ki (*University of Connecticut*)

- 08:30-08:45 WeA17.1  
**Local Activation Time Estimation in Fractionated Electrograms of Cardiac Mappings** ..... 285-288  
 Abdi, Bahareh\* (*TU Delft*); Alle-Jan, van der Veen (*TU Delft*); de Groot, Natasja (*Erasmus MC, Rotterdam*);  
 Hendriks, Richard (*TU Delft*)
- 08:45-09:00 WeA17.2  
**Preliminary Validation of Electroporation-Electrolysis (E2) for Cardiac Ablation using a  
 Parameterisable in-Vivo Model** ..... 289-293  
 Zhao, Luke Hong Lu\* (*The University of Sydney*); Rasko, Adam Emery (*The University of Sydney*); Drescher,  
 Christian (*Micropace Pty Ltd*); Maleki, Sanaz (*The University of Sydney*); Cejnar, Michael (*Micropace Pty Ltd*);  
 McEwan, Alistair (*The University of Sydney*)
- 09:00-09:15 WeA17.3  
**Structural Analysis of Complex Atrial Intramural Microstructure from a Multi-Layer  
 Model based on Siamese Network** ..... 294-297  
 Li, Jianning (*Tsinghua University*); Chen, Riqing (*The Institute of Biomedical Engineering, Graduate School at  
 Shen*); Wu, Jian\* (*Tsinghua University*)
- 09:15-09:30 WeA17.4  
**Atrial Fibrillation Detection in ICU Patients: A Pilot Study on MIMIC III Data** ..... 298-301  
 Bashar, Syed Khairul\* (*University of Connecticut*); Ding, Eric (*University of Massachusetts Medical School*);  
 Albuquerque, Daniella (*University of Massachusetts Medical School*); Winter, Michael (*Boston University*);  
 Binici, Sophia (*University of Massachusetts Medical School*); Walkey, Allan (*Boston University*); McManus,  
 David (*University of Massachusetts Medical Center*); Chon, Ki (*University of Connecticut*)
- 09:30-09:45 WeA17.5  
**Effectiveness of CRT-D versus ICD on Prevention of Electrical Storm: Big Data from the USA** ..... 302-304  
 Shakibfar, Saeed\* (*University of Copenhagen*); Yazdchi, Mohammadreza (*Isfahan University*);  
 Aliakbaryhosseinabadi, Susan (*the Center for Sensory-Motor Intraction, Dept. of Health Sc*)
- 09:45-10:00 WeA17.6  
**The Role of the Size of Infarcted Area on Two Kinds of Vulnerable Window in  
 Two Dimension Ventricular Tissue** ..... 305-308  
 Liang, Cuiping\* (*Harbin Institute of Tech.*); Wang, Kuanquan (*Harbin Institute of Tech.*); Li, Qince (*Harbin  
 Institute of Tech.*); Zhang, Henggui (*Harbin Institute of Tech., School of Computer Science & T*)

WeA18: 08:30-10:00 R13 – Level 3  
**Human Performance (I)** (Oral Session)  
**Chair:** Jones, Richard D. (*New Zealand Brain Research Institute*)  
**Co-Chair:** Petroff, Neil (*Tarleton State University*)

- 08:30-08:45 WeA18.1  
**A Mobile Solution for Rhythmic Auditory Stimulation Gait Training** ..... 309-312  
 Aholt, Katharina\* (*Friedrich-Alexander-Universität Erlangen-Nürnberg*); Martindale, Christine (*Friedrich-  
 Alexander-Universität Erlangen-Nürnberg*); Küderle, Arne (*Friedrich-Alexander-Universität Erlangen-Nürnberg*);  
 Gaßner, Heiko (*Universitätsklinikum Erlangen, Dept. of Molecular Neurology*); Gladow, Till (*Medical Valley  
 Digital Health Application Center GmbH, Bamberg*); Rojo, Javier (*Technical University of Madrid*); Villanueva-  
 Mascato, Samanta (*Universidad Politecnica de Madrid*); Klucken, Jochen (*University Hospital Erlangen*);  
 Arredondo Waldmeyer, María Teresa (*Universidad Politécnica de Madrid*); Eskofier, Bjoern M (*Friedrich-  
 Alexander-Universität Erlangen-Nürnberg*)
- 08:45-09:00 WeA18.2  
**An Eye-Tracking based Evaluation on the Effect of Far-Infrared Therapy for Relieving Visual Fatigue** ..... 313-316  
 Feng, Yong (*Southern University of Science & Technology*); Wang, Lei (*Southern University of Science &  
 Technology*); Chen, Fei\* (*Southern University of Science & Technology*)

09:00-09:15		WeA18.3
<b>An Instrumented Measurement Scheme for the Assessment of Upper Limb Function in Individuals with Friedreich Ataxia</b> .....	317-320	
Nguyen, Khoa D.* ( <i>Deakin University</i> ); Corben, Louise Anne ( <i>Murdoch Children's Research Institute</i> ); Pathirana, Pubudu N. ( <i>Deakin University</i> ); Horne, Malcolm ( <i>Florey Institute of Neuroscience &amp; Mental Health</i> ); Delatycki, Martin ( <i>Murdoch Children's Research Institute</i> ); Szmulewicz, David ( <i>Victorian Eye &amp; Ear Hospital</i> )		
09:15-09:30		WeA18.4
<b>Foot Care to Improve Physical Function and Prevent Falling of Frail Elderly Adults with and without Dementia</b> .....	321-324	
Yamashita, Tomoko* ( <i>Takase Clinic</i> ); Yamashita, Kazuhiko ( <i>Ryotokuji Tech.</i> ); Yoshimasa, Takase ( <i>Takase Clinic</i> )		
09:30-09:45		WeA18.5
<b>Specific Neuronal Oscillatory Coupling over Frontal and Occipito-Temporal Regions during Face Perception</b> .....	325-328	
Yin, Zhongliang ( <i>Xidian University</i> ); Wang, Yue ( <i>Xidian University</i> ); Yin, Kuiying ( <i>Nanjing Institute of Electronic Technology</i> ); Dong, Minghao ( <i>Xidian University</i> ); Liang, Jimin* ( <i>Xidian University</i> )		
09:45-10:00		WeA18.6
<b>High-Definition Transcranial Direct Current Stimulation (HD-tDCS) Enhances Working Memory Training</b> .....	329-332	
Wang, Ningci* ( <i>Tianjin University</i> ); Ke, Yufeng ( <i>Tianjin University</i> ); Du, Jiale ( <i>Tianjin University</i> ); Liu, Wentao ( <i>Tianjin University</i> ); Kong, Linghan ( <i>Tianjin University</i> ); Zhao, Xin ( <i>Tianjin University</i> ); Liu, Shuang ( <i>Tianjin University</i> ); Xu, Minpeng ( <i>Tianjin University</i> ); An, Xingwei ( <i>Tianjin University</i> ); Ming, Dong ( <i>Tianjin University</i> )		
WeA19: 08:30-10:00		R4 – Level 3
<b>General and Theoretical Informatics – Data Intelligence (Oral Session)</b>		
<b>Co-Chair:</b> Dickhaus, Hartmut ( <i>University of Heidelberg</i> )		
08:30-08:45		WeA19.1
<b>Cortical Functional Connectivity during Praxis in Autism Spectrum Disorder</b> .....	333-336	
Harvy, Jonathan ( <i>Singapore Institute for Neurotechnology</i> ); Ewen, Joshua ( <i>Kennedy Krieger Institute</i> ); Thakor, Nitish ( <i>National University of Singapore</i> ); Bezerianos, Anastasios ( <i>National University of Singapore</i> ); Li, Junhua* ( <i>National University of Singapore</i> )		
08:45-09:00		WeA19.2
<b>Automatic Clinical Procedure Detection for Emergency Services</b> .....	337-340	
Heard, Jamison* ( <i>Vanderbilt Univ.</i> ); Paris, Richard ( <i>Vanderbilt Univ.</i> ); Scully, Deirdre ( <i>Vanderbilt Univ.</i> ); McNaughton, Candace ( <i>Vanderbilt Univ. Medical Center</i> ); Ehrenfeld, Jesse M. ( <i>Vanderbilt Univ. Medical Center</i> ); Coco, Joseph ( <i>Vanderbilt Univ. Medical Center</i> ); Fabbri, Daniel ( <i>Vanderbilt Univ. Medical Center</i> ); Bodenheimer, Robert ( <i>Vanderbilt Univ.</i> ); Adams, Julie A. ( <i>Oregon State Univ.</i> )		
09:00-09:15		WeA19.3
<b>Clustering Cardiovascular Risk Trajectories of Patients with Type 2 Diabetes using Process Mining</b> .....	341-344	
Pebesma, Joyce ( <i>University of Twente</i> ); Martinez-Millana, Antonio* ( <i>Universitat Politècnica de València</i> ); Sacchi, Lucia ( <i>University of Pavia</i> ); Fernandez-Llatas, Carlos ( <i>Universidad Politécnica de Valencia</i> ); De Cata, Pasquale ( <i>Fondazione Salvatore Maugeri</i> ); Chiovato, Luca ( <i>Fondazione Salvatore Maugeri</i> ); Bellazzi, Riccardo ( <i>University of Pavia</i> ); Traver, Vicente ( <i>ITACA – Universitat Politècnica de València</i> )		
09:15-09:30		WeA19.4
<b>Patient-Care Team Contact Patterns Impact Treatment Length of Stay in the Emergency Dept.</b> .....	345-348	
Poigai Arunachalam, Shivaram ( <i>Mayo Clinic</i> ); Asan, Onur ( <i>Stevens Institute of Technology</i> ); Nestler, David ( <i>Mayo Clinic</i> ); Heaton, Heather ( <i>Mayo Clinic</i> ); Hellmich, Thomas ( <i>Mayo Clinic</i> ); Wutthisirisart, Phichet ( <i>Mayo Clinic</i> ); Marisamy, Gomathi ( <i>Mayo Clinic</i> ); Pasupathy, Kalyan* ( <i>Mayo Clinic</i> ); Sir, Mustafa ( <i>Mayo Clinic</i> )		
09:30-09:45		WeA19.5
<b>An Unsupervised Feature Learning Approach to Reduce False Alarm Rate in ICUs</b> .....	349-353	
Ghazanfari, Behzad* ( <i>Northern Arizona University</i> ); Afghah, Fatemeh ( <i>Northern Arizona University</i> ); Najarian, Kayvan ( <i>University of Michigan – Ann Arbor</i> ); Mousavi, Sajad ( <i>Northern Arizona University</i> ); Gryak, Jonathan ( <i>University of Michigan</i> ); Todd, James ( <i>Northern Arizona University</i> )		

09:45-10:00	WeA19.6
<b>Mining Disease Courses across Organizations: A Methodology based on Process</b>	
<b>Mining of Diagnosis Events Datasets</b> .....	354-357
de Toledo, Paula* ( <i>Universidad Carlos III de Madrid</i> ); Joppien, Carolin ( <i>Leuphana University Lueneburg</i> ); Sesmero Lorente, M. Paz ( <i>Universidad Carlos III de Madrid</i> ); Drews, Paul ( <i>Leuphana University of Lüneburg</i> )	

WeA20: 08:30-10:00	R5 – Level 3
<b>Novel Sensing Methods</b> (Oral Session)	

08:30-08:45	WeA20.1
<b>Design Optimization of Contactless Generator for Implantable Energy Harvesting System Utilizing Electrically</b> .....	
	358-363
Mochida, Takumi* ( <i>Tokyo Institute of Technology</i> ); Hijikata, Wataru ( <i>Tokyo Institute of Technology</i> )	

08:45-09:00	WeA20.2
<b>Self-Image-Guided Ultrasonic Wireless Power Transmission to Millimeter-Sized Biomedical Implants</b> .....	
	364-367
Meng, Miao ( <i>The Pennsylvania State University</i> ); Kiani, Mehdi* ( <i>Pennsylvania State University</i> )	

09:00-09:15	WeA20.3
<b>Novel Capacitive MEMS Sensor for Monitoring In-Stent Restenosis</b> .....	
	368-371
Iqbal, Muhammad Mubasher ( <i>New York University Abu Dhabi</i> ); Sultan, Saad* ( <i>New York University Abu Dhabi</i> ); Qasaimeh, Mohammad Ameen ( <i>New York University Abu Dhabi</i> )	

09:15-09:30	WeA20.4
<b>Effect of Yoga on Pulse Rate Variability Measured from a Venous Pressure Waveform</b> .....	
	372-375
Hernando, David* ( <i>University of Zaragoza (Spain)</i> ); Nardelli, Mimma ( <i>University of Pisa</i> ); Hocking, Kyle ( <i>VoluMetrix, Nashville TN, USA</i> ); Lázaro, Jesús ( <i>University of Zaragoza</i> ); Alvis, Bret ( <i>Dept. of Anesthesiology, Vanderbilt University Medical Cent</i> ); Gil, Eduardo ( <i>Zaragoza University &amp; CIBER-BBN</i> ); Scilingo, Enzo Pasquale ( <i>University of Pisa</i> ); Brophy, Daniel R ( <i>VoluMetrix, Nashville TN, USA</i> ); Valenza, Gaetano ( <i>University of Pisa</i> ); Laguna, Pablo ( <i>Zaragoza University &amp; CIBER-BBN</i> ); Brophy, Colleen ( <i>VoluMetrix, Nashville TN, USA</i> ); Bailon, Raquel ( <i>University of Zaragoza</i> )	

09:30-09:45	WeA20.5
<b>Measurement of Chest Physiological Signals using Wirelessly Coupled Bio-Impedance Patches</b> .....	
	376-381
Sel, Kaan* ( <i>Texas A&amp;M University</i> ); Zhao, Jialu ( <i>Texas A&amp;M University</i> ); Ibrahim, Bassem ( <i>Texas A&amp;M University</i> ); Jafari, Roozbeh ( <i>Texas A&amp;M University</i> )	

09:45-10:00	WeA20.6
<b>Comparison between Different Optical Systems for Optogenetics based Head Mounted Device for Retina Pigmentosa</b> .....	
	382-385
Soltan, Ahmed* ( <i>Newcastle University, School of Engineering</i> ); Liu, Yu ( <i>Newcastle University, School of Engineering</i> ); Armstrong, Niall ( <i>C4 Sightcare Ltd, Northumberland House, Newcastle upon Tyne, NE1</i> ); Akhter, Mahbub ( <i>Tyndall National Institute, Cork , Ireland</i> ); Corbett, Brian ( <i>Tyndall National Institute, Cork , Ireland</i> ); Degenaar, Patrick ( <i>Newcastle University</i> )	

WeA21: 08:30-10:00	R8 – level 3
<b>Image Feature Extraction</b> (Oral Session)	

08:30-08:45	WeA21.1
<b>Mapping of Color Information from Camera Images to 3D Models for the Manufacturing of Aesthetic Dentures</b> .....	
	386-391
Pitz, Katrin* ( <i>Technische Universität Darmstadt</i> ); Anderl, Reiner ( <i>Technische Universität Darmstadt</i> )	

08:45-09:00	WeA21.2
<b>Sway Risk Analysis based on Age Group Classification</b> .....	
	392-398
Ismail, Hafsa* ( <i>University of Canberra</i> ); Radwan, Ibrahim ( <i>Australian National University</i> ); Suominen, Hanna ( <i>Data61/CSIRO, Australian National University</i> ); Waddington, Gordon ( <i>University of Canberra</i> ); Goecke, Roland ( <i>University of Canberra</i> )	

09:00-09:15	WeA21.3
<b>Automatic Extraction of Dermatological Parameters from Nevi using an Inexpensive Smartphone Microscope: A Proof of Concept</b> .....	399-402
Meiburger, Kristen M.* ( <i>Politecnico di Torino</i> ); Veronese, Federica ( <i>University of Eastern Piedmont</i> ); Tarantino, Vanessa ( <i>University of Eastern Piedmont</i> ); Salvi, Massimo ( <i>Politecnico di Torino</i> ); Fadda, Matteo ( <i>Politecnico di Torino</i> ); Seoni, Silvia ( <i>Politecnico di Torino</i> ); Zavattaro, Elisa ( <i>University of Eastern Piedmont</i> ); De Santi, Bruno ( <i>Politecnico di Torino</i> ); Michielli, Nicola ( <i>Politecnico di Torino</i> ); Savoia, Paola ( <i>University of Eastern Piedmont</i> ); Molinari, Filippo ( <i>Politecnico di Torino</i> )	
09:15-09:30	WeA21.4
<b>Selection of Radiomics Features based on their Reproducibility</b> .....	403-408
Ligero Hernández, Marta ( <i>Vall d'Hebron Institute of Oncology, Barcelona</i> ); Torres, Guillermo* ( <i>Computer Vision Center, Universidad Autónoma de Barcelona.</i> ); Sanchez, Carles ( <i>Computer Vision Center &amp; Universitat Autònoma de Barcelona</i> ); Diaz-Chito, Katerine ( <i>Universitat Autònoma de Barcelona – UAB Barcelona</i> ); Perez, Raquel ( <i>Vall d'Hebron Institute of Oncology, Barcelona</i> ); Gil, Debora ( <i>Computer Vision Center</i> )	
09:30-09:45	WeA21.5
<b>The Method for Visualization and Analysis of Eye-Blinking Patterns using Dynamic Vision</b> .....	409-412
Lee, Woon-Hee* ( <i>Seoul National University</i> ); Woo, Jong-Hyuk ( <i>Seoul National University, Samsung Electronics</i> ); Seo, Jong Mo ( <i>Seoul National University, School of Engineering</i> )	
09:45-10:00	WeA21.6
<b>Assessment of the Effect of Intensity Standardization on the Reliability of T1-Weighted MRI Radiomic Features: Experiment on a Virtual Phantom</b> .....	413-416
Bologna, Marco* ( <i>Politecnico di Milano</i> ); Corino, Valentina ( <i>Politecnico di Milano</i> ); Mainardi, Luca ( <i>Politecnico di Milano</i> )	

WeC01: 14:00-15:30	Hall A6+A7 – Level 1
<b>Rehabilitation Helped by Technology</b> (Oral Session)	
<b>Chair:</b> Petroff, Neil ( <i>Tarleton State University</i> )	

14:00-14:15	WeC01.1
<b>The Effects of Different Tracking Tasks on Muscle Synergy through Visual Feedback</b> .....	417-420
Huang, Yao ( <i>Univ. of Technology Sydney</i> ); Song, Rong* ( <i>Sun Yat-Sen Univ.</i> ); Chen, Wenhui ( <i>Univ. of Technology Sydney</i> ); Yu, Hairong ( <i>Univ. of Technology, Sydney</i> ); Argha, Ahmadreza ( <i>Univ. of New South Wales</i> ); Celler, Branko George ( <i>Univ. of New South Wales</i> ); Su, Steven Weidong ( <i>Univ. of Technology, Sydney</i> )	
14:15-14:30	WeC01.2
<b>Modulation of Cortical Activity by Selective Steady-State Somatosensory Stimulation</b> .....	421-424
Zarei, Asghar* ( <i>Center for Neuroplasticity &amp; Pain (CNAP), Aalborg University</i> ); Lontis, Eugen Romulus ( <i>Aalborg University</i> ); Jensen, Winnie ( <i>Center for Sensory-Motor Interaction</i> )	
14:30-14:45	WeC01.3
<b>Does Repetitive Transcranial Magnetic Stimulation (rTMS) Have Therapeutic Effects on Dynamic Balance of Children with Cerebral Palsy?</b> .....	425-428
Dadashi, Farnoosh ( <i>Tehran University of Medical Sciences</i> ); Lotfian, Mahboube ( <i>Tehran University of Medical Sciences</i> ); Shahrokhi, Amin ( <i>Noorafshar Hospital, Tehran, Iran</i> ); Nourian, Ruhollah ( <i>Sports Medicine Research Center, Tehran University of Medical Sc</i> ); Irani, Ashkan ( <i>Dept. of Occupational Therapy, Faculty of Rehabilitation, S</i> ); Mirbagheri, Alireza ( <i>Tehran University of Medical Sciences (TUMS)</i> ); Mirbagheri, Mehdi* ( <i>Northwestern University/TUMS</i> )	
14:45-15:00	WeC01.4
<b>Effects of an Exoskeleton-Assisted Gait Motor Imagery Training in Functional Brain Connectivity</b> .....	429-432
Gaxiola Tirado, Jorge Antonio ( <i>Center for Research &amp; Advanced Studies (Cinvestav), Monterrey's</i> ); Ianez, Eduardo ( <i>Universidad Miguel Hernandez de Elche</i> ); Ortiz, Mario ( <i>Universidad Miguel Hernández</i> ); Gutierrez, David ( <i>Cinvestav Monterrey</i> ); Azorin, Jose M.* ( <i>Universidad Miguel Hernandez de Elche</i> )	
15:00-15:15	WeC01.5
<b>Physiological Reactions in Single-Player and Competitive Arm Rehabilitation Games</b> .....	433-436
Catalán Orts, José María* ( <i>Universidad Miguel Hernandez de Elche</i> ); Blanco Ivorra, Andrea ( <i>Universidad Miguel Hernandez de Elche</i> ); Díez Pomares, Jorge ( <i>Universidad Miguel Hernández de Elche</i> ); García Perez, José Vicente ( <i>Universidad Miguel Hernandez de Elche</i> ); Garcia-Aracil, Nicolas ( <i>Universidad Miguel Hernandez</i> )	

15:15-15:30	WeC01.6
<b>Position based Impedance Control Strategy for a Lower Limb Rehabilitation Robot</b> .....	437-441
Liang, Xu ( <i>Institute of Automation, Chinese Academy of Sciences</i> ); Wang, Weiqun* ( <i>Chinese Academy of Sciences</i> ); Hou, Zeng-Guang ( <i>Institute of Automation, Chinese Academy of Sciences</i> ); Ren, Shixin ( <i>Chinese Academy of Science</i> ); Wang, Jiaying ( <i>Institute of Automation, Chinese Academy of Sciences</i> ); Shi, Weiguo ( <i>Chinese Academy of Sciences</i> ); Peng, Liang ( <i>Institute of Automation, Chinese Academy of Sciences</i> ); Su, Tingting ( <i>North China University of Technology</i> )	

WeC12: 14:00-15:30	M6 – Level 3
<b>Brain Imaging and Image Analysis (II)</b> (Oral Session)	
<b>Co-Chair:</b> Chan, Kevin C. ( <i>New York University</i> )	

14:00-14:15	WeC12.1
<b>Global Perturbation of Initial Geometry in a Biomechanical Model of Cortical Morphogenesis</b> .....	442-445
Bohi, Amine* ( <i>Aix Marseille Univ, CNRS, INT, Inst Neurosci Timone, Marseille</i> ); Wang, Xiaoyu ( <i>IMT Atlantique, Brest, France</i> ); Al Harrach, Mariam ( <i>UTC</i> ); Dinomais, Mickael ( <i>Laboratoire Angevin de Recherche en Ingénierie des Systèmes (LAR)</i> ); Rousseau, François ( <i>Telecom Bretagne</i> ); Lefevre, Julien ( <i>Institut de Neurosciences de la Timone</i> )	

14:15-14:30	WeC12.2
<b>Posterior Corpus Callosal Integrity based on Automated Fiber Quantification Predicts Age-Related Decline of Cognitive Performance</b> .....	446-449
Xue, Ke ( <i>Shanghai Jiao Tong University</i> ); Wang, Danni ( <i>Shanghai Jiao Tong University</i> ); Wang, Tianyao ( <i>The Fifth People's Hospital of Shanghai, Fudan University</i> ); Li, Yao* ( <i>Shanghai Jiao Tong University</i> )	

14:30-14:45	WeC12.3
<b>Extending Supervoxel-Based Abnormal Brain Asymmetry Detection to the Native Image Space</b> .....	450-453
Martins, Samuel* ( <i>University of Campinas</i> ); C. Telea, Alexandru ( <i>Dep. of Mathematics &amp; Computing Science, University of Groning</i> ); Falcao, Alexandre Xavier ( <i>University of Campinas</i> )	

14:45-15:00	WeC12.4
<b>Classification of Alzheimer's Disease in MRI based on Dictionary Learning and Heavy Tailed Modelling</b> .....	454-457
Mayo, Perla* ( <i>University of Bristol</i> ); Holmes, Robin ( <i>University of Bristol</i> ); Achim, Alin ( <i>University of Bristol</i> )	

15:00-15:15	WeC12.5
<b>Graph Spectral Characterization of Brain Cortical Morphology</b> .....	458-462
Maghsadagh, Sevil ( <i>Independent researcher</i> ); Eklund, Anders ( <i>Linköping Univ.</i> ); Behjat, Hamid* ( <i>Lund Univ.</i> )	

15:15-15:30	WeC12.6
<b>An Automatic Framework for Segmentation of Brain Tumours at Follow-Up Scans after Radiation Therapy</b> .....	463-466
Karami, Elham ( <i>Sunnybrook Research Institute, Univ. of Toronto</i> ); Jalalifar, Ali ( <i>York Univ.</i> ); Ruschin, Mark ( <i>Sunnybrook Health Sciences Centre, Univ. of Toronto</i> ); Soliman, Hany ( <i>Univ. of Toronto, Sunnybrook Health Sciences Centre</i> ); Sahgal, Arjun ( <i>Sunnybrook Health Sciences Centre, Univ. of Toronto</i> ); Stanisz, Greg ( <i>Sunnybrook Research Institute, Univ. of Toronto</i> ); Sadeghi-Naini, Ali* ( <i>York Univ.</i> )	

WeC14: 14:00-15:30	R3 – Level 3
<b>Signal Processing and Classification for Spectroscopy and Oximetry</b> (Oral Session)	
<b>Co-Chair:</b> Mitsis, Georgios D. ( <i>McGill University</i> )	

14:00-14:15	WeC14.1
<b>Non-Invasive Analysis of Actinic Keratosis using a Cold Stimulation and Near-Infrared Spectroscopy</b> .....	467-470
Seoni, Silvia* ( <i>Politecnico di Torino</i> ); Veronese, Federica ( <i>Univ. of Eastern Piedmont</i> ); Tarantino, Vanessa ( <i>Univ. of Eastern Piedmont</i> ); Zavattaro, Elisa ( <i>Univ. of Eastern Piedmont</i> ); Salvi, Massimo ( <i>Politecnico di Torino</i> ); Michielli, Nicola ( <i>Politecnico di Torino</i> ); De Santi, Bruno ( <i>Politecnico di Torino</i> ); Molinari, Filippo ( <i>Politecnico di Torino</i> ); Savoia, Paola ( <i>Univ. of Eastern Piedmont</i> ); Meiburger, Kristen M. ( <i>Politecnico di Torino</i> )	

14:15-14:30	WeC14.2
<b>Reduced Featured K-NN Classifier Model Optimal for Classification of Dengue Fever from Salivary Raman Spectra</b> .....	471-474
Othman, N. H. ( <i>Universiti Teknologi MARA</i> ); Mohd Radzol, Afaf Rozan ( <i>Universiti Teknologi MARA</i> ); Lee, Yoot* ( <i>Universiti Teknologi MARA</i> ); Mansor, Wahidah ( <i>Universiti Teknologi MARA</i> )	

14:30-14:45	WeC14.3
<b>Determination of Physiological Lactate and pH by Raman Spectroscopy</b> .....	475-481
Olaetxea, Ion* ( <i>CIC nanoGUNE</i> ); Lopez, Eneko ( <i>CIC nanoGUNE</i> ); Valero, Ana ( <i>CIC nanoGUNE</i> ); Seifert, Andreas ( <i>CIC nanoGUNE</i> )	
14:45-15:00	WeC14.4
<b>Machine Learning based SpO2 Computation using Reflectance Pulse Oximetry</b> .....	482-485
Venkat, Swaathi* ( <i>Healthcare Technology Innovation Centre</i> ); Tanveejul, Mohamed ( <i>Healthcare Technology Innovation Centre</i> ); Alex, Anna Mol ( <i>HTIC IIT Madras</i> ); SP, Preejith ( <i>Healthcare Technology Innovation Center – IITMadras</i> ); Thangakunam, Balamugesh ( <i>Christian Medical College</i> ); DJ, Christopher ( <i>Christian Medical College</i> ); Joseph, Jayaraj ( <i>HTIC, Indian Institute of Technology Madras</i> ); Sivaprakasam, Mohanasankar ( <i>Indian Institute of Technology Madras</i> )	
15:00-15:15	WeC14.5
<b>Cancellation of Superficial Blood Flow in Brain Function Measurements using Near-Infrared Spectroscopy</b> .....	486-489
Fukuda, Keiko* ( <i>Tokyo Metropolitan College of Industrial Technology</i> ); Motoyoshi, Daisuke ( <i>Tokyo Metropolitan College of Industrial Technology</i> ); Sato, Daisuke ( <i>Tokyo Metropolitan College of Industrial Technology</i> )	
15:15-15:30	WeC14.6
<b>Detection of Music Preferences using Cerebral Blood Flow Signals</b> .....	490-493
Yamada, Yoshiyuki* ( <i>Meiji University</i> ); Ono, Yumie ( <i>Meiji University</i> )	

WeC17: 14:00-15:30 R12 – Level 3  
**Blood Pressure and Cardiovascular Hemodynamics (Oral Session)**  
**Chair:** Avolio, Alberto P. (*Macquarie University*)  
**Co-Chair:** Heldt, Thomas (*Massachusetts Institute of Technology*)

14:00-14:15	WeC17.1
<b>Clustering Blood Pressure Trajectories in Septic Shock in the Emergency Dept.</b> .....	494-497
Prasad, Varesh* ( <i>Massachusetts Institute of Technology</i> ); Lynch, James ( <i>Massachusetts Institute of Technology</i> ); Filbin, Michael ( <i>Massachusetts General Hospital</i> ); Reisner, Andrew ( <i>Massachusetts General Hospital</i> ); Heldt, Thomas ( <i>Massachusetts Institute of Technology</i> )	
14:15-14:30	WeC17.2
<b>Forecasting Hypotension during Vasopressor Infusion via Time Series Analysis</b> .....	498-501
Shin, Sungtae ( <i>University of Maryland</i> ); Reisner, Andrew* ( <i>Massachusetts General Hospital</i> ); Yapps, Bryce ( <i>Stanley Black &amp; Decker</i> ); Bighamian, Ramin ( <i>George Mason University</i> ); Rubin, J. Tyler ( <i>Massachusetts General Hospital</i> ); Goldstein, Joshua ( <i>Massachusetts General Hospital</i> ); Rosenthal, Eric ( <i>MGH</i> ); Peterson, Jeffrey ( <i>Massachusetts General Hospital</i> ); Hahn, Jin-Oh ( <i>University of Maryland</i> )	
14:30-14:45	WeC17.3
<b>Polar Coordinate Description of Blood Pressure Measurements and Implications for Sex-Specific and Personalized Analysis</b> .....	502-505
Kerkhof, Peter LM* ( <i>VU Univ. Medical Center</i> ); Konradi, Alexandra O. ( <i>Almazov National Medical Research Centre, Saint-Petersburg</i> ); Shlyakhto, Evgeny V. ( <i>Almazov National Medical Research Centre, Saint-Petersburg</i> ); Handly, Neal ( <i>Dept. Emergency Medicine, Drexel Univ. College of Medicine.</i> ); Li, John K-J. ( <i>Rutgers Univ.</i> )	
14:45-15:00	WeC17.4
<b>Novel Geometric Representation for One-Dimensional Model of Arterial Blood Pulse Wave Propagation</b> .....	506-509
Ramakrishna, Prashanth ( <i>New York University</i> ); P M, Nabeel* ( <i>Indian Institute of Technology Madras</i> ); Sivaprakasam, Mohanasankar ( <i>Indian Institute of Technology Madras</i> )	
15:00-15:15	WeC17.5
<b>Characterizing Fluid Response and Sepsis Progression in Emergency Dept. Patients</b> .....	510-513
Gu, Qiao ( <i>Hong Kong University of Science &amp; Technology</i> ); Prasad, Varesh ( <i>Massachusetts Institute of Technology</i> ); Heldt, Thomas* ( <i>Massachusetts Institute of Technology</i> )	



15:15-15:30	WeC17.6
<b>Characterization of Microvascular Post Occlusive Hyperemia using Laser Doppler Flowmetry Technique in Subjects with Cardiometabolic Disorders</b> .....	514-517
Fabregate Fuente, Martín ( <i>Endothelial &amp; Cardiometabolic Medicine Unit, Ramón y Cajal Uni</i> ); Arbeitman, Claudia ( <i>CONICET Consejo Nacional de Investigaciones Cientificas y Tecnic</i> ); Cymberknop, Leandro Javier* ( <i>Universidad Tecnológica Nacional</i> ); Bara Ledesma, Nuria ( <i>Endothelial &amp; Cardiometabolic Medicine Unit, Ramón y Cajal Uni</i> ); Arriazu Galindo, Mario ( <i>Endothelial &amp; Cardiometabolic Medicine Unit, Ramón y Cajal Uni</i> ); Martín Fernández, Leticia ( <i>Endothelial &amp; Cardiometabolic Medicine Unit, Ramón y Cajal Uni</i> ); Armentano, Ricardo Luis ( <i>Republic Univ.</i> ); Sabán Ruiz, José ( <i>Endothelial &amp; Cardiometabolic Medicine Unit, Ramón y Cajal Uni</i> )	

WeC18: 14:00-15:30 <b>Human Performance (II)</b> (Oral Session)	R13 – Level 3
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14:00-14:15	WeC18.1
<b>An Investigation of Computer-Based Brain Training on the Cognitive and EEG Performance of Employees</b> .....	518-521
Miller, Steve* ( <i>PlatypusNeuro</i> ); Chelian, Suhas ( <i>PlatypusNeuro</i> ); McBurnett, Will ( <i>PlatypusNeuro</i> ); Tsou, Winnie ( <i>Fujitsu Laboratories of America</i> ); Kruse, Amy ( <i>Platypus Institute</i> )	

14:15-14:30	WeC18.2
<b>Detection and Prediction of Microsleeps from EEG using Spatio-Temporal Patterns</b> .....	522-525
Shoorangiz, Reza* ( <i>University of Canterbury</i> ); Buriro, Abdol Baseer ( <i>University of Canterbury</i> ); Weddell, Stephen J. ( <i>University of Canterbury</i> ); Jones, Richard D. ( <i>New Zealand Brain Research Institute</i> )	

14:30-14:45	WeC18.3
<b>Looking through Blue Glasses: Bioelectrical Measures to Assess the Awakening after a Calm Situation</b> .....	526-529
Bilucaglia, Marco* ( <i>Behavior &amp; Brain Lab – Università IULM</i> ); Laureanti, Rita ( <i>Politecnico di Milano</i> ); Zito, Margherita ( <i>Università IULM</i> ); Circi, Riccardo ( <i>Behavior &amp; Brain Lab – Università IULM</i> ); Fici, Alessandro ( <i>Behavior &amp; Brain Lab – Università IULM</i> ); Rivetti, Fiamma ( <i>Behavior &amp; Brain Lab – Università IULM</i> ); Valesi, Riccardo ( <i>Behavior &amp; Brain Lab – Università IULM</i> ); Wahl, Siegfried ( <i>University Tuebingen</i> ); Russo, Vincenzo ( <i>IULM University of Milan</i> )	

14:45-15:00	WeC18.4
<b>Combining ICA Clustering and Power Spectral Density for Feature Extraction of Mental Fatigue of Spinal Cord Injury Patients</b> .....	530-533
Chai, Rifai* ( <i>Swinburne Univ. of Technology</i> ); Tran, Yvonne ( <i>Macquarie Univ.</i> ); Ling, Sai Ho, Steve ( <i>Univ. of Technology Sydney</i> ); Craig, Ashley ( <i>The Univ. of Sydney</i> ); Nguyen, Hung T. ( <i>Swinburne Univ. of Technology</i> )	

15:00-15:15	WeC18.5
<b>Neural Correlates of Internal States that Capture Movement Variability</b> .....	534-537
Breault, Macauley S.* ( <i>Johns Hopkins University</i> ); Gonzalez-Martinez, Jorge ( <i>Cleveland Clinic</i> ); Gale, John ( <i>Cleveland Clinic</i> ); Sarma, Sridevi V. ( <i>Johns Hopkins University</i> )	

15:15-15:30	WeC18.6
<b>Toward Clinically-Relevant Joint Moment Estimation during Sit to Stand: A Feasibility Study</b> .....	538-541
Hwang, Seoyoon* ( <i>DGIST (Daegu Gyeongbuk Institute of Science &amp; Technology)</i> ); Choi, Seoyoung ( <i>Daegu Gyeongbuk Institute of Science &amp; Technology</i> ); Kim, Jonghyun ( <i>DGIST</i> )	

WeC19: 14:00-15:30 <b>General and Theoretical Informatics – Data Mining</b> (Oral Session) <b>Co-Chair:</b> Seidl, Karsten ( <i>University of Duisburg-Essen</i> )	R4 – Level 3
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14:00-14:15	WeC19.1
<b>Abnormal Gait Recognition using 3D Joint Information of Multiple Kinects System and RNN-LSTM</b> .....	542-545
Lee, Deok-Won ( <i>Gwangju Institute of Science &amp; Technology</i> ); Jun, Kooksung ( <i>Gwangju Institute of Science &amp; Technology</i> ); Lee, Sanghyub ( <i>Gwangju Institute of Science &amp; Technology</i> ); Ko, Joong-Kwang ( <i>GIST</i> ); Kim, Mun Sang* ( <i>Gwangju Institute of Science &amp; Technology</i> )	

14:15-14:30	WeC19.2
<b>Relationship between Dynamics of Physiological Signals and Subjective Quality of Life and Its Lifestyle Dependency</b> .....	546-549
Amano, Ryota* ( <i>Tohoku University</i> ); Karashima, Akihiro ( <i>Tohoku University</i> ); Motoike, Ikuko ( <i>Tohoku University</i> ); Katayama, Norihiro ( <i>Tohoku Univ</i> ); Kinoshita, Kengo ( <i>Tohoku University</i> ); Nakao, Mitsuyuki ( <i>Tohoku University</i> )	
14:30-14:45	WeC19.3
<b>Outlier Detection in Health Record Free-Text using Deep Learning</b> .....	550-555
Wallace, Duncan* ( <i>Univ. College Dublin</i> ); Kechadi, Tahar ( <i>Insight Centre for Data Analytics, Univ. College Dublin</i> )	
14:45-15:00	WeC19.4
<b>Towards a Flexible Deep Learning Method for Automatic Detection of Clinically Relevant Multi-Modal Events in the Polysomnogram</b> .....	556-561
Olesen, Alexander Neergaard* ( <i>Technical University of Denmark</i> ); Chambon, Stanislas ( <i>LTCI Telecom ParisTech, Universite Paris-Saclay</i> ); Thorey, Valentin ( <i>Dreem, Paris</i> ); Jennum, Poul ( <i>University of Copenhagen, Denmark</i> ); Mignot, Emmanuel ( <i>Stanford University</i> ); Sorensen, Helge B D ( <i>Technical University of Denmark</i> )	
15:00-15:15	WeC19.5
<b>Deep Q-Learning for Predicting Asthma Attack with Considering Personalized Environmental Triggers' Risk Scores</b> .....	562-565
Do, Quan* ( <i>New Mexico State Univ.</i> ); Doig, Alexa ( <i>New Mexico State Univ.</i> ); Tran, Son ( <i>New Mexico State Univ.</i> )	
15:15-15:30	WeC19.6
<b>Prediction of Patient-Specific Acute Hypotensive Episodes in ICU using Deep Models</b> .....	566-569
Chan, Brandon* ( <i>Queen's University</i> ); Sedghi, Alireza ( <i>Queen's University</i> ); Laird, Philip ( <i>Queen's University</i> ); Maslove, David M ( <i>Queen's University</i> ); Mousavi, Parvin ( <i>Queen's University</i> )	

WeC20: 14:00-15:30	R5 – Level 3
<b>Sensor Enabled Biomechanical Analysis</b> (Oral Session)	
<b>Co-Chair:</b> Rocon, Eduardo ( <i>CSIC</i> )	

14:00-14:15	WeC20.1
<b>IMU-Based Knee Angle Estimation using an Extended Kalman Filter</b> .....	570-573
Hidalgo, Andrés Francisco ( <i>Centre for Automation (CAR) – CSIC</i> ); Lora, Julio ( <i>CSIC</i> ); Rocon, Eduardo* ( <i>CSIC</i> )	
14:15-14:30	WeC20.2
<b>Rehabilitation Exercise Segmentation for Autonomous Biofeedback Systems with ConvFSM</b> .....	574-579
Bevilacqua, Antonio* ( <i>Univ. College of Dublin</i> ); Brennan, Louise ( <i>Univ. College Dublin</i> ); Argent, Rob ( <i>Univ. College Dublin</i> ); Caulfield, Brian ( <i>UCD</i> ); Kechadi, Tahar ( <i>Insight Centre for Data Analytics, Univ. College Dublin</i> )	
14:30-14:45	WeC20.3
<b>Analysis of Biomedical Longitudinal Multi-Sensory Data: Extracting Interpretable Features by Context</b> .....	580-583
Schreiber, Max ( <i>Interdisciplinary Competence Center Biomedical Data Science, Ins</i> ); Handel, Till ( <i>Institute for Applied Informatics (InfAI)</i> ); Ivanova, Galina* ( <i>Interdisciplinary Competence Center Biomedical Data Science, Ins</i> )	
14:45-15:00	WeC20.4
<b>Evaluation of Parkinson's Disease at Home: Predicting Tremor from Wearable Sensors</b> .....	584-587
Heijmans, Margot* ( <i>Maastricht Univ.</i> ); Habets, Jeroen ( <i>Maastricht Univ.</i> ); Kuijf, Mark ( <i>Maastricht Univ. Medical Center</i> ); Kubben, Pieter Leonard ( <i>Maastricht Univ. Medical Center</i> ); Herff, Christian ( <i>Maastricht Univ.</i> )	
15:00-15:15	WeC20.5
<b>Machine Learning based Human Gait Segmentation with Wearable Sensor Platform</b> .....	588-594
Potluri, Sasanka* ( <i>Otto-von-Guericke University Magdeburg, Institute for Automation</i> ); Chandran, Arvind ( <i>OVGU Magdeburg</i> ); Diedrich, Christian ( <i>Otto-von-Guericke University Magdeburg, Institute for Automation</i> ); Schega, Lutz ( <i>Otto-von-Guericke University Magdeburg, Institute for Sport Scie</i> )	
15:15-15:30	WeC20.6
<b>Automatic Measurements of Neck Angles Toward the Bedside Treatment for the Dysphagia Patients at the Community-Based Health Care</b> .....	595-598
Kuramoto, Naomi* ( <i>University of Tsukuba</i> ); Ichimura, Kazuhiro ( <i>Ichimura Dental Clinic</i> ); Jayatilake, Dushyantha ( <i>PLIMES Inc</i> ); Hidaka, Kikue ( <i>University of Tsukuba</i> ); Suzuki, Kenji ( <i>University of Tsukuba</i> )	

WePOS-01: 18:00-19:30 Hall B  
**Adaptive and Kalman Filtering – Poster** (Poster Session)

- 18:00-19:30 WePOS-01.1  
**A Novel Filter for Tracking Real-World Cognitive Stress using Multi-Time-Scale Point Process Observations** ..... 599-602  
Wickramasuriya, Dilranjan (*University of Houston*); Faghieh, Rose T.\* (*University of Houston*)
- 18:00-19:30 WePOS-01.2  
**A Characteristic Filtering Method for Pulse Wave Signal Quality Assessment** ..... 603-606  
Lin, Wan-Hua (*Shenzhen Institutes of Advanced Technology*); Ji, Ning (*Shenzhen Institutes of Advanced Technology*); Wang, Lin (*Shenzhen Institutes of Advanced Technology, Chinese Academy of S*); Li, Guanglin\* (*Shenzhen Institutes of Advanced Technology*)
- 18:00-19:30 WePOS-01.3  
**Design Guidelines for Feedforward Cancellation of the Occlusion-Effect in Hearing Aids** ..... 607-610  
Coelho Borges, Renata\* (*Federal University of Technology – Paraná*); Delcio Parreira, Wemerson (*Universidade do Vale do Itajaí*); Holsbach Costa, Márcio (*UFSC*)
- 18:00-19:30 WePOS-01.4  
**A Regularized and Smoothed General Linear Kalman Filter for more Accurate Estimation of Time-Varying Directed Connectivity** ..... 611-615  
Pagnotta, Mattia Federico\* (*University of Fribourg*); Plomp, Gijs (*University of Fribourg*); Pascucci, David (*University of Fribourg*)
- 18:00-19:30 WePOS-01.5  
**SVD Square-Root Iterated Extended Kalman Filter for Modeling of Epileptic Seizure Count Time Series with External Inputs** ..... 616-619  
Moontaha, Sidratul\* (*Christian-Albrechts-Universität of Kiel, Universitätsklinikum S*); Galka, Andreas (*Christian-Albrechts-University of Kiel*); Siniatchkin, Michael (*University of Kiel*); Scharlach, Sascha (*DRK-Norddeutsches Epilepsiezentrum für Kinder und Jugendliche*); von Spiczak, Sarah (*Dept. of Neuropediatrics, University of Kiel, 24098 Kiel, G*); Stephani, Ulrich (*Christian-Albrechts-University of Kiel*); May, Theodor (*University of Bielefeld*); Meurer, Thomas (*Faculty of Engineering, University of Kiel*)
- 18:00-19:30 WePOS-01.6  
**Towards a Unified Framework for De-Noising Neural Signals** ..... 620-623  
Kilicarslan, Atilla\* (*University of Houston*); Contreras-Vidal, José (*University of Houston*)

WePOS-02: 18:00-19:30 Hall B  
**Connectivity and Causality – Poster** (Poster Session)

- 18:00-19:30 WePOS-02.1  
**The Optimal Setting for Multilayer Modularity Optimization in Multilayer Brain Networks** ..... 624-627  
Puxeddu, Maria Grazia\* (*Sapienza, University of Rome*); Petti, Manuela (*Univ. of Rome “Sapienza”, Neuroelectrical Imaging & BCI Lab IR*); Mattia, Donatella (*Fondazione Santa Lucia IRCCS*); Astolfi, Laura (*University of Rome Sapienza*)
- 18:00-19:30 WePOS-02.2  
**Evolution of Graph Theory in Dynamic Functional Connectivity for Lateralization of Temporal Lobe Epilepsy** ..... 628-631  
Fallahi, Alireza (*Biomedical Engineering Dept., Hamedan University of Technol*); Baniasad, Fatemeh (*Tehran University of Medical Sciences*); Lotfi, Nastaran (*University of Zanjan, Zanjan*); Mohammadi-Mobarakeh, Neda (*Research Center for Molecular and Cellular Imaging (RCMCI), Tehra*); Tapak, Leili (*Biostatistics School of Health, Hamadan University of Medical Sc*); Mirbagheri, Mehdi (*Northwestern University/RIC*); Hashemi Fesharaki, Seyed Sohrab (*Dept. of Epilepsy, Pars Hospital, Tehran*); Pooyan, Mohammad (*head of engineering faculty, Shahed University*); Mehvari Habibabadi, Jafar (*Isfahan Neuroscience Research Center, Isfahan University of Medic*); Nazem-Zadeh, Mohammad-Reza\* (*Tehran University of Medical Sciences*)

18:00-19:30	WePOS-02.3
<b>Selection of Efficient Clustering Index to Estimate the Number of Dynamic Brain States from Functional Network Connectivity</b> .....	632-635
Vergara, Victor Manuel* ( <i>The Mind Research Network</i> ); Abrol, Anees ( <i>Georgia State University, The Mind Research Network</i> ); Espinoza, Flor ( <i>The Mind Research Network</i> ); Calhoun, Vince ( <i>The Mind Research Network/University of New Mexico</i> )	
18:00-19:30	WePOS-02.4
<b>Estimation of Brain Connectivity through Artificial Neural Networks</b> .....	636-639
Antonacci, Yuri* ( <i>University of Rome Sapienza</i> ); Toppi, Jlenia ( <i>University of Rome "Sapienza"</i> ); Mattia, Donatella ( <i>Fondazione Santa Lucia IRCCS</i> ); Pietrabissa, Antonio ( <i>University of Rome Sapienza</i> ); Astolfi, Laura ( <i>University of Rome Sapienza</i> )	
18:00-19:30	WePOS-02.5
<b>A New Mutual Information Measure to Estimate Functional Connectivity: Preliminary Study</b> .....	640-643
El Sayed Hussein Jomaa, Mohamad* ( <i>Univ. Angers – LARIS</i> ); Colominas, Marcelo Alejandro ( <i>Univ. Angers – LARIS</i> ); Jrad, Nisrine ( <i>LTSI – University of Rennes 1</i> ); Van Bogaert, Patrick ( <i>Centre Hospitalier Universitaire d'Angers</i> ); Humeau-Heurtier, Anne ( <i>University of Angers</i> )	
18:00-19:30	WePOS-02.6
<b>A Phase Lag Index Hardware Calculation for Real-Time Electroencephalography Studies</b> .....	644-647
Gutierrez Nuno, Rafael Angel* ( <i>University of Southampton</i> ); Maharatna, Koushik ( <i>University of Southampton</i> )	
18:00-19:30	WePOS-02.7
<b>Sex Difference in EEG Functional Connectivity during Sleep Stages and Resting Wake State based on Weighted Phase Lag Index</b> .....	648-651
Liao, Yuanyuan ( <i>Sun Yat-Sen University, Guangzhou City, Guangdong Prov, China</i> ); Zhou, Guolin ( <i>Sun Yat-Sen University</i> ); Luo, Yu-Xi* ( <i>Sun Yat-Sen University</i> )	

WePOS-03: 18:00-19:30	Hall B
<b>Independent and Principal Component Analysis – Poster</b> (Poster Session)	

18:00-19:30	WePOS-03.1
<b>PCA-Based Channel Selection in High-Density EMG for Improving Force Estimation</b> .....	652-655
Hajian, Gelareh* ( <i>Queen's University</i> ); Morin, Evelyn ( <i>Queen's University</i> ); Etemad, S. Ali ( <i>Queen's University</i> )	
18:00-19:30	WePOS-03.2
<b>Subspace Averaging of Auditory Evoked Potentials</b> .....	656-659
Wang, David X. ( <i>Southern Methodist University</i> ); Davila, Carlos* ( <i>Southern Methodist University</i> )	
18:00-19:30	WePOS-03.3
<b>Monitoring Brain Hemodynamics Coupling in Neonates using Updated Tensor Decompositions</b> .....	660-663
Caicedo, Alexander ( <i>Universidad del Rosario</i> ); De Wel, Ofelie ( <i>KU Leuven</i> ); Vandecappelle, Michiel ( <i>KU Leuven</i> ); Thewissen, Liesbeth ( <i>UZ Leuven</i> ); Smits, Anne ( <i>UZ Leuven</i> ); Allegaert, Karel ( <i>KU Leuven</i> ); De Lathauwer, Lieven ( <i>KU Leuven</i> ); Naulaers, Gunnar ( <i>Univ. Hospitals Leuven</i> ); Van Huffel, Sabine* ( <i>KU Leuven</i> )	
18:00-19:30	WePOS-03.4
<b>A SOC Design of ORICA-Based Highly Effective Real-Time Multi-Channel EEG System</b> .....	664-667
Ho, Yun-Lung ( <i>National Chiao Tung University</i> ); Huang, Yu Da ( <i>National Chiao Tung University</i> ); Wang, Kai Yen ( <i>National Chiao Tung University</i> ); Fang, Wai-Chi* ( <i>National Chiao Tung University</i> )	
18:00-19:30	WePOS-03.5
<b>A Morphological Way to Remove Baseline and Spike Separation in EEG</b> .....	668-671
Mahapatra, Arindam Gajendra* ( <i>Graduate School of Medicine, Yamaguchi University, Ube</i> ); Singh, Balbir ( <i>National Institute of Physiological Sciences</i> )	

**Neural Networks and Support Vector Machines for Biosignal Processing – Poster (Poster Session)**

- 18:00-19:30 WePOS-04.1  
**Estimation of 8-Electrode Configuration for Recognition of Uterine Contraction with Electrohysterogram** ..... 672-675  
 Hao, Dongmei\* (*Beijing University of Technology*)
- 18:00-19:30 WePOS-04.2  
**Prediction of Response Time and Vigilance Score in a Sustained Attention Task from Pre-Trial Phase Synchrony using Deep Neural Networks** ..... 676-679  
 Torkamani-Azar, Mastaneh\* (*Sabanci Univ.*); Kanik, Sümeyra Demir (*Sabanci Univ., Istanbul, Turkey*); Ahmed, Sara Atito Ali (*Sabanci Univ.*); Aydin, Serap (*HACETTEPE Univ.*); Cetin, Mujdat (*Univ. of Rochester*)
- 18:00-19:30 WePOS-04.3  
**CANet: A Channel Attention Network to Determine Informative Multi-Channel for Image Classification from Brain Signals** ..... 680-683  
 Kim, Yangwoo\* (*Gwangju Institute of Science & Technology*); Jang, Sehyeon (*Gwangju Institute of Science & Technology*); Won, Kyungho (*Gwangju Institute of Science & Technology*); Jun, Sung Chan (*Gwangju Institute of Science & Technology*)
- 18:00-19:30 WePOS-04.4  
**EEG-Based Emotion Recognition with Prototype-Based Data Representation** ..... 684-689  
 Wang, Yixin (*Institute of Automation, Chinese Academy of Science*); Qiu, Shuang (*Institute of Automation, Chinese Academy of Science*); Zhao, Chen (*Renmin University of China*); Yang, Weijie (*Beijing Technology & Business University*); Li, Jinpeng (*Research Center for Brain-inspired Intelligence, Institute of Au*); Ma, Xuelin (*Institute of Automation, Chinese Academy of Sciences*); He, Huiguang\* (*Institute of Automation, Chinese Academy of Sciences*)
- 18:00-19:30 WePOS-04.5  
**Monte-Carlo Analysis for Quality Estimation of Gradient Correction Algorithms in Simultaneous Surface EMG-MRI Measurements using Signal Synthesis and Class Probability** ..... 690-693  
 Schwartz, Martin\* (*University of Tübingen*); Reuter, Milan (*Institute of Signal Processing & System Theory, University of*); Yang, Bin (*Institute of Signal Processing & System Theory, University of*); Schick, Fritz (*Dept. of Diagnostic & Interventional Radiology, Universit*)
- 18:00-19:30 WePOS-04.6  
**EEG-Based Emotion Detection using Unsupervised Transfer Learning** ..... 694-697  
 Gonzalez Diaz, Hector Andres\* (*Technische Universität Dresden*); Yoo, Jerald (*National University of Singapore*); Elfadel, Ibrahim (Abe) (*Masdar Institute of Science & Technology*)
- 18:00-19:30 WePOS-04.7  
**An Investigation of Dimensionality Reduction Techniques for EMG-Based Force Estimation** ..... 698-701  
 Hajian, Gelareh\* (*Queen's University*); Etemad, S. Ali (*Queen's University*); Morin, Evelyn (*Queen's University*)
- 18:00-19:30 WePOS-04.8  
**Signal2Image Modules in Deep Neural Networks for EEG Classification** ..... 702-705  
 Bizopoulos, Paschalis\* (*National Technical University of Athens*); Lambrou, George I. (*National & Kapodistrian University of Athens*); Koutsouris, Dimitrios (*Biomedical Engineering Laboratory, School of Electrical & Comp*)
- 18:00-19:30 WePOS-04.9  
**LSTMs and Neural Attention Models for Blood Glucose Prediction: Comparative Experiments on Real and Synthetic Data** ..... 706-712  
 Mirshekarian, Sadegh (*Ohio University*); Shen, Hui (*Ohio University*); Bunescu, Razvan\* (*Ohio University*); Marling, Cindy (*Ohio University*)
- 18:00-19:30 WePOS-04.10  
**Learning to Sort: Few-Shot Spike Sorting with Adversarial Representation Learning** ..... 713-716  
 Wu, Tong\* (*University of Minnesota, Twin Cities*); Rátkai, Anikó (*Eötvös Loránd University, Dept. of Physiology & Neurobiolo*); Schlett, Katalin (*Dept. Physiology & Neurobiology, Eotvos Lorand University*); Grand, László (*Imperial College London*); Yang, Zhi (*University of Minnesota*)

18:00-19:30 WePOS-04.11  
**Deep Learning Approach to Parkinson's Disease Detection using Voice Recordings and Convolutional Neural Network Dedicated to Image Classification** ..... 717-720  
 Wodzinski, Marek\* (AGH University of Science & Technology); Skalski, Andrzej (AGH University of Science & Technology); Hemmerling, Daria (AGH University of Science & Technology); Orozco-Arroyave, Juan-Rafael (Universidad de Antioquia); Noeth, Elmar (Friedrich-Alexander-University Erlangen-Nuremberg)

WePOS-05: 18:00-19:30 Hall B  
**Nonlinear Analysis of Biosignals – Poster** (Poster Session)

18:00-19:30 WePOS-05.1  
**Transfer Entropy in Artificial and Cardiovascular Environment in Stress** ..... 721-724  
 Skoric, Tamara\* (University of Novi Sad, Faculty of Technical Sciences); Japundzic-Zigon, Nina (University of Belgrade); Bajic, Dragana (University of Novi Sad)

18:00-19:30 WePOS-05.2  
**The Relation of Skin Conductance and Pupillary Fluctuations Assessed by Phase-Rectified Signal Averaging** ..... 725-728  
 Schumann, Andy\* (Psychiatric Brain & Body Research Group Jena, Dept. of Psyc); Kietzer, Stephanie (University Hospital Jena); Ebel, Juliane (University Hospital Jena); Bär, Karl-Jürgen (Friedrich-Schiller-University of Jena)

18:00-19:30 WePOS-05.3  
**Quantification of Dynamic Gastric Slow Wave Activity using Recurrence Plots** ..... 729-732  
 Paskaranandavivel, Niranchan\* (The University of Auckland); Avci, Recep (University of Auckland); Cheng, Leo K (The University of Auckland)

18:00-19:30 WePOS-05.4  
**A Novel Multiscale Cross-Entropy Method Applied to Navigation Data Acquired with a Bike Simulator** ..... 733-736  
 Jamin, Antoine\* (COTTOS Medical); Duval, Guillaume (Dept. of Geriatric Medicine, Angers University Hospital, An); Annweiler, Cédric (Dept. of Geriatric Medicine, Angers University Hospital, An); Abraham, Pierre (Centre Hospitalier Universitaire d'Angers); Humeau-Heurtier, Anne (University of Angers)

18:00-19:30 WePOS-05.5  
**Cross Entropy Profiling to Test Pattern Synchrony in Short-Term Signals** ..... 737-740  
 Udhayakumar, Radhagayathri\* (University of Melbourne); Karmakar, Chandan (Deakin University); Palaniswami, Marimuthu (The University of Melbourne)

WePOS-06: 18:00-19:30 Hall B  
**Physiological Systems Modeling – Poster** (Poster Session)

18:00-19:30 WePOS-06.1  
**Nanoswimmer-Oriented Direct Targeting Strategy Inspired by Momentum-Based Gradient Optimization** ..... 741-744  
 Ali, Muhammad (University of Waikato); Cree, Michael (University of Waikato); Sharifi, Neda (The University of Waikato); Chen, Yifan\* (The University of Waikato)

18:00-19:30 WePOS-06.2  
**Tonic and Phasic Decomposition of Skin Conductance Data: A Generalized-Cross-Validation-Based Block Coordinate Descent Approach** ..... 745-749  
 Amin, Md. Rafiul (University of Houston); Faghih, Rose T.\* (University of Houston)

18:00-19:30 WePOS-06.3  
**Modeling the Measurement Error of Factory-Calibrated Continuous Glucose Monitoring Sensors: Application to Dexcom G6 Sensor Data** ..... 750-753  
 Vettoretti, Martina\* (University of Padova); Del Favero, Simone (University of Padova, Padova, Italy); Sparacino, Giovanni (University of Padova); Facchinetti, Andrea (University of Padova)

18:00-19:30 WePOS-06.4  
**Can we Rely on the Pulse Transit Time – Pressure Relationship – Models Comparison** ..... 754-757  
 Polinski, Artur (*Gdansk University of Technology*); Bujnowski, Adam (*Gdansk University of Technology*);  
 Kocejko, Tomasz\* (*Gdansk University of Technology*); Wtorek, Jerzy (*Gdansk University of Technology*)

WePOS-07: 18:00-19:30 Hall B  
**Signal Processing and Classification for BCIs and Motor Imagery – Poster (Poster Session)**

18:00-19:30 WePOS-07.1  
**Classification of EEG Motor Imagery Tasks using Convolution Neural Networks** ..... 758-761  
 Ling, Sai Ho, Steve\* (*University of Technology Sydney*); Makgawinata, Henry (*University of Technology Sydney*); Monsivais, Fernando Huerta (*University of Technology Sydney*); Lourenco, Andre dos Santos  
 Goncalves (*University of Technology Sydney*); Lyu, Juan (*Harbin Engineering University*); Chai, Rifai  
 (*Swinburne University of Technology*)

18:00-19:30 WePOS-07.2  
**Discrimination of SSVEP Responses using a Kernel based Approach** ..... 762-766  
 Oikonomou, Vangelis\* (*Centre for Research & Technology Hellas*); Nikolopoulos, Spiros (*Information Technologies Institute, Centre for Research & Tech*); Kompatsiaris, Ioannis (Yannis) (*Information Technologies Institute, CERTH*)

18:00-19:30 WePOS-07.3  
**Evaluation of Electroencephalography Analysis Methods** ..... 767-773  
 Wetzel, Dominik\* (*University of Applied Sciences Zwickau*); Spahn, Nico (*University of Applied Sciences Zwickau*); Heilemann, Martin (*University of Applied Sciences Zwickau*); Löffler, Marcus Michael (*University of Applied Sciences Zwickau*); Seidel, Markus (*University of Applied Sciences Zwickau*); Kolbig, Silke (*University of Applied Sciences Zwickau*); Winkler, Dirk (*Leipzig University*)

18:00-19:30 WePOS-07.4  
**A Framework on Optimization Strategy for EEG Motor Imagery Recognition** ..... 774-777  
 Yang, Banghua\* (*Shanghai University*); Fan, Chengcheng (*Shanghai University*); Guan, Cuntai (*Nanyang Technological University*); Gu, xuelin (*Shanghai University*)

WePOS-08: 18:00-19:30 Hall B  
**Signal Processing and Classification for Contactless Measurements – Poster (Poster Session)**

18:00-19:30 WePOS-08.1  
**Non-Contact Blood Pressure Measurement Scheme using Doppler Radar** ..... 778-781  
 Ohata, Tomoyuki\* (*The University of Electro-Communications*); Ishibashi, Koichiro (*The University of Electro-Communications*); Sun, Guanghao (*The University of Electro-Communications*)

18:00-19:30 WePOS-08.2  
**ITERATOR: A 3D Gait Identification from IR-UWB Technology** ..... 782-787  
 Rana, Soumya Prakash\* (*London South Bank University*); Dey, Maitreyee (*London South Bank University*);  
 Ghavami, Mohammad (*London South Bank University*); Dudley, Sandra (*London South Bank University*)

18:00-19:30 WePOS-08.3  
**Precise Heart Rate Measurement using Non-Contact Doppler Radar Assisted by Machine-Learning-Based Sleep Posture Estimation** ..... 788-791  
 Higashi, Kotaro\* (*The University of Electro-Communications*); Sun, Guanghao (*The University of Electro-Communications*); Ishibashi, Koichiro (*The University of Electro-Communications*)

18:00-19:30 WePOS-08.4  
**Non-Contact Apnea-Hypopnea Index Estimation using Near Infrared Video** ..... 792-795  
 Zhu, Kaiyin (*Toronto Rehab-University Health Network*); Yadollahi, Azadeh (*University of Toronto*); Taati, Babak\* (*Toronto Rehabilitation Institute & University of Toronto*)

18:00-19:30 WePOS-08.5  
**Novel CA-CFAR Approach for Improvement of Doppler Sensor-Based Heart Rate Variability Estimation** ..... 796-799  
 Hiromatsu, Ryosuke\* (*Keio University*); Yamamoto, Kohei (*Keio University*); Toyoda, Kentaroh (*Keio University*); Ohtsuki, Tomoaki (*Keio University*)

WePOS-09: 18:00-19:30 Hall B  
**Brain Imaging and Image Analysis – Poster (Poster Session)**

18:00-19:30 WePOS-09.1  
**Investigations on the Functional Connectivity Disruptive Patterns of Progressive Neurodegenerative Disorders** ..... 800-803  
 A, Kavitha\* (*SSN College of Engineering*); S Prakash, Sucharitha (*SSN College of Engineering*); P, Sreeja (*SSN College of Engineering*); S, Ancy Carshia (*SSN College of Engineering*)

18:00-19:30 WePOS-09.2  
**A Feature Ranking and Selection Algorithm for Brain Tumor Segmentation in Multi-Spectral Magnetic Resonance Image Data** ..... 804-807  
 Gyorfi, Agnes\* (*Sapientia Hungarian University of Transylvania*); Kovacs, Levente (*Obuda University*); Szilagy, Laszlo (*Budapest Univ. of Tech & Economics*)

18:00-19:30 WePOS-09.3  
**On the use of Linear-Modelling-Based Algorithms for Physiological Noise Correction in fMRI Studies of the Central Breathing Control** ..... 808-811  
 Cauzzo, Simone\* (*Scuola Superiore Sant'Anna*); Callara, Alejandro Luis (*Dipartimento di Ingegneria dell'Informazione, University of Pisa*); Morelli, Maria Sole (*Scuola Superiore Sant'Anna (Pisa)*); Hartwig, Valentina (*CNR*); Montanaro, Domenico (*Fondazione Toscana "G. Monasterio", National Research Council, P*); Passino, Claudio (*Fondazione Gabriele Monasterio, Pisa*); Emdin, Michele (*Fondazione Gabriele Monasterio, Pisa*); Giannoni, Alberto (*Fondazione Gabriele Monasterio, Pisa*); Vanello, Nicola (*University of Pisa*)

18:00-19:30 WePOS-09.4  
**Automatic Classification of Alzheimer's Disease based on CPD Brain Point Cloud Registration for Feature Extraction** ..... 812-815  
 Perez-Gonzalez, Jorge\* (*Universidad Nacional Autonoma de Mexico*); Azamar, Cristian (*Universidad Autonoma Metropolitana*); Pina-Ramirez, Omar (*Universidad Autonoma Metropolitana*)

WePOS-10: 18:00-19:30 Hall B  
**Cardiac Imaging and Image Analysis – Poster (Poster Session)**

18:00-19:30 WePOS-10.1  
**Coronary Artery Vascular Segmentation on Limited Data via Pseudo-Precise Label** ..... 816-819  
 Zhai, Mo (*Beijing University of Posts & Telecommunications*); Du, Tianming (*Beijing University of Posts & Telecommunications*); Yang, Ruolin (*Beijing University of Posts & Telecommunications*); Zhang, Honggang\* (*Beijing University of Posts & Telecommunications*)

18:00-19:30 WePOS-10.2  
**Elevated Right Atrial Pressure Associated with Alteration of Left Ventricular Contractility and Ventricular-Arterial Coupling in Pulmonary Artery Hypertension** ..... 820-823  
 Zhao, Xiaodan (*National Heart Centre Singapore*); Tan, Ru-San (*National Heart Centre Singapore*); Tan, Ju Le (*National Heart Centre Singapore*); Chai, Ping (*National University Heart Centre Singapore*); Teo, Lynette Li San (*National University Hospital*); Fortier, Marielle V (*KK Women's & Children's Hospital*); Tan, Teng Hong (*KK Women's & Children's Hospital*); Leng, Shuang (*National Heart Centre Singapore*); Ruan, Wen (*National Heart Centre Singapore*); Zhang, Jun-Mei (*National Heart Center*); Bryant, Jennifer (*NHCS*); Yap, Jonathan (*NHCS*); Ong, Ching Ching (*National University Hospital*); Singh, Devinder (*National University Hospital*); Lim, Soo Teik (*National Heart Centre Singapore*); Yip, James Wei Luen (*National University Hospital*); Chen, Yucheng (*West China Hospital, Sichuan University, Chengdu, China*); Zhong, Liang\* (*Duke-Duke Medical School, National University of Singapore*)



18:00-19:30	WePOS-10.3
<b>Deep CNN with LM Learning based Myocardial Ischemia Detection in Cardiac Magnetic Resonance Images</b> .....	824-827
Muthunayagam, Muthulakshmi ( <i>MIT Campus, Anna University,</i> ); Ganesan, Kavitha* ( <i>MIT Campus, Anna University,</i> )	
18:00-19:30	WePOS-10.4
<b>Detection and Classification of Chronic Total Occlusion Lesions using Deep Learning</b> .....	828-831
Liu, Xuqing ( <i>Beijing University of Posts &amp; Telecommunications</i> ); Du, Tianming ( <i>Beijing University of Posts &amp; Telecommunications</i> ); Zhang, Honggang* ( <i>Beijing University of Posts &amp; Telecommunications</i> ); Sun, Chunlei ( <i>Beijing University of Posts &amp; Telecommunications</i> )	
18:00-19:30	WePOS-10.5
<b>Kernel-Based Reconstruction of C-11-Hydroxyephedrine Cardiac PET Images of the Sympathetic Nervous System</b> .....	832-835
Ashouri, Zahra* ( <i>Carleton University</i> ); Hunter, Chad ( <i>University of Ottawa Heart Institute</i> ); Spencer, Benjamin ( <i>UC Davis Medical Center</i> ); Wang, Guobao ( <i>Univ. of California – Davis</i> ); Dansereau, Richard ( <i>Carleton University</i> ); deKemp, Robert ( <i>uOttawa Heart Institute</i> )	
18:00-19:30	WePOS-10.6
<b>Automatic Assessment of 3D Coronary Artery Distensibility from Time-Resolved Coronary CT Angiography</b> .....	836-840
Ghanem, Ahmed ( <i>NIH</i> ); Hamimi, Ahmed ( <i>NIH</i> ); Gharib, Ahmed ( <i>NIH</i> ); Abd-Elmoniem, Khaled* ( <i>NIH</i> )	
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WePOS-11: 18:00-19:30	Hall B
<b>Image Analysis and Classification – Machine Learning / Deep Learning Approaches – Poster</b> (Poster Session)	
18:00-19:30	WePOS-11.1
<b>Assessment of Data Augmentation Strategies Toward Performance Improvement of Abnormality Classification in Chest Radiographs</b> .....	841-844
Ganesan, Prasanth ( <i>Florida Atlantic University</i> ); Rajaraman, Sivaramakrishnan ( <i>National Library of Medicine</i> ); Long, L. Rodney ( <i>National Library of Medicine</i> ); Ghoraani, Behnaz ( <i>Florida Atlantic University</i> ); Antani, Sameer* ( <i>National Library of Medicine</i> )	
18:00-19:30	WePOS-11.2
<b>Comparison and Analyzation of Different Feature Parameters for Alzheimer’s Disease Identification</b> .....	845-848
Liu, Yan ( <i>University of Chinese Academy of Sciences</i> ); Zeng, Xiangzhu ( <i>Peking University Third Hospital, Beijing, China</i> ); Wang, Ling* ( <i>University of Electronic Science &amp; Technology of China</i> ); Wang, Zheng ( <i>Capital University of Medical Sciences</i> ); Wang, Qiang ( <i>Beijing Union University</i> )	
18:00-19:30	WePOS-11.3
<b>Anterior Chamber Angles Classification in Anterior Segment OCT Images via Multi-Scale Regions Convolutional Neural Networks</b> .....	849-852
Hao, Huaying ( <i>Ningbo University</i> ); Zhao, Yitian* ( <i>Chinese Academy of Sciences</i> ); Fu, Huazhu ( <i>Inception Institute of Artificial Intelligence</i> ); Shang, Qiaoling ( <i>Shenyang Jianzhu University</i> ); Chen, Zhili ( <i>Shenyang Jianzhu University</i> ); Li, Fei ( <i>Zhongshan Ophthalmic Center, State Key Laboratory of Ophthalmology</i> ); Zhang, Xiulan ( <i>Zhongshan Ophthalmic Center, State Key Laboratory of Ophthalmology</i> ); Liu, Jiang ( <i>Ningbo Institute of Materials Technology &amp; Engineering, CAS</i> )	
18:00-19:30	WePOS-11.4
<b>Improving the Malignancy Characterization of Hepatocellular Carcinoma using Deeply Supervised Cross Modal Transfer Learning for Non-Enhanced MR</b> .....	853-856
Jian, Wanwei ( <i>Guangzhou University of Chinese Medicine</i> ); Ju, HanQiu ( <i>Guangzhou University of Chinese Medicine</i> ); Cen, Xiaoping ( <i>Guangzhou University of Chinese Medicine</i> ); Cui, Manman ( <i>Guangzhou University of Chinese Medicine</i> ); Zhang, Honglai ( <i>Guangzhou University of Chinese Medicine</i> ); Wang, Guangyi ( <i>Guangdong General Hospital</i> ); Zhang, Lijuan ( <i>Shenzhen Institute of Advanced Technology</i> ); Gu, Lin ( <i>National Institute of Informatics (NII)</i> ); Zhou, Wu* ( <i>Guangzhou University of Chinese Medicine</i> )	
18:00-19:30	WePOS-11.5
<b>Understanding Deep Convolutional Networks for Biomedical Imaging: A Tutorial</b> .....	857-863
Ng, Dianwen ( <i>National University of Singapore</i> ); Feng, Mengling* ( <i>Massachusetts Institute of Technology</i> )	

18:00-19:30	WePOS-11.6
<b>Monitoring of Patient Blanket Coverage using 3D Camera Data</b> .....	864-867
Vaughn, Julie (MIT); Milosevic, Mladen (Philips Research North America); Parvaneh, Saman* (Philips Research North America)	
18:00-19:30	WePOS-11.7
<b>Deep Learning based Dosimetry Evaluation at Organs-at-Risk in Esophageal Radiation Treatment Planning</b> .....	868-871
Jiang, Dashan (Electrical Engineering & Automation, Anhui University); Li, Teng* (Anhui University); Mao, Ronghu (Dept. of Radiation Oncology, The Affiliated Cancer Hospital); Du, Chi (Cancer Center, The Second People's Hospital of Neijiang, Neijian); Liu, Jianfei (Anhui University)	
18:00-19:30	WePOS-11.8
<b>Automatic Detection of Focal Liver Lesions in Multi-Phase CT Images using a Multi-Channel and Multi-Scale CNN</b> .....	872-875
Todoroki, Yoshihiro* (Ritsumeikan University); Iwamoto, Yutaro (Ritsumeikan University); Chen, Yen-Wei (Ritsumeikan University)	
18:00-19:30	WePOS-11.9
<b>Convolutional Neural Network-Based Regression for Biomarker Estimation in Corneal Endothelium Microscopy Images</b> .....	876-881
Vigueras-Guillén, Juan P.* (Rotterdam Eye Hospital); van Rooij, Jeroen (Rotterdam Eye Hospital); Lemij, Hans G. (Glaucoma Service, Rotterdam Eye Hospital); Vermeer, Koenraad A. (Rotterdam Ophthalmic Institute, Rotterdam Eye Hospital); van Vliet, Lucas (TU Delft)	
18:00-19:30	WePOS-11.10
<b>Mild Cognitive Impairment Diagnosis using Extreme Learning Machine Combined with Multivoxel Pattern Analysis on Multi-Biomarker Resting-State fMRI</b> .....	882-885
Nguyen, Thanh Duc (Gwangju Institute of Science & Technology); Ryu, Seungjun (Gist); Choi, Min (Gwangju Institute of Science & Technology); Qureshi, Muhammad Naveed Iqbal (Gwangju Institute of Science & Technology, Gwangju); Lee, Boreom* (Gwangju Institute of Science & Technology (GIST))	
18:00-19:30	WePOS-11.11
<b>Improving CNN Training using Disentanglement for Liver Lesion Classification in CT</b> .....	886-889
Ben-Cohen, Avi (Tel Aviv University); Mechrez, Roey (Technion); Yedidia, Noa (Tel-Aviv University); Greenspan, Hayit K.* (Tel Aviv University)	
18:00-19:30	WePOS-11.12
<b>Variations on Branding with Text Occurrence for Optimized Body Parts Classification</b> .....	890-894
Pelka, Obioma (University of Applied Sciences & Arts Dortmund); Nensa, Felix (University Hospital Essen); Friedrich, Christoph M.* (University of Applied Sciences & Arts Dortmund; Dept. of)	
18:00-19:30	WePOS-11.13
<b>Hierarchical Fine-Tuning for Joint Liver Lesion Segmentation and Lesion Classification in CT</b> .....	895-898
Heker, Michal* (Tel- Aviv University); Ben-Cohen, Avi (Tel Aviv University); Greenspan, Hayit K. (Tel Aviv University)	
18:00-19:30	WePOS-11.14
<b>Hybrid Unified Deep Learning Network for Highly Precise Gleason Grading of Prostate Cancer</b> .....	899-903
Sharma, Shanker Lal (Omart Technologies); Uthappa, Poojitha* (Indian Institute of Technology)	
18:00-19:30	WePOS-11.15
<b>Automated Glaucoma Screening from Retinal Fundus Image using Deep Learning</b> .....	904-907
Phasuk, Siriporn (Thammasat University); Pooprasert, Pakinee (Cardiff University School of Medicine); Yaemsuk, Akarachai (Thammasat University); Suvannachart, Pukkapol (Chulalongkorn University); Itthipanichpong, Rath (Chulalongkorn University); Chansangpetch, Sunee (Chulalongkorn University); Manassakorn, Anita (Chulalongkorn University & King Chulalongkorn Memorial Hospita); Tantisevi, Visanee (Chulalongkorn University); Rojanapongpun, Prin (Chulalongkorn University); Tantibundhit, Charturong* (Thammasat University)	

18:00-19:30	WePOS-11.16
<b>Pattern Detection from Seating Pressure Distribution during Wheelchair Motion using Deep Embedded Clustering</b> .....	908-911
Noguchi, Hiroshi* ( <i>The University of Tokyo</i> ); Maeda, Tomonori ( <i>The University of Tokyo</i> ); Tamai, Nao ( <i>The University of Tokyo</i> ); Minematsu, Takeo ( <i>The University of Tokyo</i> ); Sanada, Hiromi ( <i>The University of Tokyo</i> ); Mori, Taketoshi ( <i>The University of Tokyo</i> )	
18:00-19:30	WePOS-11.17
<b>A Random Initialization Deep Neural Network for Discriminating Malignant Breast Cancer Lesions</b> .....	912-915
Duggento, Andrea* ( <i>University of Rome "Tor Vergata"</i> ); Scimeca, Manuel ( <i>University of Rome Tor Vergata</i> ); Urbano, Nicoletta ( <i>University of Rome Tor Vergata</i> ); Bonanno, Elena ( <i>University of Rome Tor Vergata</i> ); Aiello, Marco ( <i>IRCCS SDN, Naples, Italy</i> ); Cavaliere, Carlo ( <i>IRCCS SDN, Naples, Italy</i> ); Cascella, Giuseppe L. ( <i>Politecnico di Bari</i> ); Cascella, Davide ( <i>GEM ICT</i> ); Conte, Giovanni ( <i>GEM ICT</i> ); Guerrisi, Maria ( <i>University of Rome "Tor Vergata"</i> ); Toschi, Nicola ( <i>University of Rome "Tor Vergata", Faculty of Medicine</i> )	
18:00-19:30	WePOS-11.18
<b>Skin Lesion Classification using GAN based Data Augmentation</b> .....	916-919
Rashid, Haroon ( <i>National University of Sciences &amp; Technology</i> ); Tanveer, M. Asjid ( <i>National University of Sciences &amp; Technology</i> ); Khan, Hassan Aqeel* ( <i>National University of Sciences &amp; Technology</i> )	
18:00-19:30	WePOS-11.19
<b>Predicting Human Embryos' Implantation Outcome from a Single Blastocyst Image</b> .....	920-924
Moradi Rad, Reza* ( <i>Simon Fraser University</i> ); Saeedi, Parvaneh ( <i>Simon Fraser University</i> ); Au, Jason Ka Man ( <i>Pacific Center for Reproductive Medicine</i> ); Havelock, Jon ( <i>Pacific Centre for Reproductive Medicine</i> )	
18:00-19:30	WePOS-11.20
<b>Detection of Rapid Mouse's Scratching Behavior based on Shape and Motion Features</b> .....	925-928
Akita, Shingo* ( <i>Tokyo University of Science</i> ); Tsuichihara, Satoki ( <i>Tokyo University of Science</i> ); Takemura, Hiroshi ( <i>Tokyo University of Science</i> )	
18:00-19:30	WePOS-11.21
<b>An End-to-End Deep Learning Pipeline for Emphysema Quantification using Multi-Label Learning</b> .....	929-932
Negahdar, Mohammadreza* ( <i>IBM</i> ); Coy, Adam ( <i>University of California San Francisco</i> ); Beymer, David ( <i>IBM Almaden Research Center</i> )	
18:00-19:30	WePOS-11.22
<b>Ultrasound-Based Diagnosis of Breast Tumor with Parameter Transfer Multilayer Kernel Extreme Learning Machine</b> .....	933-936
Fei, Xiaoyan ( <i>Shanghai University</i> ); Zhou, Weijun ( <i>First Affiliated Hospital of USTC</i> ); Shen, Lu ( <i>Shanghai University</i> ); Chang, Cai ( <i>Fudan University</i> ); Zhou, Shichong ( <i>Fudan University</i> ); Shi, Jun* ( <i>Shanghai University</i> )	
18:00-19:30	WePOS-11.23
<b>Driver Drowsiness Estimation by Parallel Linked Time-Domain CNN with Novel Temporal Measures on Eye States</b> .....	937-942
Shiau, Jia-Yau ( <i>National Taiwan University</i> ); Nishiyuki, Kenta* ( <i>Omron Corporation</i> ); Nagae, Shigenori ( <i>Omron Corporation</i> ); Yabuuchi, Tomohiro ( <i>Omron Corporation</i> ); Kinoshita, Koichi ( <i>Omron Corporation</i> ); Hasegawa, Yuki ( <i>Omron Corporation</i> )	
18:00-19:30	WePOS-11.24
<b>Analysis of Carotid Plaque using Multifractal Method in Ultrasound Images</b> .....	943-946
B., Smitha* ( <i>National Institute of Technology, Calicut</i> ); Joseph, Paul ( <i>National Institute of Technology Calicut</i> )	
18:00-19:30	WePOS-11.25
<b>Boundary-Aware Semi-Supervised Deep Learning for Breast Ultrasound Computer-Aided Diagnosis</b> .....	947-950
Zhang, Erlei ( <i>University of Texas Southwestern Medical Center</i> ); Seiler, Stephen ( <i>University of Texas Southwestern Medical Center</i> ); Chen, Mingli ( <i>University of Texas Southwestern Medical Center</i> ); Lu, Weiguo* ( <i>University of Texas Southwestern Medical Center</i> ); Gu, Xuejun ( <i>University of Texas Southwestern Medical Center</i> )	

18:00-19:30	WePOS-11.26
<b>Deep Neural Network for Automatic Characterization of Lesions on 68Ga-PSMA PET/CT Images</b> .....	951-954
Zhao, Yu* ( <i>Technische Universität München</i> ); Tetteh, Giles ( <i>Technische Universität München (TUM)</i> ); Menze, Bjoern ( <i>TU Munich</i> ); Eiber, Matthias ( <i>Klinikum Rechts der Isar, Technische Universitaet Muenchen</i> ); Shi, Kuangyu ( <i>University of Bern</i> )	
18:00-19:30	WePOS-11.27
<b>Semantic Segmentation of Microengineered Neural Tissues</b> .....	955-960
Karimian, Hamid R.* ( <i>Tulane University</i> ); Pollard, Kevin ( <i>Tulane University</i> ); Moore, Michael J. ( <i>Tulane University</i> ); Kordjamshidi, Parisa ( <i>Tulane University</i> )	
18:00-19:30	WePOS-11.28
<b>Machine Learning for Computer-Aided Polyp Detection using Wavelets and Content-Based Image</b> .....	961-965
Viscaino Sarango, Michelle Estefania* ( <i>Universidad Técnica Federico Santa María</i> ); Auat Cheein, Fernando A. ( <i>National University of San Juan</i> )	
18:00-19:30	WePOS-11.29
<b>Segmentation of Femoral Cartilage from Knee Ultrasound Images using Mask R-CNN</b> .....	966-969
Kompella, Gayatri* ( <i>Indian Institute of Technology, Madras</i> ); Antico, Maria ( <i>Queensland University of Technology</i> ); Sasazawa, Fumio ( <i>Queensland University of Technology</i> ); Singarayan, Jeevakala ( <i>Healthcare Technology &amp; Innovation Center</i> ); Ram, Keerthi ( <i>IIT Madras</i> ); Fontanarosa, Davide ( <i>Queensland University of Technology</i> ); Pandey, Ajay K ( <i>Queensland University of Technology, Australia</i> ); Sivaprakasam, Mohanasankar ( <i>Indian Institute of Technology Madras</i> )	
18:00-19:30	WePOS-11.30
<b>Hierarchical Pruning for Simplification of Convolutional Neural Networks in Diabetic Retinopathy Classification</b> .....	970-973
Hajabdollahi, Mohsen ( <i>Isfahan University of Technology</i> ); Esfandiarpour, Reza ( <i>Isfahan University of Technology</i> ); Najarian, Kayvan ( <i>University of Michigan – Ann Arbor</i> ); Karimi, Nader ( <i>Isfahan University of Technology</i> ); Samavi, Shadrokh ( <i>McMaster University</i> ); Soroushmehr, S.M.Reza* ( <i>University of Michigan, Ann Arbor</i> )	

WePOS-12: 18:00-19:30	Hall B
<b>Image Registration, Segmentation, Compression and Visualization – Machine Learning / Deep Learning Approaches – Poster</b> (Poster Session)	

18:00-19:30	WePOS-12.1
<b>Fully Automatic White Matter Hyperintensity Segmentation using U-Net and Skip Connection</b> .....	974-977
Zhang, Yue ( <i>Southern University of Science &amp; Technology</i> ); Wu, Jiong ( <i>Sun Yat-Sen University</i> ); Chen, Wanli ( <i>Southern University of Science &amp; Technology of China</i> ); Liu, Yilong ( <i>The University of Hong Kong</i> ); Lyu, Junyan ( <i>Southern University of Science &amp; Technology</i> ); Shi, Hongjian ( <i>Southern University of Science &amp; Technology</i> ); Chen, Yifan ( <i>The University of Waikato</i> ); Wu, Ed X. ( <i>The University of Hong Kong</i> ); Tang, Xiaoying* ( <i>Southern University of Science &amp; Technology</i> )	
18:00-19:30	WePOS-12.2
<b>Deep Learning based Sub-Retinal Fluid Segmentation in Central Serous Chorioretinopathy Optical Coherence Tomography Scans</b> .....	978-981
Rao T J, Narendra ( <i>National Institute of Technology Karnataka, Surathkal</i> ); Girish, GN* ( <i>National Institute of Technology Karnataka, Surathkal</i> ); R Kothari, Abhishek ( <i>Dr. Agarwal's Eye Hospital, Jaipur, India</i> ); Rajan, Jeny ( <i>Dept. of Computer Science &amp; Engineering, National Institu</i> )	
18:00-19:30	WePOS-12.3
<b>OpenArm 2.0: Automated Segmentation of 3D Tissue Structures for Multi-Subject Study of Muscle Deformation Dynamics</b> .....	982-988
Nozik, Yonatan ( <i>UC Berkeley</i> ); Hallock, Laura* ( <i>UC Berkeley</i> ); Ho, Daniel ( <i>UC Berkeley</i> ); Mandava, Sai ( <i>UC Berkeley</i> ); Mitchell, Chris ( <i>UC Berkeley</i> ); Li, Thomas Hui ( <i>UC Berkeley</i> ); Bajcsy, Ruzena ( <i>UC Berkeley, CITRIS</i> )	
18:00-19:30	WePOS-12.4
<b>Data Representations for Segmentation of Vascular Structures using Convolutional Neural Networks with U-Net Architecture</b> .....	989-992
Bargsten, Lennart* ( <i>Hamburg University of Technology</i> ); Wendebourg, Mareike ( <i>Hamburg University of Technology</i> ); Schlaefer, Alexander ( <i>Hamburg University of Technology</i> )	

- 18:00-19:30 WePOS-12.5  
**Deep Learning-Based Automatic Endometrium Segmentation and Thickness Measurement for 2D Transvaginal Ultrasound** ..... 993-997  
 Hu, Szu-Yeu (*Massachusetts General Hospital*); Xu, Hong (*MGH*); Li, Qian (*Massachusetts General Hospital*); Telfer, Brian (*MIT Lincoln Laboratory*); Brattain, Laura\* (*MIT Lincoln Laboratory*); Samir, Anthony Edward (*Harvard Medical School, Massachusetts General Hospital*)
- 18:00-19:30 WePOS-12.6  
**Automatic Brain Tumor Segmentation Method based on Modified Convolutional Neural Network** ..... 998-1001  
 Yang, Chushu (*Harbin Institute of Technology*); Xutao, Guo (*HIT*); Wang, Tong (*Harbin Institute of Technology, Shenzhen*); Yang, Yanwu (*Harbin Institute of Technology Shenzhen Graduate School*); Ji, Nan (*Dept. of Neurosurgery, China National Clinical Research Cen*); Li, Deling (*Beijing Tiantan Hospital*); Lv, Haiyan (*Mindsgo Life Science Shenzhen Ltd.*); Ma, Ting\* (*Harbin Institute of Technology at Shenzhen*)
- 18:00-19:30 WePOS-12.7  
**Diabetic Wound Segmentation using Convolutional Neural Networks** ..... 1002-1005  
 Cui, Can (*University of Michigan*); Thurnhofer-Hemsi, Karl (*University of Málaga*); Soroushmehr, S.M.Reza (*University of Michigan, Ann Arbor*); Mishra, Abinash (*University of Michigan*); Gryak, Jonathan\* (*University of Michigan*); Dominguez, Enrique (*University of Malaga*); Wrobel, James (*University of Michigan*); Najarian, Kayvan (*University of Michigan – Ann Arbor*); Lopez-Rubio, Ezequiel (*University of Malaga*)
- 18:00-19:30 WePOS-12.8  
**Adrenal Tumor Vessels Segmentation using Convolutional Neural Network in Computed Tomography Angiography** ..... 1006-1009  
 Zhao, Wangyuan (*Shanghai Jiao Tong University*); He, Hongchao (*Shanghai Ruijin Hospital, Shanghai Jiao Tong University School of*); Zhao, Jun (*Shanghai Jiao Tong University*); Sun, Jianqi\* (*Shanghai Jiao Tong University*)
- 18:00-19:30 WePOS-12.9  
**Adversarially Trained Convolutional Neural Networks for Semantic Segmentation of Ischaemic Stroke Lesion using Multisequence Magnetic Resonance Imaging** ..... 1010-1013  
 Sathish, Rachana (*Indian Institute of Technology Kharagpur*); Rajan, Ronnie\* (*Indian Institute of Technology Kharagpur*); Vupputuri, Anusha (*Indian Institute of Technology Kharagpur*); Ghosh, Nirmalya (*Indian Institute of Technology (IIT), Kharagpur*); Sheet, Debdoot (*Indian Institute of Technology Kharagpur*)
- 18:00-19:30 WePOS-12.10  
**Brain-Vascular Segmentation for SEEG Planning via a 3D Fully-Convolutional Neural Network** ..... 1014-1017  
 El Hadji, Sara\* (*Politecnico di Milano*); Moccia, Sara (*Unviersità Politecnica delle Marche*); Scorza, Davide (*Vicomtech Foundation*); Rizzi, Michele (*Ospedale Niguarda, Milano*); Cardinale, Francesco (*Niguarda Hospital*); Baselli, Giuseppe (*Politecnico di Milano*); De Momi, Elena (*Politecnico di Milano*)
- 18:00-19:30 WePOS-12.11  
**Automatic Sternum Segmentation in Thoracic MRI** ..... 1018-1021  
 Ribeiro Dias, Mariana (*University of Porto*); Rocha, Beatriz (*University of Porto*); João, F. Teixeira\* (*INESCTEC*); Oliveira, Hélder P. (*INESC TEC, Faculdade de Ciências, Universidade do Porto*)
- 18:00-19:30 WePOS-12.12  
**An MR Radiomics Framework for Predicting the Outcome of Stereotactic Radiation Therapy in Brain Metastasis** ..... 1022-1025  
 Karami, Elham (*Sunnybrook Research Institute, University of Toronto*); Ruschin, Mark (*Sunnybrook Health Sciences Centre, University of Toronto*); Soliman, Hany (*University of Toronto, Sunnybrook Health Sciences Centre*); Sahgal, Arjun (*Sunnybrook Health Sciences Centre, University of Toronto*); Stanis, Greg (*Sunnybrook Research Institute, University of Toronto*); Sadeghi-Naini, Ali\* (*York University*)
- 18:00-19:30 WePOS-12.13  
**Scribbles for Metric Learning in Histological Image Segmentation** ..... 1026-1030  
 Harada, Daisuke (*Kyushu University*); Bise, Ryoma\* (*Kyushu University*); Tokunaga, Hiroki (*Kyushu University*); Ohyama, Wataru (*Kyushu University*); Oka, Sanae (*National Institute for Basic Biology*); Fujimori, Toshihiko (*National Institute for Basic Biology*); Uchida, Seiichi (*Kyushu University*)

18:00-19:30 WePOS-12.14  
**Gland Segmentation in Histopathology Images based on Deep Networks and Handcrafted Features** ..... 1031-1034  
Rezaei, Safiyeh (*Isfahan University of Technology, Iran*); Emami, Ali (*Isfahan University of Technology*); Zarrabi, Hamidreza (*Isfahan University of Technology*); Rafiei, Shima (*IUT*); Najarian, Kayvan (*University of Michigan – Ann Arbor*); Karimi, Nader (*Isfahan University of Technology*); Samavi, Shadrokh (*McMaster University*); Soroushmehr, S.M.Reza\* (*University of Michigan, Ann Arbor*)

18:00-19:30 WePOS-12.15  
**Volume Visualization for Improving CT Lung Nodule Detection** ..... 1035-1038  
Huang, Adam\* (*National Central University*); Lee, Chung-Wei (*National Taiwan University Hospital*); Yang, Chung-Yi (*E-Da Hospital*); Liu, Hon-Man (*Fu Jen Catholic University Hospital*)

WePOS-13: 18:00-19:30 Hall B  
**Micro/Nano-Bioengineering; Cellular/Tissue Engineering and Biomaterials (I) – Poster (Poster Session)**

18:00-19:30 WePOS-13.1  
**Influence of Substrate Stiffness on Human Induced Pluripotent Stem Cells: Preliminary Results** ..... 1039-1043  
Iberite, Federica\* (*Scuola Superiore Sant'Anna*); Salerno, Marco (*Istituto Italiano di Tecnologia*); Canale, Claudio (*Dept. of Physics, University of Genoa*); Rosa, Alessandro (*Sapienza University of Rome*); Ricotti, Leonardo (*Scuola Superiore Sant'Anna*)

18:00-19:30 WePOS-13.2  
**Microdevice for Evaluating Ion Channel Expression by Axon-Targeted Recording to Cultured Neurons** ..... 1044-1047  
Shimba, Kenta\* (*The University of Tokyo*); Sakai, Koji (*University of Tokyo*); Kotani, Kiyoshi (*University of Tokyo*); Jimbo, Yasuhiko (*University of Tokyo*)

18:00-19:30 WePOS-13.3  
**Pilot Study on Fibrin for Chronic Wound Healing** ..... 1048-1049  
Fernandes, Beatriz\* (*Pontifícia Universidade Católica do Paraná*); Moreschi, Maria Eduarda (*Pontifícia Universidade Católica do Paraná*); dos Santos, Romilda Prado (*Pontifical Catholic University of Paraná*); Sellmer, Danielle (*Pontifical Catholic University of Paraná*)

18:00-19:30 WePOS-13.4  
**Nanocomposite Thin Films based on Polyethylene Vinyl Acetate and Piezoelectric Nanomaterials** ..... 1050-1053  
Vannozi, Lorenzo\* (*Scuola Superiore Sant'Anna*); Mariotti, Giulia (*Scuola Superiore Sant'Anna*); Ricotti, Leonardo (*Scuola Superiore Sant'Anna*)

18:00-19:30 WePOS-13.5  
**A Scalable Random Access Membrane Displacement Traps Array for Selective Capture and Release of Individual Droplets** ..... 1054-1057  
Babahosseini, Hesam\* (*National Institutes of Health*); Padmanabhan, Supriya (*University of Maryland*); Misteli, Tom (*National Cancer Institute, National Institutes of Health*); DeVoe, Don L. (*University of Maryland*)

18:00-19:30 WePOS-13.6  
**A Compact Visible Light Spectrometer for Molecular Detection with Spherical Gold Nanoparticles** ..... 1058-1061  
Niyonambaza, Shimwe Dominique\* (*Universite Laval*); Boisselier, Elodie (*Université Laval*); Boukadoum, Mounir (*University of Quebec at Montréal*); Miled, Amine (*Laval University*)

18:00-19:30 WePOS-13.7  
**High-Performance Nanocrystal Platinum on Hierarchical Microelectrode for Biochemical Sensing** ..... 1062-1065  
Zeng, Qi (*Shenzhen Institutes of Advanced Technology, Chinese Academy of S*); Zhang, Yi (*University of Southern California & Doheny Eye Institute*); Wu, Tianzhun\* (*Shenzhen Institutes of Advanced Technology (SIAT), Chinese Acade*)

18:00-19:30 WePOS-13.8  
**Growth Factor Releasing Core-Shell Polymeric Scaffolds for Tissue Engineering Applications** ..... 1066-1069  
Augustine, Robin (*Qatar University, Doha*); Zahid, Alap Ali (*Qatar University*); Mian, Wang (*Northeastern University*); Thomas, Webster (*Northeastern University*); Anwarul, Hasan\* (*Qatar University, Doha*)

18:00-19:30 WePOS-13.9  
**Effects of Hydrogel-Fiber on Cystic Cavity after Spinal Cord Injury** ..... 1070-1073  
 Xijie, Zhou (*Dept. of Neurosurgery, University of Maryland School of Med*); Du, Jian (*University of Maryland School of Medicine*); Jia, Xiaofeng\* (*University of Maryland School of Medicine, Johns Hopkins Unvers*)

WePOS-14: 18:00-19:30 Hall B  
**Micro/Nano-Bioengineering; Cellular/Tissue Engineering and Biomaterials (II) – Poster (Poster Session)**

18:00-19:30 WePOS-14.1  
**High-Throughput Droplet Array Generated by Roller Nanoimprint Lithography with Biomimetic Surfaces** ..... 1074-1077  
 Peng, Zhiting (*Chinese Academy of Sciences*); Wu, Tianzhun\* (*Shenzhen Institutes of Advanced Technology (SIAT), Chinese Acade*)

18:00-19:30 WePOS-14.2  
**Optimization of the Single Emulsion Method for Encapsulation of a Cancer Drug in Nanoparticles** ..... 1078-1081  
 Holley, Claire (*University of Houston*); Sinquefield, Bridgett (*University of Houston*); Majd, Sheereen\* (*University of Houston*)

18:00-19:30 WePOS-14.3  
**Requirements for Documenting Electrical Cell Stimulation Experiments for Replicability and Numerical Modeling** ..... 1082-1088  
 Budde, Kai\* (*University of Rostock*); Zimmermann, Julius (*University of Rostock*); Neuhaus, Elisa (*University of Rostock*); Schröder, Max (*University of Rostock*); Uhrmacher, Adelinde (*Institute of Computer Science, University of Rostock*); van Rienen, Ursula (*University of Rostock*)

18:00-19:30 WePOS-14.4  
**Azopolymer based Nanoparticles for Phototriggered Drug Delivery** ..... 1089-1092  
 Perez-Buitrago, Sandra\* (*Pontificia Universidad Católica del Perú*); Mena-Giraldo, Pedro (*Max Planck Tandem Group in Nanobioengineering, Universidad de An*); Pinal, Rodolfo (*Industrial & Physical Pharmacy Dept., Purdue University*); Hoyos, Lina M. (*Universidad Pontificia Bolivariana*)

18:00-19:30 WePOS-14.5  
**Biocompatibility and Thermodynamic Properties of PEGDA and Two of Its Co-Polymers** ..... 1093-1096  
 Rekowska, Natalia\* (*Rostock University Medical Centre*); Arbeiter, Daniela (*Rostock University Medical Centre*); Brietzke, Andreas (*Rostock University Medical Centre*); Konasch, Jan (*Rostock University*); Riess, Alexander (*University of Rostock*); Mau, Robert (*Rostock University*); Eickner, Thomas (*Rostock University Medical Centre*); Seitz, Hermann (*University of Rostock*); Grabow, Niels (*Rostock University Medical Centre*); Teske, Michael (*Rostock University Medical Centre*)

18:00-19:30 WePOS-14.6  
**Investigation of Bifurcation Effect on Various Microfluidic Designs for Blood Separation** ..... 1097-1100  
 Hamad, Eyad\* (*German Jordanian University*); Sawalmeh, Basil (*German Jordanian University*); Al Mhawsh, Abdulrahman (*German Jordan University*); Mansour, Maher (*German Jordan University*); Awad, Mohamad (*German Jordan University*); Al-Halhouli, Alaaldeen (*German Jordan University*); Al-Gharabli, Samer (*Pharmaceutical & Chemical Engineering Dept., German Jorda*)

18:00-19:30 WePOS-14.7  
**Mechanical Properties of Double Network Poly (Acrylic Acid) based Hydrogels for Potential use as a Biomaterial** ..... 1101-1104  
 Udayanandana, Ruwan\* (*University of Moratuwa*); Silva, Pujitha (*University of Moratuwa, Kairos Sensing*); Mudiyansele, Thilini Kuruwita (*University of Sri Jayewardenepura*)

18:00-19:30 WePOS-14.8  
**Long-Term Safety of the Carbon Fiber as an Implant Scaffold Material** ..... 1105-1110  
 Baba, Kazutomo\* (*University of Tsukuba*); Mikhailov, Andrey (*University of Tsukuba*); Sankai, Yoshiyuki (*University of Tsukuba*)

18:00-19:30 WePOS-14.9  
**EEG-Hat with Candle-Like Microneedle Electrode** ..... 1111-1114  
 Kawana, Takumi\* (*Keio University*); Yoshida, Yuri (*Keio University*); Kudo, Yuta (*Keio University*); Miki, Norihisa (*University*)

**Bio-Electric Sensor Systems – Poster (Poster Session)**

- 18:00-19:30 WePOS-15.1  
**Portable Device based on Microwave Resonator for Noninvasive Blood Glucose Monitoring** ..... 1115-1118  
 Garcia Martinez, Hector (*Miguel Hernández University of Elche*); Juan, Carlos G.\* (*Miguel Hernandez University*); Avila-Navarro, Ernesto (*Miguel Hernandez University*); Bronchalo, Enrique (*Miguel Hernandez University*); Sabater-Navarro, Jose Maria (*Universidad Miguel Hernandez*)
- 18:00-19:30 WePOS-15.2  
**Sensitivity Enhancement of Point-of-Care for Cardiac Markers Detection using Micro-Impedimetric Immunosensor Arrays** ..... 1119-1122  
 Hamad, Eyad\* (*German Jordanian University*); Al-Gharabli, Samer (*Pharmaceutical & Chemical Engineering Dept., German Jorda*); McLaughlin, James (*University of Ulster*)
- 18:00-19:30 WePOS-15.3  
**The Optimization of Analog Front-End for Fully Integrated Wearable Sweat Sensor** ..... 1123-1126  
 Kim, Ikhwan (*Fudan University*); Jin, Han (*Fudan University*); Jiang, Yizhou (*Fudan University*); Qin, Yajie\* (*Fudan University*)
- 18:00-19:30 WePOS-15.4  
**Monitoring and Modulating the Gastrointestinal Activity: A Wirelessly Programmable System with Impedance Measurement Capability** ..... 1127-1130  
 Javan-Khoshkholgh, Amir (*New York Institute of Technology*); Kang, Qi (*New York Institute of Technology*); Abumahfouz, Nadi (*New York Institute of Technology*); Farajidavar, Aydin\* (*New York Institute of Technology*)
- 18:00-19:30 WePOS-15.5  
**Development of a Biosensor based on Graphene for Detection of Physiological Signals** ..... 1131-1134  
 Zi, Xingyu (*Northeastern University*); Xie, Liping (*Northeastern University*); Meng, Qingshi (*Shenyang Aerospace University*); Liu, Zhiwen (*Shenyang Aerospace University*); Xu, Lisheng\* (*Northeastern University*)
- 18:00-19:30 WePOS-15.6  
**Design and Characterisation of a Graphene-Based FET for Ultrasensitive Detection of Clinical Biomarkers** ..... 1135-1138  
 Santos, Simão (*University Southeast Norway*); Yang, Shuai (*Congqing Technology & Business University*); Pires, Nuno M. M. (*University of Southeast Norway and Institute of Applied Micr*); Yang, Zhaochu (*University of Southeast Norway*); Dong, Tao\* (*University Southeast Norway – HSN, TekMar*)
- 18:00-19:30 WePOS-15.7  
**Optical Fiber Sensors for Monitoring in Critical Care** ..... 1139-1143  
 Morgan, Stephen Peter\* (*University of Nottingham*); Korposh, Serhiy (*University of Nottingham*); Liu, LiangLiang (*University of Nottingham*); Hernandez, Francisco Ulises (*University of Nottingham*); Correia, Ricardo (*University of Nottingham*); Norris, Andrew (*Nottingham University Hospitals Trust*); Sinha, Rishie (*Nottingham University Hospitals Trust*); Hayes-Gill, Barrie (*University of Nottingham*); Piletsky, Sergey (*University of Leicester*); Canfarotta, Francesco (*MIP Diagnostics*); Piletska, Elena (*University of Leicester*); Grillo, Fabiana (*University of Leicester*)
- 18:00-19:30 WePOS-15.8  
**Continuous ECG Monitoring Trial for Outpatient – Patient Receptiveness and Signal Accuracy** ..... 1144-1148  
 Wong, David Liang Tai (*National University of Singapore*); Sathappan, Selva Muthu Kumaran (*NUS*); Yu, Jufeng (*National University of Singapore*); Heng, Chun Huat (*National University of Singapore*); Kojodjojo, Pipin (*National University Hospital*); Feng, Mengling\* (*Massachusetts Institute of Technology*)
- 18:00-19:30 WePOS-15.9  
**A Simple and Stable Load Control Algorithm for Time-Varying Harvested Energy in Miniaturized Implantable Devices** ..... 1149-1154  
 Bae, ChiSung\* (*Samsung Advanced Institute of Technology*)



18:00-19:30 WePOS-15.10  
**Non-Contact Capacitive Ballistocardiogram Measurements using In-Bed Fabric Sheet Electrode for Blood Pressure Estimation** ..... 1155-1158  
Sakajiri, Yuichiro\* (*Tokyo Denki University*); Nakamura, Hajime (*Tokyo Denki University*); Ueno, Akinori (*Tokyo Denki University*)

WePOS-16: 18:00-19:30 Hall B  
**Chemical and Biological Sensors – Poster (Poster Session)**

18:00-19:30 WePOS-16.1  
**A Biosensor for the Detection of Acetylcholine and Diazinon** ..... 1159-1162  
Herrera, Elisa G (*University of Pisa, Dept. of Chemistry & Industrial Chemis*); Bonini, Andrea (*University of Pisa, Dept. of Chemistry & Industrial Chemi*); Vivaldi, Federico (*University of Pisa, Dept. of Chemistry & Industrial Chemis*); Melai, Bernardo (*Dept. of Chemistry & Industrial Chemistry, University of*); Salvo, Pietro\* (*National Research Council*); Poma, Noemi (*University of Pisa, Dept. of Chemistry & Industrial Chemis*); Santalucia, Delio (*University of Pisa, Dept. of Chemistry & Industrial Chemis*); Kirchhain, Arno (*University of Pisa, Dept. of Chemistry & Industrial Chemis*); Di Francesco, Fabio (*University of Pisa*)

18:00-19:30 WePOS-16.2  
**A Single-Chain Templated Polymer-Based Target Receptor as a New Platform for Label-Free Selective Electrochemical Sensing** ..... 1163-1166  
Dutta, Gaurab (*University of New Hampshire*); Yang, Rongfang (*University of New Hampshire*); Ahmad, Habib (*University of New Hampshire*); Si, Bo (*University of New Hampshire*); Csoros, John (*University of New Hampshire*); Ren, Tianyu (*University of New Hampshire*); Halpern, Jeffrey (*University of New Hampshire*); Seitz, W. Rudolf (*University of New Hampshire*); Song, Edward\* (*University of New Hampshire*)

18:00-19:30 WePOS-16.3  
**A Hybrid Glucose Fuel Cell based on Electrodeposited Carbon Nanotubes and Platinized Carbon** ..... 1167-1170  
Slaughter, Gymama\* (*University of Maryland Baltimore County*); Kulkarni, Tanmay (*University of Maryland Baltimore County*)

18:00-19:30 WePOS-16.4  
**Computational Evaluation of Suspended Microcantilever and Microfluidic Channel** ..... 1171-1174  
Gavalas, Iakovos (*Unit of Medical Technology & Intelligent Information Systems,*); Fotiadis, Dimitrios I.\* (*University of Ioannina*)

18:00-19:30 WePOS-16.5  
**Low Cost Wavelength Specific Water Quality Measurement Technique** ..... 1175-1178  
Nayeem, Huzaifa (*International Institute of Information Technology, Hyderabad*); Syed, Azeemuddin\* (*International Institute of Information & Technology, Hyderabad*); Mohammed, Zafar Ali Khan (*Indian Institute of Technology Hyderabad*)

18:00-19:30 WePOS-16.6  
**Non-Invasive Blood Glucose Sensor: A Feasibility Study** ..... 1179-1182  
Lopez Albalat, Alvaro (*Universitat Politècnica de València*); Sanz Alaman, Maria Begoña (*Universitat Politècnica de València*); Dejoz Diez, Maria Cristina (*Universitat Politècnica de València*); Martinez-Millana, Antonio\* (*Universitat Politècnica de València*); Traver, Vicente (*ITACA – Universitat Politècnica de València*)

18:00-19:30 WePOS-16.7  
**Dielectric Permittivity of Human Blood of Different Lactate Levels Measured at Millimeter Waves** ..... 1183-1186  
Koutsoupidou, Maria (*King's College London*); Cano-Garcia, Helena\* (*King's College London, Medical Wireless Sensing Ltd.*); Pricci, Roberto L. (*MediWise, Medical Wireless Sensing Ltd.*); Saha, Shimul C. (*MediWise, Medical Wireless Sensing Ltd.*); Rana, Srinivas (*King's College London*); Ancu, Oana (*Institute of life Sciences, Roehampton University*); Draicchio, Fulvia (*Institute of life Sciences, Roehampton University*); Mackenzie, Richard (*Institute of life Sciences, Roehampton University*); Kosmas, Panagiotis (*Kings College London*); Kallos, Efthymios (*MediWise, Medical Wireless Sensing Ltd.*)

**Instrumentation for Physiological Monitoring – Poster (Poster Session)**

- 18:00-19:30 WePOS-17.1  
**Wireless Low-Cost Bioimpedance Measurement Device for Lung Capacity Screening** ..... 1187-1190  
 Pino, Esteban J\* (*Universidad de Concepcion*); Gomez, Britam (*University of Concepcion*); Monsalve, Emyrna (*Universidad de Concepción*); Aqueveque, Pablo (*University of Concepcion*)
- 18:00-19:30 WePOS-17.2  
**Application of Signed Distance Function Neural Network in Real-Time Feet Tracking** ..... 1191-1196  
 Foo, Ming Jeat\* (*Nanyang Technological University*); Tiseo, Carlo (*University of Edinburgh*); Ang, Wei Tech (*Nanyang Technological University*)
- 18:00-19:30 WePOS-17.3  
**Pitfall of Heart Rate Variability Analyses for Autonomic Nervous System Activity with Photoplethysmography** ..... 1197-1200  
 Nakamura, Hideo\* (*Osaka Electro-Communication Univ*); Tagawa, Munenori (*Osaka electro-communication University*)
- 18:00-19:30 WePOS-17.4  
**Emotion Classification in Response to Tactile Enhanced Multimedia using Frequency Domain Features of Brain Signals** ..... 1201-1204  
 Raheel, Aasim (*University of Engineering & Technology Taxila*); Majid, Muhammad (*University of Engineering & Technology, Taxila*); Anwar, Syed\* (*University of Central Florida*); Bagci, Ulas (*University of Central Florida*)
- 18:00-19:30 WePOS-17.5  
**In Vitro Quantification of Lactate in Phosphate Buffer Saline (PBS) Samples** ..... 1205-1208  
 Budidha, Karthik\* (*City, University of London*); Mamouei, MohammadHosseini (*City, University of London*); Baishya, Nystha (*City, University of London*); Vadgama, Pankaj (*Queen Mary University of London*); Kyriacou, Panayiotis (*City University London*)
- 18:00-19:30 WePOS-17.6  
**EEG-Based Emotion Recognition with Similarity Learning Network** ..... 1209-1212  
 Wang, Yixin (*Institute of Automation, Chinese Academy of Science*); Qiu, Shuang (*Institute of Automation, Chinese Academy of Science*); Li, Jinpeng (*Research Center for Brain-inspired Intelligence, Institute of Au*); Ma, Xuelin (*Institute of Automation, Chinese Academy of Sciences*); Liang, Zhiyue (*Capital Normal University*); Li, Hui (*Dept. of Educational technology, Capital Normal University*); He, Huiguang\* (*Institute of Automation, Chinese Academy of Sciences*)
- 18:00-19:30 WePOS-17.7  
**UKF Magnetometer-Free Sensor Fusion for Pelvis Pose Estimation during Treadmill Walking** ..... 1213-1216  
 Cardarelli, Stefano\* (*Università Politecnica delle Marche*); Mengarelli, Alessandro (*Università Politecnica delle Marche*); Tigrini, Andrea (*Università Politecnica delle Marche*); Strazza, Annachiara (*Università Politecnica delle Marche*); Di Nardo, Francesco (*Polytechnic University of Marche*); Verdini, Federica (*Università Politecnica delle Marche*); Fioretti, Sandro (*Università Politecnica delle Marche*)
- 18:00-19:30 WePOS-17.8  
**A Wearable RF Sensor for Monitoring Respiratory Patterns** ..... 1217-1223  
 Sharma, Pragma\* (*Cornell University*); Hui, Xiaonan (*Cornell University*); Kan, Edwin (*Cornell University*)

**Modeling and Analysis in Sensors and Wearable Systems – Poster (Poster Session)**

- 18:00-19:30 WePOS-18.1  
**Wearable-Based Temporal Parameters of Gait in Circuitous Routes under Dual-Task Conditions** ..... 1224-1227  
 Caramia, Carlotta (*Roma Tre University*); Bibbo, Daniele (*Università degli Studi Roma TRE*); D'Anna, Carmen (*Roma TRE University – Engineering Dept.*); De Marchis, Cristiano (*Università degli Studi Roma Tre*); Ranaldi, Simone (*Roma Tre University*); Varrecchia, Tiwana (*Roma Tre University*); Conforto, Silvia (*University Roma TRE*); Schmid, Maurizio\* (*Roma Tre University*)

18:00-19:30	WePOS-18.2
<b>A Pilot Study on Continuous Breaststroke Phase Recognition with Fast Training based on Lower-Limb Inertial Signals</b> .....	1228-1232
Zheng, Enhao* ( <i>Institute of Automation, Chinese Academy of Sciences</i> ); Zhang, Zhendong ( <i>Peking University</i> ); Mai, Jingeng ( <i>Peking University</i> ); Wang, Qining ( <i>Peking University</i> ); Qiao, Hong ( <i>Institute of Automation, Chinese Academy of Sciences</i> )	
18:00-19:30	WePOS-18.3
<b>Magnetometer-Free Realtime Inertial Motion Tracking by Exploitation of Kinematic Constraints in 2-DoF Joints</b> .....	1233-1238
Laidig, Daniel* ( <i>TU Berlin</i> ); Lehmann, Dustin ( <i>TU Berlin</i> ); Begin, Marc-Andre ( <i>Sherbrooke University</i> ); Seel, Thomas ( <i>Technische Universität Berlin</i> )	
18:00-19:30	WePOS-18.4
<b>Turning the Finger into a Writing Tool</b> .....	1239-1242
Sakuma, Katsuyuki* ( <i>IBM T.J. Watson Research Center</i> ); Blumrosen, Gaddi ( <i>Hebrew University</i> ); Rice, John J ( <i>IBM T.J. Watson Research Center</i> ); Rogers, Jeff ( <i>IBM T.J. Watson Research Center</i> ); Knickerbocker, John ( <i>IBM T.J. Watson Research Center</i> )	
18:00-19:30	WePOS-18.5
<b>Hierarchical Classification Scheme for Real-Time Recognition of Physical Activities and Postural Transitions using Smartphone Inertial Sensors</b> .....	1243-1246
Talha, Sid Ahmed Walid* ( <i>IMT Lille Douai</i> ); Fleury, Anthony ( <i>IMT Lille Douai</i> ); Lecoeuche, Stéphane ( <i>IMT Lille Douai</i> )	
18:00-19:30	WePOS-18.6
<b>Classification of Perceived Human Stress using Physiological Signals</b> .....	1247-1250
Arsalan, Aamir ( <i>University of Engineering &amp; Technology, Taxila</i> ); Majid, Muhammad ( <i>University of Engineering &amp; Technology, Taxila</i> ); Anwar, Syed* ( <i>University of Central Florida</i> ); Bagci, Ulas ( <i>University of Central Florida</i> )	
18:00-19:30	WePOS-18.7
<b>Physical Activity based Classification of Serious Mental Illness Group Participants in the UK Biobank using Ensemble Dense Neural Networks</b> .....	1251-1254
Zebin, Tahmina ( <i>University of Manchester</i> ); Peek, Niels ( <i>University of Manchester</i> ); Casson, Alexander James* ( <i>The University of Manchester</i> )	
18:00-19:30	WePOS-18.8
<b>Exploring Cortex Connectivity Signal in Sensory Response to Odors</b> .....	1255-1258
Zhang, Zhuo ( <i>A*STAR</i> ); Zhang, Haihong ( <i>Institute for Infocomm Research</i> ); Zhang, Lu ( <i>Procter &amp; Gamble International Operations SA SG Branch</i> ); Guan, Cuntai* ( <i>Nanyang Technological University</i> )	

WePOS-19: 18:00-19:30	Hall B
<b>New Sensing Technologies – Poster (Poster Session)</b>	

18:00-19:30	WePOS-19.1
<b>Improved Acquisition of Vibroarthrographic Signals of the Knee Joint</b> .....	1259-1262
Klemm, Lisa ( <i>Otto-von-Guericke University</i> ); Sühn, Thomas* ( <i>Otto-von-Guericke-University of Magdeburg</i> ); Spiller, Moritz ( <i>Otto-von-Guericke University Magdeburg</i> ); Illanes, Alfredo ( <i>Otto-von-Guericke University of Magdeburg</i> ); Boese, Axel ( <i>Dept. of Medical Engineering, Otto-von-Guericke-University</i> ); Friebe, Michael ( <i>Otto-von-Guericke-University</i> )	
18:00-19:30	WePOS-19.2
<b>Comparison of Silence Removal Methods for the Identification of Audio Cough Events</b> .....	1263-1268
Cohen-McFarlane, Madison* ( <i>Carleton University</i> ); Goubran, Rafik A. ( <i>Carleton University</i> ); Knoefel, Frank-Dietrich ( <i>Bruyere Continuing Care, University of Ottawa, Carleton Universi</i> )	

18:00-19:30	WePOS-19.3
<b>A Wearable Daily Respiration Monitoring System using PDMS-Graphene Compound Tensile Sensor for Adult</b> .....	1269-1273
Chen, Hongyu ( <i>Technische Universiteit Eindhoven – TU/e</i> ); Bao, Shenjie ( <i>Fudan University</i> ); Ma, Jianhua ( <i>Molecular Engineering of Polymers, Dept. of Macromolecular</i> ); Peng, Wang ( <i>Molecular Engineering of Polymers, Dept. of Macromolecular</i> ); Hongbin, Lu ( <i>Molecular Engineering of Polymers, Dept. of Macromolecular</i> ); Bambang Oetomo, Sidarto ( <i>Máxima Medical Center</i> ); Chen, Wei* ( <i>Fudan University</i> )	
18:00-19:30	WePOS-19.4
<b>Respiratory Signal of Bathing Person – Preliminary Study</b> .....	1274-1277
Bujnowski, Adam* ( <i>Gdansk University of Technology</i> ); Osiński, Kamil ( <i>Gdansk University of Technology</i> ); Przystup, Piotr ( <i>Gdansk University of Technology</i> ); Wtorek, Jerzy ( <i>Gdansk University of Technology</i> )	
18:00-19:30	WePOS-19.5
<b>Balanced Adjustable Mirrored Current Source with Common Mode Feedback and Output Measurement for Bioimpedance Applications</b> .....	1278-1281
Klum, Michael* ( <i>Technische Universität Berlin</i> ); Schmidt, Malte ( <i>Technische Universität Berlin</i> ); Klapproth, Joel ( <i>Technische Universität Berlin</i> ); Pielmus, Alexandru Gabriel ( <i>Technische Universität Berlin</i> ); Tigges, Timo ( <i>Technical University Berlin</i> ); Orglmeister, Reinhold ( <i>Technische Universität Berlin</i> )	
18:00-19:30	WePOS-19.6
<b>Stretchability Enhancement of Electronics According to Three Shapes of Substrate Fabricated by Thermal Reflow Process</b> .....	1282-1285
Lee, Ho Jin* ( <i>Seoul National University</i> ); Seo, Min-won ( <i>Seoul National University</i> ); Yi, Jungho ( <i>Seoul National University</i> ); Seo, Jong Mo ( <i>Seoul National University, School of Engineering</i> )	
18:00-19:30	WePOS-19.7
<b>Electrode Design on Plastic Substrates using Laser Patterned Double-Sided Tape and Gold Leaf</b> .....	1286-1289
Jeong, Hyunbeen* ( <i>Seoul National University</i> ); Seo, Jong Mo ( <i>Seoul National University, School of Engineering</i> )	
18:00-19:30	WePOS-19.8
<b>Nightingale V2: Low-Power Compact-Sized Multi-Sensor Platform for Wearable Health Monitoring</b> .....	1290-1293
Lee, Seulki* ( <i>imec</i> ); Grundlehner, Bernard ( <i>Holst Centre</i> ); Garcia Van der Westen, Roberto ( <i>imec / Holst Centre</i> ); Polito, Salvatore ( <i>Holst Centre/imec</i> ); Van Hoof, Chris ( <i>imec</i> )	
18:00-19:30	WePOS-19.9
<b>Wireless Sensor Platform for Detection of Vital Parameters of Bats</b> .....	1294-1297
Duda, Niklas* ( <i>Friedrich-Alexander-University Erlangen-Nuremberg</i> ); Ripperger, Simon ( <i>Museum fuer Naturkunde – Leibniz Institute for Evolution &amp; Bio</i> ); Tschapka, Marco ( <i>University of Ulm, Institute of Evolutionary Ecology &amp; Conserv</i> ); Mayer, Frieder ( <i>Museum fuer Naturkunde – Leibniz Institute for Evolution &amp; Bio</i> ); Weigel, Robert ( <i>University of Erlangen Nuremberg</i> ); Koelpin, Alexander ( <i>Chair for Electronics &amp; Sensor Systems, Brandenburg University</i> )	
18:00-19:30	WePOS-19.10
<b>Development of an Electrostatic Oral Cavity Generator Driven by Occlusal Force</b> .....	1298-1301
Ichikawa, Kenta* ( <i>Tokyo Institute of Technology</i> ); Hijikata, Wataru ( <i>Tokyo Institute of Technology</i> )	

WePOS-20: 18:00-19:30	Hall B
<b>Assistive Technologies for Aging, Rehabilitation, and Disabilities – Poster</b> (Poster Session)	

18:00-19:30	WePOS-20.1
<b>Improving Accessibility for People with Disabilities: A Case Study on Inclusive Beach Tourism</b> .....	1302-1305
Mayordomo-Martínez, Diego ( <i>Technical University of Cartagena</i> ); Sánchez-Aarnoutse, Juan-Carlos ( <i>Technical University of Cartagena</i> ); Merzoukid, Khalil ( <i>Technical University of Cartagena</i> ); García-Hernández, Manuel ( <i>FAMDIF</i> ); Carrillo de Gea, Juan Manuel* ( <i>University of Murcia</i> ); García-Berná, José Alberto ( <i>University of Murcia</i> ); Fernandez Aleman, Jose Luis ( <i>University of Murcia</i> ); Idri, Ali ( <i>Mohammed V University Rabat</i> ); García-Mateos, Ginés ( <i>University of Murcia</i> )	

18:00-19:30 WePOS-20.2  
**A Multiscript Gaze-Based Assistive Virtual Keyboard** ..... 1306-1309  
Cecotti, Hubert\* (*California State University Fresno*); Meena, Yogesh Kumar (*Ulster University*); Bhushan, Braj  
(*IIT Kanpur*); Dutta, Ashish (*Indian Institute of Technology Kanpur*); Prasad, Girijesh (*University of Ulster*)

18:00-19:30 WePOS-20.3  
**Eye Gaze-Based Early Intent Prediction Utilizing CNN-LSTM** ..... 1310-1313  
Koochaki, Fatemeh (*Rutgers University*); Najafizadeh, Laleh\* (*Rutgers University*)

18:00-19:30 WePOS-20.4  
**Evaluation of a Mental Care System for Patients Recuperating in a Sterile Room after Hematopoietic Cell Transplantation** ..... 1314-1317  
Joko, Shiho\* (*Graduate School of Robotics & Design, Osaka Institute of Techno*); Ohsuga, Mieko (*Osaka Institute of Technology*); Tada, Yuma (*Dept. of Hematology, Osaka International Cancer Institute*); Ishihara, Jun (*Dept. of Hematology, Osaka International Cancer Institute*)

WePOS-21: 18:00-19:30 Hall B  
**Behavioral Health Informatics – Poster (Poster Session)**

18:00-19:30 WePOS-21.1  
**Effect and Safety Evaluation of XETHRU X4 Radar Radiation on Sexual Hormone Levels in Mice** ..... 1318-1320  
Yaolei, Zhang (*Center Laboratory, The General Hospital of Western Theater Comma*); Xin, Guo (*Center Laboratory, The General Hospital of Western Theater Comma*); Ting, Li (*Center Laboratory, The General Hospital of Western Theater Comma*); Zhang, Ming (*Center Laboratory, The General Hospital of Western Theater Comma*); Feng, yaxing (*Center Laboratory, The General Hospital of Western Theater Comma*); Li, Wei (*Center Laboratory, The General Hospital of Western Theater Comma*); Zhu, Xiaoyan (*Center Laboratory, The General Hospital of Western Theater Comma*); Gu, Rui (*Center Laboratory, The General Hospital of Western Theater Comma*); Zhou, Longfu\* (*The General Hospital of Western Theater Command*)

18:00-19:30 WePOS-21.2  
**A Sensor-Enabled Digital Trier Social Stress Test in an Enterprise Context** ..... 1321-1325  
Gavas, Rahul (*TCS Research & Innovation, Tata Consultancy Services Ltd.*); Das, Deepan (*TATA Consultancy Services*); Bhattacharjee, Tanuka (*Research & Innovation, TATA Consultancy Services, India*); Basaralu Sheshachala, Mithun (*Tata Consultancy Services*); Kumar Hissaria, Lalit (*Manhattan Associates*); Vempada, Ramu Reddy (*TCS Research & Innovation Lab*); Viraraghavan, Venkata Subramanian\* (*Tata Consultancy Services Limited*); Dutta Choudhury, Anirban (*Tata Consultancy Services Ltd.*); Muralidharan, Kartik (*Tata Consultancy Services Limited*); Ramakrishnan, Ramesh Kumar (*TATA Consultancy Services*); P, Balamuralidhar (*TATA Consultancy Services*); Pal, Arpan (*Tata Consultancy Services*)

18:00-19:30 WePOS-21.3  
**An Unobtrusive Stress Recognition System for the Smart Office** ..... 1326-1329  
Yu, Bin\* (*Eindhoven University of Technology*); Zhang, Biyong (*BOBO Technology Ltd.*); An, Pengcheng (*Eindhoven University of Technology*); Xu, Lisheng (*Northeastern University*); Xue, Mengru (*Eindhoven University of Technology*); Hu, Jun (*Eindhoven University of Technology*)

18:00-19:30 WePOS-21.4  
**Multiple-Instance Learning for Sparse Behavior Modeling from Wearables: Toward Dementia-Related Agitation Prediction** ..... 1330-1333  
Alam, Ridwan\* (*University of Virginia*); Bankole, Azziza (*Virginia Tech Carilion School of Medicine*); Anderson, Martha (*Virginia Tech Carilion School of Medicine*); Lach, John (*University of Virginia*)

18:00-19:30 WePOS-21.5  
**Portable, Low Cost Smartphone-Based Potentiostat System for the Salivary  $\alpha$ -Amylase Detection in Stress Paradigm** ..... 1334-1337  
Ma, Lei (*Nantong University*); Ju, Feng (*Nantong University*); Tao, Chunling (*Nantong University*); Shen, Xiaoyan\* (*Nantong University*)

18:00-19:30 WePOS-21.6  
**Cluster Analysis of Alcohol Consumption during Pregnancy in the Safe Passage Study** ..... 1338-1341  
 Pini, Nicolò\* (*Politecnico di Milano*); Shuffrey, Lauren C. (*Columbia University Medical Center*); Lucchini, Maristella (*Politecnico di Milano*); Sania, Ayesha (*Dept. of Psychiatry & Pediatrics, Columbia University Col*); Nelson, Morgan (*Avera Research Institute*); Nugent, J. David (*New York State Psychiatric Institute, Teachers College, Columbia*); Ochoa, Timothy (*New York State Psychiatric Institute*); Odendaal, Hein (*Stellenbosch University*); Fifer, William P. (*Dept. of Psychiatry & Pediatrics, Columbia University Col*); Myers, Michael (*Columbia University Medical Center*); Elliott, Amy (*Avera Research Institute*)

WePOS-22: 18:00-19:30 Hall B  
**Bioinformatics – Poster** (Poster Session)

18:00-19:30 WePOS-22.1  
**The "Prisoner's Dilemma" in the Tumor Biology Context: The Warburg Effect, Proliferation Dynamics and Equilibria** ..... 1342-1345  
 Lambrou, George I. (*National & Kapodistrian University of Athens*); Sarafidis, Michail\* (*National Technical University of Athens*); Bizopoulos, Paschalis (*National Technical University of Athens*); Iliopoulou, Dimitra (*National Technical University of Athens*); Paidi, Anna (*National Technical University of Athens*); Koutsouris, Dimitrios (*Biomedical Engineering Laboratory, School of Electrical & Comp*)

18:00-19:30 WePOS-22.2  
**Bioinformatics Analysis Reveals Ki-67 Specific microRNA Functions in Pediatric Embryonal Tumors** ... 1346-1349  
 Braoudaki, Maria (*National & Kapodistrian University of Athens, First Dept.*); Sarafidis, Michail\* (*National Technical University of Athens*); Koutsouris, Dimitrios (*Biomedical Engineering Laboratory, School of Electrical & Comp*); Koutsouri, Georgia (*Biomedical Engineering Laboratory, National Technical University*); Lambrou, George I. (*National & Kapodistrian University of Athens*)

18:00-19:30 WePOS-22.3  
**Multi-Omic Pathway and Network Analysis to Identify Biomarkers for Hepatocellular Carcinoma** ..... 1350-1354  
 Barefoot, Megan (*Georgetown University Medical Center*); Varghese, Rency (*Georgetown University Medical Center*); Zhou, Yuan (*Georgetown University*); Di Poto, Cristina (*Georgetown University*); Ferrarini, Alessia (*Georgetown University*); Resson, Habtom\* (*Georgetown University*)

18:00-19:30 WePOS-22.4  
**Protein Subcellular Localization Prediction based on Internal Micro-Similarities of Markov Chains** ..... 1355-1358  
 Alaa, Asem\* (*Cairo University, Faculty of Engineering*); Eldeib, Ayman M. (*Cairo University*); Metwally, Ahmed (*Stanford University*)

WePOS-23: 18:00-19:30 Hall B  
**Clinical Information and Decision Support Methods and Systems – Poster** (Poster Session)

18:00-19:30 WePOS-23.1  
**Characterization of Physicians Workload in a Reference Center for the Treatment of Thrombotic and Bleeding Disorders** ..... 1359-1362  
 Rosati, Samanta (*Politecnico di Torino*); Valeri, Federica (*Città della Salute e della Scienza di Torino*); Borchiellini, Alessandra (*Città della Salute e della Scienza di Torino*); Gianfreda, Claudia Maria (*Politecnico di Torino*); Balestra, Gabriella\* (*Politecnico di Torino*)

18:00-19:30 WePOS-23.2  
**Nutrition Adherence in Critically Ill Patients; How is Nutritional Intake within the 1st Week of Hospitalization Affecting the Patient's Outcome?** ..... 1363-1366  
 Chytas, Achilleas (*Lab of Medical Informatics, Medical School, Aristotle University*); Vaporidi, Katerina (*Medical School, University of Crete*); Soundoulounaki, Stella (*Medical School, University of Crete*); Georgopoulos, Dimitris (*Dept. of Intensive Care Medicine, University Hospital of He*); Maglaveras, Nikolaos (*Aristotle University of Thessaloniki*); Chouvarda, Ioanna\* (*Aristotle University*)

18:00-19:30 WePOS-23.3  
**Using Ensemble Classification Methods in Lung Cancer Disease** ..... 1367-1370  
 Hosni, Mohamed (*ENSIAS, Mohammed V University*); Carrillo de Gea, Juan Manuel\* (*University of Murcia*); Idri, Ali (*Mohammed V University Rabat*); Fernandez Aleman, Jose Luis (*University of Murcia*); García-Berná, José Alberto (*University of Murcia*)

- 18:00-19:30 WePOS-23.4  
**An Accurate Data Preparation Approach for the Prediction of Mortality in ACLF Patients using the CANONIC Dataset** ..... 1371-1377  
 Sanchez Garcia, Moises Noe\* (*IBM*); Doyle, Gordon (*IBM*); Ranco, Gabriele (*IBM*); Agarwal, Banwari (*Royal Free Hospital*); Arroyo, Vicente (*EF Clif*); Saliba, Faouzi (*Hospital paul Brousse*); Garcia Lopez, Elisabet (*EFClif*); Pavesi, Marco (*European Foundation for the study of Chronic Liver Failure (EF-C)*); Jalan, Rajiv (*UCL*); Fernandez, Javier (*Liver ICU, Hospital Clinic Barcelona, Catalonia*); Bañares, Rafael (*Hospital General Universitario Gregorio Marañón*); Mookerjee, Rajeshwar Prasad (*University College London*)
- 18:00-19:30 WePOS-23.5  
**Detection of Abnormal Segments in Finger Tapping Waveform using One-Class SVM** ..... 1378-1381  
 Sano, Yuko\* (*Hitachi Co. Ltd.*); Yin, Ying (*Hitachi China R&D*); Mizuguchi, Tomohiko (*Maxell, Ltd.*); Kandori, Akihiko (*Hitachi Ltd.*)
- 18:00-19:30 WePOS-23.6  
**KardiaSoft Architecture – A Software Supporting Diagnosis and Therapy Monitoring of Heart Failure Patients Exploiting Saliva Biomarkers** ..... 1382-1385  
 Tripoliti, Evanthia (*University of Ioannina*); Ioannidou, Pinelopi (*Dept. of Biomedical Research, Institute of Molecular Biolog*); Toumpaniaris, Petros (*National Technical University of Athens*); Bechlioulis, Aris (*Michaelidion Cardiac Center, University of Ioannina, & 2nd Dep*); Rammos, Aidonis (*2nd Dept. of Cardiology, University of Ioannina*); Gallagher, Joseph (*University College Dublin, National University of Ireland, Belfi*); Salvo, Pietro (*National Research Council*); Goletsis, Yorgos (*University of Ioannina*); Naka, Katerina (*University of Ioannina*); Abdelhamid, Errachid (*Université de Lyon, Institut de Sciences Analytiques (ISA)*); Fotiadis, Dimitrios I.\* (*University of Ioannina*)
- 18:00-19:30 WePOS-23.7  
**Using Machine Learning Models to Classify Stroke Risk Level based on National Screening Data** ..... 1386-1390  
 Li, XueMeng (*Academy of Military Medical Sciences*); Bian, Di (*Xi'an University of Science & Technology*); Yu, Jinghui (*Academy of Military Medical Sciences*); Mao, Huajian (*Academy of Military Medical Sciences of Chinese PLA*); Li, Mei (*China Stroke Data Center*); Zhao, Dongsheng\* (*Institute of Health Service & Medical Information, Academy of*)
- 18:00-19:30 WePOS-23.8  
**Development of Objective Evidence in Rorschach Ink Blot Test: An Eye Tracking Study** ..... 1391-1394  
 Roy, Anup Kumar\* (*IIT Kharagpur*); Nasreen, Shazia (*IIT Kharagpur*); Majumder, Debabrata (*IIT Kharagpur*); Mahadevappa, Manjunatha (*Indian Institute of Technology Kharagpur*); Guha, Rajlakshmi (*IIT Kharagpur*); Mukhopadhyay, Jayanta (*Dept. of Computer Science & Engineering, IIT Kharagpur*)
- 18:00-19:30 WePOS-23.9  
**SmartHypnos: Developing a Toolbox for Polysomnographic Data Visualization and Analysis** ..... 1395-1398  
 Chriskos, Panteleimon\* (*Aristotle University of Thessaloniki*); Frantzidis, Christos (*Aristotle University of Thessaloniki*); Gkivogkli, Polyxeni (*Aristotle University of Thessaloniki*); Papanastasiou, Emmanouil (*Aristotle University of Thessaloniki*); Kourtidou-Papadeli, Chrysoula (*Greek Aerospace Medical Association*); Bamidis, Panagiotis (*Aristotle University*)
- 18:00-19:30 WePOS-23.10  
**Architecture for a Multimodal and Domain-Independent Clinical Decision Support System Software Development Kit** ..... 1399-1404  
 Muro, Naiara\* (*Vicomtech*); Larburu, Nekane (*Vicomtech*); Torres, Jordi (*Vicomtech*); Kerexeta, Jon (*Vicomtech*); Artola, Garazi (*Vicomtech*); Arrúe, Mónica (*Vicomtech*); Macía, Iván (*Vicomtech-Ik4*); Seroussi, Brigitte (*LIMICS*)

WePOS-24: 18:00-19:30

**eHealth, Games, and Education – Poster** (Poster Session)

Hall B

- 18:00-19:30 WePOS-24.1  
**An Ontology-Based Serious Game Design for the Development of Nutrition and Food Literacy Skills** .... 1405-1408  
 Mitsis, Konstantinos\* (*National Technical University of Athens*); Zarkogianni, Konstantia (*National Technical University of Athens*); Bountouni, Nefeli (*Biomedical Simulations & Imaging Laboratory, National Technical*); Athanasiou, Maria (*National Technical University of Athens*); Nikita, Konstantina (*National Technical University of Athens*)

18:00-19:30 WePOS-24.2  
**Methodology for Assessing End-User Requirements in the Ella4Life Project: Elders' Perspectives about Self-Monitoring** ..... 1409-1412  
 Kaczmarek, Mariusz\* (*Gdansk University of Technology*); Velciu, Magdalena (*Fundation Ana Aslan International*); Spiru, Luiza (*Fundation Ana Aslan International*); Bujnowski, Adam (*Gdansk University of Technology*); Andrushevich, Alexey (*iHomeLab, Lucerne University of Applied Sciences & Arts*); Birrer, Edith (*Lucerne University of Applied Sciences & Arts*)

18:00-19:30 WePOS-24.3  
**Software Code Complexity Assessment using EEG Features** ..... 1413-1416  
 Medeiros, Julio (*University of Coimbra*); Couceiro, Ricardo (*University of Coimbra*); Castelhana, João (*ICNAS, University of Coimbra*); Castelo-Branco, Miguel (*University of Coimbra*); Duarte, Gonçalo (*CISUC, University of Coimbra*); Duarte, Catarina (*Institute of Nuclear Sciences Applied to Health, University of C*); Durães, João (*Polytechnic Institute of Coimbra*); Madeira, Henrique (*Centre for Informatics & Systems of The University of Coimbra*); de Carvalho, Paulo\* (*University of Coimbra*); Teixeira, César (*University of Coimbra*)

WePOS-25: 18:00-19:30 Hall B  
**General and Theoretical Informatics for Pediatric Health Applications – Poster (Poster Session)**

18:00-19:30 WePOS-25.1  
**Learning Clusters in Autism Spectrum Disorder: Image-Based Clustering of Eye-Tracking Scanpaths with Deep Autoencoder** ..... 1417-1420  
 Elbattah, Mahmoud\* (*Université de Picardie Jules Verne*); Carette, Romuald (*Romuald Carette*); Dequen, Gilles (*University of Picardie Jules Verne*); Guérin, Jean-Luc (*Université de Picardie Jules Verne*); Cilia, Federica (*Université de Picardie Jules Verne*)

18:00-19:30 WePOS-25.2  
**Kinematic Features of a Simple and Short Movement Task to Predict Autism Diagnosis** ..... 1421-1424  
 Vabalas, Andrius\* (*The University of Manchester*); Gowen, Emma (*The University of Manchester*); Poliakoff, Ellen (*The University of Manchester*); Casson, Alexander James (*The University of Manchester*)

18:00-19:30 WePOS-25.3  
**Identifying Optimal Features from Heart Rate Variability for Early Detection of Sepsis in Pediatric Intensive Care** ..... 1425-1428  
 Amiri, Paria\* (*Tehran University of Medical Sciences*); Derakhshan, Amin (*Shahed University*); Gharib, Behdad (*Tehran University of Medical Sciences*); Liu, Ying-Hsang (*The Australian National University*); Mirzaaghayan, Mohamadreza (*Tehran University of Medical Sciences*)

18:00-19:30 WePOS-25.4  
**Asthma Device Calibrator (ADC)** ..... 1429-1432  
 Sassiya, Bedouin (*Notre Dame University-Louaize*); Chaaya, Pamela (*Notre Dame University-Louaize*); Ghnatio, Chady (*Notre Dame University-Louaize*); Kassem, Abdallah\* (*Notre Dame University-Louaize*)

WePOS-26: 18:00-19:30 Hall B  
**Education and Simulation – Poster (Poster Session)**

18:00-19:30 WePOS-26.1  
**Legal Issues in Implantable Medical Devices: Liability and Hedge** ..... 1433-1435  
 Yi, Jungho\* (*Seoul National University*); Seo, Jong Mo (*Seoul National University, School of Engineering*); Lee, Sang-Won (*Seoul National University*)

18:00-19:30 WePOS-26.2  
**Supervision of M.Sc. Theses using the Writing of a Scientific Article as a Framework to Increase Efficiency and Quality of Research Outcomes** ..... 1436-1439  
 Ortiz-Catalan, Max\* (*Chalmers University of Technology*); Middleton, Alexandra (*Princeton University*); Gustafsson, Magnus (*Chalmers University of Technology*)



**Translational Engineering for Healthcare Innovation and Commercialization – Poster (Poster Session)**

- 18:00-19:30 WePOS-27.1  
**Realtime Indoor Workout Analysis using Machine Learning and Computer Vision** ..... 1440-1443  
 Nagarkoti, Amit\* (*Samsung R&D Bangalore*); Teotia, Revant (*Samsung R&D Bangalore*); Das, Pankaj Kumar (*Samsung R&D Bangalore*); Mahale, Amith Kumar (*Samsung R&D Bangalore*)
- 18:00-19:30 WePOS-27.2  
**PANDAS: Paediatric Attention-Deficit/Hyperactivity Disorder Application Software** ..... 1444-1447  
 Mwamba, Hervé Mukenya\* (*Stellenbosch University*); Fourie, Pieter Rousseau (*Stellenbosch University*); Van Den Heever, Dawie (*Stellenbosch University*)
- 18:00-19:30 WePOS-27.3  
**Cloud Database Construction for the Expressway Design by the use of the Medical Information** ..... 1448-1451  
 Yambe, Tomoyuki\* (*Tohoku Univ*)
- 18:00-19:30 WePOS-27.4  
**Research Platform for Medical Device Development to Simplify Translation to the Market** ..... 1452-1455  
 Somerlik-Fuchs, Karin H\* (*inomed Medizintechnik GmbH*); Uecker, Florian Cornelius (*Charité Universitätsmedizin Berlin*); Reich, Uta (*Charité Universitätsmedizin Berlin*); Kogut, Andreas (*Spinal Cord Injury Center, Heidelberg University Hospital*); Schiemer, Jonas (*Universitätsmedizin Mainz*); Olze, Heidi (*Charité Universitätsmedizin Berlin*); Rupp, Rüdiger (*Heidelberg University Hospital*); Kneist, Werner (*AVTC Unimedizin Mainz*); Hoffmann, Klaus-Peter (*Fraunhofer Institut für Biomedizinische Technik*); Krueger, Thilo B (*inomed Medizintechnik GmbH*)
- 18:00-19:30 WePOS-27.5  
**An Exploration of Form Factors for Sleep-Olfactory Interfaces** ..... 1456-1460  
 Amores Fernandez, Judith\* (*MIT Media Lab*); Maes, Pattie (*MIT Media Lab*); Dotan, Mae (*MIT Media Lab*)
- 18:00-19:30 WePOS-27.6  
**Non Invasive Brain Stimulation (NIBS) Study based on Ischemic Stroke Patients** ..... 1461-1464  
 Sharma, Gaurav (*Indian Institute of Technology Mandi*); Karwal, Om (*Indian Institute of Technology Mandi*); Roy Chowdhury, Shubhajit\* (*Indian Institute of Technology Mandi*)
- 18:00-19:30 WePOS-27.7  
**A Comparative Evaluation of SteamVR Tracking and the OptiTrack System for Medical Device Tracking** ..... 1465-1470  
 Ameler, Tim (*University of Applied Sciences & Arts (FH Dortmund)*); Blohme, Kai (*University of Applied Sciences & Arts Dortmund (FH Dortmund)*); Brandt, Lilith (*University of Applied Sciences & Arts Dortmund (FH Dortmund)*); Brüngel, Raphael (*University of Applied Sciences & Arts Dortmund (FH Dortmund)*); Hensel, Alice (*University of Applied Sciences & Arts Dortmund (FH Dortmund)*); Huber, Lisa (*University of Applied Sciences & Arts (FH Dortmund)*); Kuper, Francis (*University of Applied Sciences & Arts (FH Dortmund)*); Swoboda, Jessica (*University of Applied Sciences & Arts Dortmund (FH Dortmund)*); Warnecke, Maren (*University of Applied Sciences & Arts Dortmund (FH Dortmund)*); Warzecha, Michaela (*University of Applied Sciences & Arts Dortmund (FH Dortmund)*); Hess, Daniel (*Fachhochschule Dortmund – University of Applied Sciences & Art*); Schmitz-Stolbrink, Annette (*Klinikum Dortmund*); Friedrich, Christoph M.\* (*University of Applied Sciences & Arts Dortmund; Dept. of*)
- 18:00-19:30 WePOS-27.8  
**Gait Analysis using Stereo Camera in Daily Environment** ..... 1471-1475  
 Li, Yuan\* (*Hitachi Ltd. Research & Development Group*); Zhang, Pan (*Hitachi (China) Research & Development Corporation*); Zhang, Yang (*Hitachi (China) Research & Development Corporation*); Miyazaki, Kunihiko (*Hitachi (China) Research & Development Corporation*)
- 18:00-19:30 WePOS-27.9  
**Development and Evaluation of a Customized Wrist-Hand Orthosis using 3D Technology for a Child with Cerebral Palsy – A Case Study** ..... 1476-1479  
 Schmitz, Cristiane (*Federal University of Technology – Paraná (UTFPR)*); Mori, Ivy Tiemi (*Federal University of Technology Parana*); Gamba, Humberto (*Federal Univ. of Technology UTFPR- C.N.P.J.*); Nohama, Percy (*Pontifícia Universidade Católica do Paraná*); Abreu de Souza, Mauren\* (*Pontifical Catholic University of Paraná – PUCPR*)

**Smart Implants – Poster** (Poster Session)

18:00-19:30

WePOS-28.1

**General Voltage Injection Device for Immunity Test of Active Implantable Neurostimulators to Electromagnetic Fields Over the Frequency Range 16.6Hz to 80MHz** ..... 1480-1483

Li, Bing\* (*Tsinghua University*); Wang, Weiming (*Tsinghua University*); Wu, Feng (*Beijing PINS medical Co., Ltd*); Hu, Chunhua (*Tsinghua University*); Liu, FangJun (*Tsinghua University*); Li, Luming (*Tsinghua University*)

18:00-19:30

WePOS-28.2

**Technical, Medical and Ethical Challenges in Networks of Smart Active Implants** ..... 1484-1487

Hoffmann, Klaus-Peter\* (*Fraunhofer Institut für Biomedizinische Technik*); Olze, Heidi (*Charité Universitätsmedizin Berlin*); Kneist, Werner (*AVTC Unimedizin Mainz*); Schiemer, Jonas (*Universitätsmedizin Mainz*); Krueger, Thilo B (*inomed Medizintechnik GmbH*); Somerlik-Fuchs, Karin H (*Albert-Ludwigs-Universität Freiburg*); Gottschalk, Michael (*VARTA Microbattery GmbH*); Kostelnik, Jan (*Würth Elektronik GmbH & Co. KG*); Schreivogel, Alina (*Würth Elektronik GmbH & Co. KG*); Ruff, Roman (*Fraunhofer Institut für Biomedizinische Technik*); Droste, Wiebke (*Institute for German, European & International Medical Law, Pu*); Rupp, Rüdiger (*Heidelberg University Hospital*)

**Thursday, 25 July 2019**

ThA05: 08:30-10:00

Hall A2 – Level 1

**Pattern Detection and Classification in Cardiovascular Signals** (Oral Session)**Chair:** Barbieri, Riccardo (*Politecnico di Milano*)**Co-Chair:** Glos, Martin (*Charité-Universitaetsmedizin Berlin*)

08:30-08:45

ThA05.1

**Markov Models for Detection of Ventricular Arrhythmia** ..... 1488-1491

Li, Zhi\* (*University of Michigan*); Derksen, Harm (*University of Michigan, Ann Arbor*); Gryak, Jonathan (*University of Michigan*); Hooshmand, Mohsen (*University of Michigan*); Wood, Alexander (*University of Michigan*); Ghanbari, Hamid (*University of Michigan*); Gunaratne, Pujitha (*Toyota Motor North America*); Najarian, Kayvan (*University of Michigan – Ann Arbor*)

08:45-09:00

ThA05.2

**Deterministic Learning-Based Methodology for Detecting Abnormal Dynamics of Cardiac Repolarization during Ischemia** ..... 1492-1495

Deng, Muqing\* (*Hangzhou Dianzi University*); Wu, Weiming (*South China University of Technology*); Cao, Jiuwen (*School of Automation Hangzhou Dianzi University / COGNACG, CNRS*); Tang, Min (*Peking Union Medical College*); Wang, Cong (*South China University of Technology*)

09:00-09:15

ThA05.3

**Detection of Myocardial Infarction from Multi-Lead ECG using Dual-Q Tunable Q-Factor Wavelet Transform** ..... 1496-1499

Liu, Jia\* (*University of Jyväskylä*); Zhang, Chi (*Dalian University of Technology*); Ristaniemi, Tapani (*University of Jyväskylä*); Cong, Fengyu (*Dalian University of Technology*)

09:15-09:30

ThA05.4

**Deep Learning based Patient-Specific Classification of Arrhythmia on ECG Signal** ..... 1500-1503

Zhao, Wei\* (*Guangzhou Shiyuan Electronics Co., Ltd*); Hu, Jing (*Guangzhou Shiyuan Electronic Technology Co., Ltd.*); Jia, Dongya (*CVTE, Guangdong Province, China*); Wang, Hongmei (*Guangzhou Shiyuan Electronics Co., Ltd*); Li, Zhenqi (*Guangzhou Shiyuan Electronics Co., Ltd*); Yan, Cong (*Guangzhou Shiyuan Electronics Co., Ltd*); You, Tianyuan (*Guangzhou Shiyuan Electronics Co., Ltd.*)

09:30-09:45

ThA05.5

**ECG-Based Random Forest Classifier for Cardiac Arrest Rhythms** ..... 1504-1508

Manibardo, Eric (*UPV/EHU*); Irusta, Unai\* (*UPV/EHU*); Del Ser, Javier (*Tecnalia*); Aramendi, Elisabete (*University of the Basque Country*); Isasi Liñero, Iraia (*UPV/EHU*); Olbarria, Mikel (*Emergentziak Osakidetza*); Corcuera, Carlos (*Emergentziak Osakidetza*); Veintemillas, Jose (*Emergentziak Osakidetza*); Larrea, Andima (*Emergentziak Osakidetza*)

09:45-10:00 ThA05.6  
**A Simple Unsupervised, Real-Time Clustering Method for Arterial Blood Pressure Signal Classification** ..... 1509-1512  
 Holland, Alex\* (*Edwards Lifesciences*); Asgari, Shadnaz (*California State University, Long Beach*)

**ThA06: 08:30-10:00** Hall A5 – Level 1  
**Neuromuscular Systems (I)** (Oral Session)

08:30-08:45 ThA06.1  
**A Technique for Measuring Visuomotor Feedback Contributions to the Control of an Inverted Pendulum** ..... 1513-1516  
 Franklin, David W.\* (*Technical University of Munich*); Cesonis, Justinas (*Technical University of Munich*); Franklin, Sae (*Institute for Cognitive Systems, Technical University of Munich*); Leib, Raz (*Technical University of Munich*)

08:45-09:00 ThA06.2  
**Feedback Delay Changes the Control of an Inverted Pendulum** ..... 1517-1520  
 Franklin, Sae\* (*Institute for Cognitive Systems, Technical University of Munich*); Cesonis, Justinas (*Technical University of Munich*); Leib, Raz (*Technical University of Munich*); Franklin, David W. (*Technical University of Munich*)

09:00-09:15 ThA06.3  
**A Method to Quantify Multi-Degree-of-Freedom Lower Limb Isometric Joint Torques in Children with Hemiplegia** ..... 1521-1524  
 Goyal, Vatsala\* (*Northwestern University*); Sukal, Theresa (*Northwestern University*); Dewald, Julius P. A. (*Northwestern University*)

09:15-09:30 ThA06.4  
**How to Improve Robustness in Muscle Synergy Extraction** ..... 1525-1528  
 Ghislieri, Marco\* (*Politecnico di Torino*); Agostini, Valentina (*Politecnico di Torino*); Knaflitz, Marco (*Politecnico di Torino*)

09:30-09:45 ThA06.5  
**Error Augmentation Improves Visuomotor Adaptation during a Full-Body Balance Task** ..... 1529-1533  
 Fasola, Jemina\* (*EPFL – LNCO*); Kannape, Oliver Alan (*Swiss Institute of Technology Lausanne (EPFL)*); Bouri, Mohamed (*EPFL*); Bleuler, Hannes (*EPFL*); Blanke, Olaf (*LNCO, EPFL*)

09:45-10:00 ThA06.6  
**Modeling Expected Reaching Error and Behaviors for Motor Adaptation** ..... 1534-1538  
 Earley, Eric J\* (*Northwestern University*); Hargrove, Levi (*Rehabilitation Institute of Chicago*)

**ThA12: 08:30-10:00** M6 – Level 3  
**EEG and Electrical Impedance Imaging** (Oral Session)  
**Chair:** Ding, Lei (*University of Oklahoma*)  
**Co-Chair:** Doessel, Olaf (*Karlsruhe Institute of Technology (KIT)*)

08:30-08:45 ThA12.1  
**Cortical Theta Activity and Postural Control in Non-Visual and High Cognitive Load Tasks: Impact for Clinical Studies** ..... 1539-1542  
 Carro Domínguez, Manuel\* (*Trinity Centre for Bioengineering*); O'Keeffe, Clodagh (*Trinity College Dublin*); O'Rourke, Eugene (*Trinity Centre of Bioengineering, Trinity College Dublin.*); Feerick, Niamh (*Trinity Centre of Bioengineering, Trinity College Dublin.*); Reilly, Richard (*Trinity College Dublin*)

08:45-09:00 ThA12.2  
**Altered Cortical and Postural Response to Balance Perturbation in Traumatic Brain Injury – An EEG Pilot Study** ..... 1543-1546  
 Alexandre, Didier\* (*Kessler Foundation*); Hoxha, Armand (*Kessler Foundation*); Shenoy Handiru, Vikram (*Kessler Foundation*); Saleh, Soha (*Kessler Foundation*); Suvisheshamuthu, Easter (*Kessler Foundation*); Yue, Guang (*Kessler Foundation*)

09:00-09:15	ThA12.3
<b>Influence of Background Lung Tissue Conductivity on the Cardiosynchronous EIT Signal</b>	
<b>Components: A Sensitivity Study</b> .....	1547-1550
Kircher, Michael* ( <i>Karlsruhe Institute of Technology</i> ); Hattiangdi, Rohit ( <i>Institute of Biomedical Engineering, Karlsruhe Institute of Tech</i> ); Menges, Robert ( <i>Institute of Biomedical Engineering, Karlsruhe Institute of Tech</i> ); Doessel, Olaf ( <i>Karlsruhe Institute of Technology (KIT)</i> )	
09:15-09:30	ThA12.4
<b>Improved Imaging Resolution of Electrical Impedance Tomography using Artificial Neural Networks for Image Reconstruction</b> .....	1551-1554
Huang, Shu-Wei ( <i>National Chiao Tung University</i> ); Cheng, Hao-Min ( <i>Taipei Veterans General Hospital</i> ); Lin, Shien-Fong* ( <i>National Chiao Tung University</i> )	
09:30-09:45	ThA12.5
<b>Noninvasive Localization of High-Frequency Oscillations in Children with Epilepsy: Validation against Intracranial Gold-Standard</b> .....	1555-1558
Dirodi, Matilde* ( <i>Unit of Biomedical Robotics &amp; Biomicrosystems, Engineering Dep</i> ); Tamilia, Eleonora ( <i>Harvard Medical School / Boston Children's Hospital</i> ); Grant, Patricia Ellen ( <i>Boston Children's Hospital, Harvard Medical School</i> ); Madsen, Joseph ( <i>Children's Hospital Boston, Harvard Medical School</i> ); Stufflebeam, Steve ( <i>Athinoula A. Martinos Center for Biomedical Imaging, Massachusetts</i> ); Pearl, Philip ( <i>Division of Epilepsy &amp; Clinical Neurophysiology, Dept. of</i> ); Papadelis, Christos ( <i>Harvard Medical School</i> )	
09:45-10:00	ThA12.6
<b>Using a Spatio-Temporal Basis for ECG Imaging of Ventricular Pacings: Insights from Simulations and First Application to Clinical Data</b> .....	1559-1562
Schuler, Steffen* ( <i>Karlsruhe Institute of Technology (KIT)</i> ); Potyagaylo, Danila ( <i>EP Solutions SA</i> ); Doessel, Olaf ( <i>Karlsruhe Institute of Technology (KIT)</i> )	

ThA13: 08:30-10:00	R2 – Level 3
<b>Chemical and Biological Sensing</b> (Oral Session)	
<b>Co-Chair:</b> Mainardi, Luca ( <i>Politecnico di Milano</i> )	

08:30-08:45	ThA13.1
<b>A Graphene-Based pH Sensor on Paper for Human Plasma and Seawater</b> .....	1563-1566
Vivaldi, Federico ( <i>University of Pisa, Dept. of Chemistry &amp; Industrial Chemis</i> ); Bonini, Andrea ( <i>University of Pisa, Dept. of Chemistry &amp; Industrial Chemi</i> ); Melai, Bernardo ( <i>Dept. of Chemistry &amp; Industrial Chemistry, University of</i> ); Poma, Noemi ( <i>University of Pisa, Dept. of Chemistry &amp; Industrial Chemis</i> ); Kirchhain, Arno ( <i>University of Pisa, Dept. of Chemistry &amp; Industrial Chemis</i> ); Santalucia, Delio ( <i>University of Pisa, Dept. of Chemistry &amp; Industrial Chemis</i> ); Salvo, Pietro* ( <i>National Research Council</i> ); Di Francesco, Fabio ( <i>University of Pisa</i> )	
08:45-09:00	ThA13.2
<b>Wireless Bipotentiostat Circuit for Glucose and H2O2 Interrogation</b> .....	1567-1570
Slaughter, Gymama* ( <i>University of Maryland Baltimore County</i> ); Annamalai, Priyanka ( <i>University of Maryland Baltimore County</i> )	
09:00-09:15	ThA13.3
<b>An Integrated and Automated Electronic System for Point-of-Care Protein Testing</b> .....	1571-1574
Wu, Dan ( <i>Massachusetts Institute of Technology</i> ); voldman, Joel* ( <i>Massachusetts Institute of Technology</i> )	
09:15-09:30	ThA13.4
<b>On-Chip Multiwell Plate Impedance Analysis of Microwell Array Sensor for Label-Free Detection of Cytokines in Rat Serum</b> .....	1575-1578
Mahmoodi, Seyed Reza* ( <i>Rutgers University</i> ); Xie, Pengfei ( <i>Rutgers University</i> ); Javanmard, Mehdi ( <i>Rutgers University</i> )	
09:30-09:45	ThA13.5
<b>Design and Development of a Disposable Lab-on-a-Chip for Prostate Cancer Detection</b> .....	1579-1583
Farazmand, Meer* ( <i>University of Warwick</i> ); Rodrigues, Rui ( <i>University of Warwick, WMG</i> ); Gardner, Julian ( <i>University of Warwick</i> ); Charmet, Jerome ( <i>University of Warwick</i> )	

09:45-10:00 ThA13.6  
**A Metal Oxide Gas Sensors Array for Lung Cancer Diagnosis through Exhaled Breath Analysis** ..... 1584-1587  
 Marzorati, Davide\* (*Politecnico di Milano*); Mainardi, Luca (*Politecnico di Milano*); Sedda, Giulia (*IEO European Institute of Oncology IRCCS*); Gasparri, Roberto (*IEO European Institute of Oncology IRCCS*); Spaggiari, Lorenzo (*IEO European Institute of Oncology IRCCS*); Cerveri, Pietro (*Politecnico di Milano*)

ThA14: 08:30-10:00	R3 – Level 3
<b>Signal Processing and Classification for Sleep Apnea</b> (Oral Session)	
<b>Chair:</b> Bailon, Raquel ( <i>University of Zaragoza</i> )	
<b>Co-Chair:</b> de Chazal, Philip ( <i>University of Sydney</i> )	

08:30-08:45 ThA14.1  
**Evaluation of Methods to Characterize the Change of the Respiratory Sinus Arrhythmia with Age in Sleep Apnea Patients** ..... 1588-1591  
 Morales Tellez, John Fredy\* (*KU Leuven*); Deviaene, Margot (*KU Leuven*); Milagro, Javier (*University of Zaragoza*); Testelmans, Dries (*Universitair Ziekenhuis Gasthuisberg*); Buyse, Bertien (*Katholieke Universiteit Leuven*); Willems, Rik (*KU Leuven*); Orini, Michele (*University College London*); Van Huffel, Sabine (*KU Leuven*); Bailon, Raquel (*University of Zaragoza*); Varon, Carolina (*Katholieke Universiteit Leuven*)

08:45-09:00 ThA14.2  
**A Preliminary Study of the Automatic Classification of the Site of Airway Collapse in OSA Patients using Snoring Signals** ..... 1592-1595  
 Sebastian, Arun\* (*University of Sydney*); de Chazal, Philip (*University of Sydney*); Cistulli, Peter (*University of Sydney*)

09:00-09:15 ThA14.3  
**AI vs Humans for the Diagnosis of Sleep Apnea** ..... 1596-1600  
 Thorey, Valentin\* (*Dreem, Paris*); Bou i Hernandez, Albert (*Algorithms Team, Dreem*); Arnal, Pierrick Jacques (*Research Team, Dreem, New York City, USA*); During, Emmanuel Hossein (*Center for Sleep Sciences & Medicine, Stanford University, Sta*)

09:15-09:30 ThA14.4  
**Sleep Apnea Severity Estimation from Respiratory Related Movements using Deep Learning** ..... 1601-1604  
 Hafezi, Maziar (*Toronto Rehabilitation Institute, University Health Network*); Montazeri Ghahjaverestan, Nasim (*Institute of Biomaterial & Biomedical Engineering, University of*); Zhu, Kaiyin (*Toronto Rehab-University Health Network*); Alshaer, Hisham (*Toronto Rehabilitation Inst, UHN*); Yadollahi, Azadeh (*University of Toronto*); Taati, Babak\* (*Toronto Rehabilitation Institute & University of Toronto*)

09:30-09:45 ThA14.5  
**Diagnosis of Obstructive Sleep Apnea during Wakefulness using Upper Airway Negative Pressure and Machine Learning** ..... 1605-1608  
 Lim, Jan (*Toronto Rehabilitation Institute*); Khan, Shehroz (*Toronto Rehabilitation Institute*); Pandya, Aditya (*Ryerson University*); Ryan, Clodagh (*Toronto General Hospital, University Health Network, Toronto, ON*); Ul Haq, Mohammad Adnan (*Toronto Rehabilitation Institute, University Health Network, Tor*); Macarthur, Kori (*Toronto Rehabilitation Institute*); Haleem, Ahmed (*UHN Toronto Rehabilitation Institute*); Sivakulam, Niveca (*Toronto Rehabilitation Institute*); Sahak, Hosna (*University of Toronto*); Alshaer, Hisham\* (*Toronto Rehabilitation Inst, UHN*)

09:45-10:00 ThA14.6  
**Non-Invasive Diagnosis of Sleep Apnoea using ECG and Respiratory Bands** ..... 1609-1612  
 Sadr, Nadi\* (*University of Sydney*); de Chazal, Philip (*University of Sydney*)

ThA15: 08:30-10:00

M3 – Level 3

**Image Analysis and Classification – Machine Learning Approaches (I)** (Oral Session)

**Chair:** Wang, Wenjin (*Eindhoven Engineering*)

**Co-Chair:** Wang, Haifeng (*Shenzhen Institutes of Advanced Technology, Chinese Academy of Science*)

08:30-08:45

ThA15.1

**MelanomaNet: An Effective Network for Melanoma Detection** ..... 1613-1616

Huang, Rian (*Shenzhen University*); Liang, Jiajun (*Shenzhen University*); Jiang, Feng (*Shenzhen University*); Zhou, Feng (*The University of Michigan*); Cheng, Nina (*Shenzhen University*); Wang, Tianfu (*Shenzhen University*); Lei, Baiying\* (*Shenzhen University*)

08:45-09:00

ThA15.2

**Recognizing Occlusal Caries in Dental Intraoral Images using Deep Learning** ..... 1617-1620

Moutselos, Konstantinos (*University of Piraeus*); Berdouses, Elias (*Dept. of Paediatric Dentistry, Dental School, National & Kapod*); Oulis, Constantine (*Dept. of Paediatric Dentistry, Dental School, National & Kapod*); Maglogiannis, Ilias\* (*University of Piraeus*)

09:00-09:15

ThA15.3

**Unsupervised Face Anti-Spoofing using Dual Cameras based Feature Matching** ..... 1621-1624

Shen, Wang (*Hunan University*); Liu, Jie (*Hunan University*); He, Min (*Hunan University*); Wang, Wenjin\* (*Eindhoven University of Technology*)

09:15-09:30

ThA15.4

**Vision-Based Mouth Motion Analysis in Epilepsy: A 3D Perspective** ..... 1625-1629

Ahmedt-Aristizabal, David\* (*Queensland University of Technology*); Nguyen, Kien (*Queensland University of Technology*); Denman, Simon (*Queensland University of Technology*); Sarfraz, Muhammad Saquib (*Karlsruhe Institute of Technology*); Sridharan, Sridha (*Queensland University of Technology*); Dionisio, Sasha (*Mater Hospital*); Fookes, Clinton (*Queensland University of Technology*)

09:30-09:45

ThA15.5

**Tournament based Ranking CNN for the Cataract Grading** ..... 1630-1636

Kim, Dohyeun\* (*Electronics & Telecommunications Research Institute*); Jun, Tae Joon (*KAIST*); Eom, Youngsub (*Korea University College of Medicine*); Kim, Cherry (*Korea University College of Medicine*); Kim, Daeyoung (*KAIST*)

09:45-10:00

ThA15.6

**Real-Time Detection of Ureteral Orifice in Urinary Endoscopy Videos based on Deep Learning** ..... 1637-1640

Peng, Xin (*Shanghai Jiao Tong University*); Liu, Dingyi (*Dept. of Urology, Shanghai Pudan Hospital of Pudong New Dis*); Li, Yiming (*Deepwise Artificial Intelligence Laboratory*); Xue, Wei (*Dept. of Urology, Ren Ji Hospital affiliated to Shanghai Ji*); Qian, Dahong\* (*Shanghai Jiao Tong University*)

ThA16: 08:30-10:00

M5 – Level 3

**Human-Robot Interaction: Systems and Controls** (Oral Session)

**Chair:** Desai, Jaydip (*Wichita State University*)

**Co-Chair:** Yano, Kenichi (*Mie University*)

08:30-08:45

ThA16.1

**Design and Validation of Two Embodied Mirroring Setups for Interactive Games with Autistic Children using the NAO Humanoid Robot** ..... 1641-1644

Geminiani, Alice\* (*Politecnico di Milano*); Santos, Laura (*Politecnico di Milano*); Casellato, Claudia (*Politecnico di Milano*); Farabbi, Andrea (*Politecnico di Milano*); Farella, Nicola (*Politecnico di Milano*); Santos-Victor, Jose (*Technical University of Lisbon*); Olivieri, Ivana (*IRCCS Fondazione Don Carlo Gnocchi*); Pedrocchi, Alessandra (*Politecnico di Milano*)

08:45-09:00

ThA16.2

**Development of Cybernetic Robot Arm to Realize Support Action Cooperated with Hemiplegic Person's Arm** ..... 1645-1650

Toyama, Hiroaki\* (*University of Tsukuba*); Kawamoto, Hiroaki (*University of Tsukuba*); Sankai, Yoshiyuki (*University of Tsukuba*)

09:00-09:15 ThA16.3  
**Detection of Stressful Situations using GSR While Driving a BCI-Controlled Wheelchair** ..... 1651-1656  
Cruz, Aniana\* (*University of Coimbra*); Pires, Gabriel (*University of Coimbra*); Lopes, Ana (*Instituto Politécnico de Tomar*); Nunes, Urbano (*University of Coimbra*)

09:15-09:30 ThA16.4  
**Bio-Compatible Piezoresistive Pressure Sensing Skin Sleeve for Millimetre-Scale Flexible Robots: Design, Manufacturing and Pitfalls** ..... 1657-1661  
Wasyliczyk, Piotr (*King's College London*); Ozimek, Filip (*University College London*); Tiwari, Manish (*University College London*); da Cruz, Lyndon (*Moorfields Eye Hospital*); Bergeles, Christos\* (*King's College London*)

09:30-09:45 ThA16.5  
**Artificial Neural Network to Detect Human Hand Gestures for a Robotic Arm Control** ..... 1662-1665  
Schabron, Bridget (*Wichita State University*); Alashqar, Zaid (*Wichita State University*); Fuhrman, Nicole (*Wichita State University*); Jibbe, Khaled (*Wichita State University*); Desai, Jaydip\* (*Wichita State University*)

09:45-10:00 ThA16.6  
**Joystick Grip for Electric Wheelchair for Tension-Athetosis-Type Cerebral Palsy** ..... 1666-1669  
Ogata, Yuto\* (*Mie University*); Katsumura, Motoyu (*Mie University*); Yano, Kenichi (*Mie University*); Nakao, Tomoyuki (*Imasen Engineering Corporation*); Hamada, Atsushi (*Imasen Engineering Corporation*); Torii, Katsuhiko (*Imasen Engineering Corporation*)

ThA17: 08:30-10:00 R12 – Level 3  
**Pharmaceutical Engineering and Drug Delivery Systems (Oral Session)**  
**Chair:** Oh, Yu-Kyoung (*Seoul National University*)  
**Co-Chair:** Kurose, Hitoshi (*Kyushu University, Graduate School of Pharmaceutical Sciences*)

08:30-08:45 ThA17.1  
**in-Vivo Intradermal Delivery of Co-57 Labeled Vitamin B-12, and Subsequent Comparison with Standard Subcutaneous Administration** ..... 1670-1673  
Paul Chaudhuri, Buddhadev\* (*Biolinq, Inc.*); Ceyskens, Frederik (*ESAT, Catholic University, Leuven, Belgium*); Celen, Sofie (*Radiopharmacy Research, KU Leuven*); Bormans, Guy (*Radiopharmacy Research, KU Leuven*); Kraft, Michael (*University of Liege*); Puers, Robert (*Catholic University of Leuven*)

08:45-09:00 ThA17.2  
**Magnetic Stimulus Responsive DDS based on Chitosan Microbeads Embedded with Magnetic Nanoparticles** ..... 1674-1677  
Mohapatra, Ankita\* (*California State University Fullerton*); Harris, Michael (*University of Memphis*); Levine, David (*University of Memphis*); Ghimire, Madhav (*University of Memphis*); Morshed, Bashir (*The University of Memphis*); Jennings, Jessica (*University of Memphis*); Bumgardner, Joel (*University of Memphis*); Haggard, Warren (*University of Memphis*); Mishra, Sanjay (*University of Memphis*); Fujiwara, Tomoko (*University of Memphis*)

09:00-09:15 ThA17.3  
**Feasibility of Drug Delivery Mediated by Ultra-Short and Intense Pulsed Electric Fields** ..... 1678-1681  
Caramazza, Laura\* (*ICemB@La Sapienza, University of Rome*); Nardoni, Martina (*Sapienza University of Rome*); De Angelis, Annalisa (*ICEMB@La Sapienza University Rome*); della Valle, Elena (*University of Michigan*); Denzi, Agnese (*Istituto Italiano di Tecnologia (IIT@Sapienza)*); Paolicelli, Patrizia (*Sapienza University of Rome*); Merla, Caterina (*ENEA*); Liberti, Micaela (*ICEmB at Sapienza University of Rome*); Apollonio, Francesca (*ICEmB@La Sapienza Univ. Rome*); Petralito, Stefania (*Sapienza University of Rome*)

09:15-09:30 ThA17.4  
**A Finite Element Model for Insulin Adsorption in ICU Infusion Sets** ..... 1682-1685  
Knopp, Jennifer L.\* (*University of Canterbury*); Bishop, Kaia (*University of Canterbury*); Chase, J. Geoffrey (*University of Canterbury*)

09:30-09:45 ThA17.5  
**Laterally Dispersing Nozzles for Needle-Assisted Jet Injection** ..... 1686-1689  
Mckeage, James William\* (*Auckland Bioengineering Institute*); Abeysekera, Nandoun (*Auckland Bioengineering Institute*); Ruddy, Bryan (*University of Auckland*); Nielsen, Poul (*The University of Auckland*); Taberner, Andrew (*The University of Auckland*)

ThA18: 08:30-10:00 R13 – Level 3  
**Brain Functional Imaging (Oral Session)**

- 08:30-08:45 ThA18.1  
**Higher Resolution sLORETA (HR-sLORETA) in EEG Source Imaging** ..... 1690-1693  
 Sadat-Nejad, Younes\* (*Ryerson University*); Beheshti, Soosan (*Ryerson University*)
- 08:45-09:00 ThA18.2  
**Characterising Brain Network Topology in Cervical Dystonia Patients and Unaffected Relatives via Graph Theory** ..... 1694-1697  
 Narasimham, Shruti\* (*Trinity College Dublin*); Sundararajan, Vikram (*Trinity College Dublin*); McGovern, Eavan (*St. Vincent's University Hospital*); Quinlivan, Brendan (*Trinity College Dublin*); Killian, Owen (*Trinity College Dublin*); O'Riordan, Sean (*St. Vincent's University Hospital*); Hutchinson, Michael (*St. Vincent's University Hospital Dublin*); Reilly, Richard (*Trinity College Dublin*)
- 09:00-09:15 ThA18.3  
**Reconstructing Cortical Intrinsic Connectivity Networks using a Regression Method Combining EEG Data from Sensor and Source Levels** ..... 1698-1701  
 Shou, Guofa\* (*University of Oklahoma*); Ding, Lei (*University of Oklahoma*)
- 09:15-09:30 ThA18.4  
**AttentivU: A Biofeedback Device to Monitor and Improve Engagement in the Workplace** ..... 1702-1708  
 Kosmyrna, Nataliya\* (*MIT Media Lab*); Maes, Pattie (*MIT Media Lab*)
- 09:30-09:45 ThA18.5  
**Characteristic Changes in the EEG Signals between Microsleeps and Preceding Responsive States** ..... 1709-1712  
 Venkatasubramanian, Umamaheswari\* (*University of Otago*); Pearson, John (*University of Otago*); Beckert, Lutz (*University of Otago*); Jones, Richard D. (*New Zealand Brain Research Institute*)
- 09:45-10:00 ThA18.6  
**Different Roles for Theta and Alpha-Band Brain Rhythms during Sequential Memory** ..... 1713-1716  
 Takase, Ryoken (*Hokkaido University*); Boasen, Jared (*Hokkaido University*); Yokosawa, Koichi\* (*Hokkaido University*)

ThA19: 08:30-10:00 R4 – Level 3  
**General and Theoretical Informatics – Machine Learning (I) (Oral Session)**  
**Chair:** Najarian, Kayvan (*University of Michigan – Ann Arbor*)  
**Co-Chair:** Bianchi, Anna Maria (*Politecnico di Milano*)

- 08:30-08:45 ThA19.1  
**Detection of Acute Respiratory Distress Syndrome by Incorporation of Label Uncertainty and Partially Available Privileged Information** ..... 1717-1720  
 Sabeti, Elyas\* (*University of Michigan, Ann Arbor*); Drews, Joshua (*University of Michigan, Ann Arbor*); Reamaroon, Narathip (*University of Michigan, Ann Arbor*); Gryak, Jonathan (*University of Michigan*); Sjoding, Michael (*University of Michigan, Ann Arbor*); Najarian, Kayvan (*University of Michigan – Ann Arbor*)
- 08:45-09:00 ThA19.2  
**Prediction of Patient Evolution in Terms of Clinical Risk Groups Form Routinely Collected Data using Machine Learning** ..... 1721-1724  
 de Toledo, Paula\* (*Universidad Carlos III de Madrid*); Pérez-Rodríguez, Rodrigo (*Biomedical Research Foundation – Getafe University Hospital*); de Miguel, Pablo (*Hospital Universitario de Fuenlabrada*); Sanchis, Araceli (*Universidad Carlos III de Madrid*); Serrano Balazote, Pablo (*Hospital Universitario 12 de Octubre, Madrid*)
- 09:00-09:15 ThA19.3  
**Domain Adaptation in Children Activity Recognition** ..... 1725-1728  
 Hosseini, Anahita (*Dept. of Computer Science, University of California, Los An*); Zamanzadeh, Davina\* (*University of California Los Angeles*); Valencia, Lisa (*University of Southern California – Los Angeles*); Habre, Rima (*University of Southern California – Los Angeles*); Bui, Alex (*University of California, Los Angeles*); Sarrafzadeh, Majid (*University of California Los Angeles*)



09:15-09:30 ThA19.4  
**A Novel Hybrid Model for Visceral Adipose Tissue Prediction using Shape Descriptors** ..... 1729-1732  
Wang, Qiyue\* (*George Washington University*); Lu, Yao (*George Washington University*); Zhang, Xiaoke (*George Washington University*); Hahn, James (*George Washington University*)

09:30-09:45 ThA19.5  
**Learning a Cytometric Deep Phenotype Embedding for Automatic Hematological Malignancies Classification** ..... 1733-1736  
Li, Jeng-Lin (*Dept. of Electrical Engineering, National Tsing Hua Univers*); Wang, Yu-Fen (*Tai-Cheng Stem Cell Therapy Center, National Taiwan University*); Ko, Bor-Sheng (*Dept. of Internal Medicine, National Taiwan University Hosp*); Li, Chi-Cheng (*Center of Stem Cell & Precision Medicine, Buddhist Tzu Chi Gen*); Tang, Jih-Luh (*Dept. of Internal Medicine, National Taiwan University Hosp*); Lee, Chi-Chun\* (*National Tsing Hua University*)

09:45-10:00 ThA19.6  
**A Thermal Imaging Solution for Early Detection of Pre-Ulcerative Diabetic Hotspots** ..... 1737-1740  
Quinn, Susan\* (*Ulster University*); Saunders, Catherine (*Ulster University*); Cleland, Ian (*University of Ulster*); Nugent, Chris (*University of Ulster*); Garcia-Constantino, Matias Fernando (*Ulster University*); Cundell, Jill (*Ulster University*); Madill, Godfrey (*Prosthetic Forum NI*); Morrison, Gareth (*The Lava Group*)

ThA20: 08:30-10:00 R5 – Level 3  
**Smart Textiles** (Oral Session)  
**Chair:** Paradiso, Rita (*Smartex srl*)  
**Co-Chair:** Lendaro, Eva (*Chalmers University of Technology*)

08:30-08:45 ThA20.1  
**An Ecological Study based on Textile Sensory Platforms to Improve Safety and Well-Being at Work** ..... 1741-1744  
Paradiso, Rita\* (*Smartex srl*); Crupi, Riccardo (*Smartex s.r.l.*); Pacelli, Maria (*Smartex s.r.l.*); Cuervo, Gabriel (*Ferrovial*); Saunder, Mark (*Ferrovial*)

08:45-09:00 ThA20.2  
**A Comparative Characterization of Smart Textile Pressure Sensors** ..... 1745-1748  
Kamara, Vanessa L\* (*University of Rhode Island, Electrical, Computer & Biomedical*); Kargwal, Sahil (*Dept. of Textile Technology, Indian Institute of Technology*); Constant, Nicholas (*Dept. of Electrical, Computer & Biomedical Engineering, U*); Gordon, Renee (*University of Rhode Island, Electrical, Computer & Biomedical*); Humphreys, George (*University of Rhode Island*); Mankodiya, Kunal (*University of Rhode Island*)

09:00-09:15 ThA20.3  
**Development of a Prototype E-Textile Sock** ..... 1749-1752  
D'Addio, Giovanni (*ICS Maugeri Institute of Care & Scientific Research of Telese*); Evangelista, Simone (*ICS Maugeri Institute of Care & Scientific Research of Telese*); Donisi, Leandro\* (*Electrical & ICT Engineering Dept. of University Federico*); Biancardi, Arcangelo (*ICS Maugeri Institute of Care & Scientific Research of Telese*); Andreozzi, Emilio (*University of Naples Federico II*); Pagano, Gaetano (*ICS Maugeri Institute of Care & Scientific Research of Telese*); Pasquale, Arpaia (*Electrical & ICT Engineering Dept. of University Federico*); Cesarelli, Mario (*University "Federico II", Naples, Italy.*)

09:15-09:30 ThA20.4  
**Seamless Integrated Tetrode-Band for Real-Time Lower Limb Movements Classification to Facilitate Self-Administrated Phantom Limb Pain Treatment** ..... 1753-1756  
Lendaro, Eva\* (*Chalmers University of Technology*); Guo, Li (*University of Borås*); Muñoz, María Jose (*Chalmers University of Technology*); Sandsjö, Leif (*University of Borås*); Ortiz-Catalan, Max (*Chalmers University of Technology*)

09:30-09:45 ThA20.5  
**A Pilot Study on an Integrated Service based on Wearable Textile Platforms to Promote Workers Wellness at Workplace** ..... 1757-1760  
De Toma, Gianluca (*Smartex S.r.l.*); Pacelli, Maria (*Smartex s.r.l.*); Paradiso, Rita\* (*Smartex srl*); Ana Rosa, Victoria (*Reale Seguros Generales S.A*); Saunder, Mark (*Ferrovial*); Cuervo, Gabriel (*Ferrovial*)

09:45-10:00 ThA20.6  
**An Improved Liquid Metal Mask Printing Enabled Fast Fabrication of Wearable Electronics on Fabrics** . 1761-1764  
 Guo, Rui (*Tsinghua University*); Yao, Siyuan (*Chinese Academy of Sciences*); Sun, Xuyang (*Technical Institute of Physics & Chemistry, Chinese Academy of*); Liu, Jing\* (*Tsinghua University*)

ThA21: 08:30-10:00	R8 – level 3
<b>Cardiovascular Assessment and Diagnostic Technologies</b> (Oral Session)	
<b>Chair:</b> Friebe, Michael ( <i>Otto-von-Guericke-University</i> )	
<b>Co-Chair:</b> Panescu, Dorin ( <i>Zidan Medical, Inc.</i> )	

08:30-08:45 ThA21.1  
**Operation Stability of Chitosan and Nafion-Chitosan Coatings on Bioelectrodes in Enzymatic Glucose Biofuel Cells** ..... ... P-R-E  
 Kuis, Robinson (*University of Maryland Baltimore County*); Hasan, Md Qumrul (*University of Maryland Baltimore County*); Slaughter, Gymama\* (*University of Maryland Baltimore County*)

08:45-09:00 ThA21.2  
**High Impedance Electrical Accidents: Importance of Source and Subject Impedance** ..... 1769-1775  
 Kroll, Mark William (*University of Minnesota*); Kroll, Lori (*Independent Consultant*); Panescu, Dorin\* (*Advanced Cardiac Therapeutics*); Perkins, Pete (*Safety Engineering*); Andrews, Chris (*University of Queensland*)

09:00-09:15 ThA21.3  
**Design of an Auscultation System for Phonoangiography and Monitoring of Carotid Artery Diseases** ... 1776-1779  
 Sühn, Thomas\* (*Otto-von-Guericke-University of Magdeburg*); Sreenivas, Arathi (*Otto-von-Guericke-University of Magdeburg*); Mahmoodian, Naghmeh (*Otto-von-Guericke-Universität Magdeburg*); Maldonado, Ivan (*OVGU, INKA*); Boese, Axel (*Dept. of Medical Engineering, Otto-von-Guericke-University*); Illanes, Alfredo (*Otto-von-Guericke University of Magdeburg*); Bloxton, Michael (*Bloxton Investment Group, LLC*); Friebe, Michael (*Otto-von-Guericke-University*)

09:15-09:30 ThA21.4  
**Deep Learning Approach for Highly Specific Atrial Fibrillation and Flutter Detection based on RR Intervals** ..... 1780-1783  
 Ivanovic, Marija\* (*Vinca Institute of Nuclear Sciences*); Atanasoski, Vladimir (*University of Belgrade*); Shvilkin, Alexei (*Beth Israel Deaconess Medical Center; Harvard Medical School*); Hadzievski, Ljupco (*Vinca Institute of Nuclear Sciences*); Maluckov, Aleksandra (*Vinca Institute of Nuclear Sciences*)

09:30-09:45 ThA21.5  
**Effect of Beta-Blocker on Maternal-Fetal Heart Rates and Coupling in Pregnant Mice and Fetuses** ..... 1784-1787  
 Khandoker, Ahsan H\* (*Khalifa University of Science, Technology & Research*); Yoshida, Chihiro (*Tohoku University*); Kasahara, Yoshiyuki (*Tohoku University*); Funamoto, Kiyoe (*Tohoku University*); Nakanishi, Kana (*Tohoku University*); Kanda, Keiichi (*Tohoku University*); Fukase, Miyabi (*Tohoku University*); Niizeki, Kyuichi (*Yamagata University*); Kimura, Yoshitaka (*Tohoku University*)

09:45-10:00 ThA21.6  
**Dosimetry for Ventricular Fibrillation Risk with Short Electrical Pulses: History and Future** ..... 1788-1794  
 Kroll, Mark William (*University of Minnesota*); Panescu, Dorin\* (*Advanced Cardiac Therapeutics*); Hirtler, Reinhard (*Elektroschutz Gemeinnützige Privatstiftung*); Koch, Michael (*Eaton GmbH*); Andrews, Chris (*University of Queensland*)

ThB01: 10:30-12:00	Hall A6+A7 – Level 1
<b>Sensory Neuroprostheses</b> (Oral Session)	
<b>Chair:</b> Suanning, Gregg ( <i>The University of Sydney</i> )	

10:30-10:45 ThB01.1  
**The Effects of Phase Durations on the Spatial Responses of Retinal Ganglion Cells to EPI and Sub-Retinal Electrical Stimulation** ..... 1795-1800  
 Tong, Wei\* (*University of Melbourne*); Stamp, Melanie (*University of Melbourne*); Hejazi, Maryam (*University of Melbourne*); Garrett, David J. (*University of Melbourne*); Prawer, Steven (*University of Melbourne*); Ibbotson, Michael R (*Australian College of Optometry*)

10:45-11:00	ThB01.2
<b>An Investigation of Audibility Effects on Cochlear Implant Speech Perception Prediction</b> .....	1801-1804
Watkins, Gregory Douglas* ( <i>The University of Sydney</i> ); Swanson, Brett Anthony ( <i>Cochlear Limited</i> ); Suaning, Gregg ( <i>The University of Sydney</i> )	
11:00-11:15	ThB01.3
<b>Electrotactile Feedback with Spatial and Mixed Coding for Object Identification and Closed-Loop Control of Grasping Force in Myoelectric Prostheses</b> .....	1805-1808
Chai, Guohong* ( <i>Shanghai Jiao Tong University</i> ); Briand, Josselin ( <i>Shanghai Jiao Tong University</i> ); Su, Shiyong ( <i>Shanghai Jiao Tong University</i> ); Sheng, Xinjun ( <i>Shanghai Jiao Tong University</i> ); Zhu, Xiangyang ( <i>Shanghai Jiao Tong University</i> )	
11:15-11:30	ThB01.4
<b>Somatosensory Cortex Microstimulation: Behavioral Effects of Phase Duration and Asymmetric Waveforms</b> .....	1809-1812
Urdaneta, Morgan* ( <i>University of Florida</i> ); Kunigk, Nicolas ( <i>University of Florida</i> ); Delgado, Francisco (Dr.); Otto, Kevin ( <i>University of Florida</i> )	
11:30-11:45	ThB01.5
<b>Comparison of Electrically Elicited Responses in Rabbit and Mouse Retinal Ganglion Cells</b> .....	1813-1816
Werginz, Paul* ( <i>Massachusetts General Hospital / Harvard Medical School</i> ); Fried, Shelley ( <i>Massachusetts General Hospital / Harvard Medical School</i> )	
11:45-12:00	ThB01.6
<b>Effect of Interphase Gap Duration and Stimulus Rate on Threshold of Visual Cortical Neurons in the Rat</b> .....	1817-1820
Xie, Hui ( <i>City University of Hong Kong</i> ); Shek, Chi Ho ( <i>City University of Hong Kong</i> ); Wang, Yi ( <i>City University of Hong Kong</i> ); Chan, Leanne LH* ( <i>City University of Hong Kong</i> )	

ThB02: 10:30-12:00	Hall A8 – Level 1
<b>Deep Learning Methods in Biosignal Analysis</b> (Oral Session)	
Chair: Celler, Branko George ( <i>University of New South Wales</i> )	

10:30-10:45	ThB02.1
<b>Blood Pressure Estimation using Time Domain Features of Auscultatory Waveforms and Deep Learning</b> .....	1821-1824
Argha, Ahmadreza* ( <i>University of New South Wales</i> ); Celler, Branko George ( <i>University of New South Wales</i> )	
10:45-11:00	ThB02.2
<b>2D Wavelet Scalogram Training of Deep Convolutional Neural Network for Automatic Identification of Micro-Scale Sharp Wave Biomarkers in the Hypoxic-Ischemic EEG of Preterm Sheep</b> .....	1825-1828
Abbasi, Hamid* ( <i>University of Auckland</i> ); Bennet, Laura ( <i>The University of Auckland</i> ); Gunn, Alistair Jan ( <i>University of Auckland</i> ); Unsworth, Charles Peter ( <i>University of Auckland</i> )	
11:00-11:15	ThB02.3
<b>Fusion of End-to-End Deep Learning Models for Sequence-to-Sequence Sleep Staging</b> .....	1829-1833
Phan, Huy* ( <i>University of Kent</i> ); Chén, Oliver ( <i>University of Oxford</i> ); Koch, Philipp ( <i>University of Lübeck</i> ); Mertins, Alfred ( <i>University of Lübeck</i> ); De Vos, Maarten ( <i>University of Oxford</i> )	
11:15-11:30	ThB02.4
<b>Deep Learning Techniques for Improving Digital Gait Segmentation</b> .....	1834-1837
Gadaleta, Matteo ( <i>University of Padova</i> ); Cisotto, Giulia* ( <i>University of Padova</i> ); Rossi, Michele ( <i>University of Padova</i> ); Rehman, Rana Zia Ur ( <i>Newcastle University</i> ); Rochester, Lynn ( <i>Newcastle University</i> ); Del Din, Silvia ( <i>Newcastle University</i> )	
11:30-11:45	ThB02.5
<b>A Joint-Feature Learning-Based Voice Conversion System for Dysarthric User based on Deep Learning Technology</b> .....	1838-1841
Chen, Ko-Chiang ( <i>National Yang-Ming University</i> ); Yeh, Hsiu – Wei ( <i>Yuan Ze University</i> ); Han, Ji Yan ( <i>Yang Ming</i> ); Jhang, Sin-Hua ( <i>National Yang-Ming University</i> ); Zheng, Wei-Zhong ( <i>National Yang Ming University</i> ); Lai, Ying-Hui* ( <i>National Yang-Ming University</i> )	

11:45-12:00 ThB02.6  
**Improved A-Phase Detection of Cyclic Alternating Pattern using Deep Learning** ..... 1842-1845  
 Hartmann, Simon\* (*The University of Adelaide*); Baumert, Mathias (*The University of Adelaide*)

**ThB03: 10:30-12:00** Hall A3 – Level 1  
**Novel Imaging Modalities (Oral Session)**

10:30-10:45 ThB03.1  
**Experimental Validation for Microwave based Real-Time Monitoring for Microwave Ablation Treatment** ..... 1846-1850  
 Kanazawa, Kazuki (*University of Electro-Communications*); Kidera, Shouhei\* (*University of Electro-Communications*)

10:45-11:00 ThB03.2  
**Hyperspectral Imaging for Thermal Effect Monitoring in in-Vivo Liver during Laser Ablation** ..... 1851-1854  
 De Landro, Martina\* (*Politecnico di Milano*); Saccomandi, Paola (*Politecnico di Milano*); Barberio, Manuel (*IHU Institute of Image-Guided Surgery, Strasbourg*); Schena, Emiliano (*University of Rome Campus Bio-Medico*); Marescaux, Jacques (*IRCAD*); Diana, Michele (*IRCAD: Research Institute against Cancer of Digestive System, St*)

11:00-11:15 ThB03.3  
**Magnetomyographic Recordings of Pelvic Floor Activity during Pregnancy and Postpartum: A Novel Non-Invasive Approach** ..... 1855-1858  
 Escalona-Vargas, Diana\* (*University of Arkansas for Medical Sciences*); Oliphant, Sallie (*University of Arkansas for Medical Sciences*); Eswaran, Hari (*Univ. of Arkansas for Medical Sci*)

11:15-11:30 ThB03.4  
**An Air-Operated Bistatic System for Breast Microwave Radar Imaging: Pre-Clinical Validation** ..... 1859-1862  
 Solis-Nepote, Mario (*Research Institute in Oncology & Hematology, Winnipeg, MB.*); Reimer, Tyson (*University of Manitoba*); Pistorius, Stephen\* (*University of Manitoba*)

11:30-11:45 ThB03.5  
**Multi-Frequency Integration Algorithm of Contrast Source Inversion Method for Microwave Breast Tumor Detection** ..... 1863-1867  
 Sato, Hiroki\* (*The University of Electro-Communications*); Kidera, Shouhei (*University of Electro-Communications*)

11:45-12:00 ThB03.6  
**Super-Resolution Radar Imaging for Breast Cancer Detection with Microwaves: The Integrated Information Selection Criteria** ..... 1868-1874  
 Fasoula, Angie\* (*Microwave Vision*); Moloney, Brian (*Lambe Institute for Translational Research, National University*); Duchesne, Luc (*Microwave Vision*); Gil Cano, Julio Daniel (*Microwave Vision*); Oliveira, Barbara Luz (*HRB Clinical Research Facility, National University of Ireland G*); Bernard, Jean-Gael (*Microwave Vision*); Kerin, Michael (*Lambe Institute for Translational Research, National University*)

**ThB04: 10:30-12:00** Hall A1 – Level 1  
**Modeling Cell, Tissue, and Physiology for Patient Care (Oral Session)**  
**Chair:** Marmarelis, Vasilis (*University of Southern California*)  
**Co-Chair:** Dokos, Socrates (*University of New South Wales*)

10:30-10:45 ThB04.1  
**Inter-Species Differences in the Response of Sinus Node Cellular Pacemaking to Changes of Extracellular Calcium** ..... 1875-1878  
 Loewe, Axel\* (*Karlsruhe Institute of Technology (KIT)*); Lutz, Yannick (*Karlsruhe Institute of Technology (KIT)*); Nagy, Norbert (*University of Szeged*); Fabbri, Alan (*University Medical Center Utrecht*); Schweda, Christoph (*Karlsruhe Institute of Technology (KIT)*); Varró, András (*University of Szeged*); Severi, Stefano (*University of Bologna*)

10:45-11:00	ThB04.2
<b>Closed-Loop Modeling of the Heart-Rate Reflex for Improved Diagnosis and Monitoring of Mild Cognitive Impairment</b> .....	1879-1882
Marmarelis, Vasilis* ( <i>University of Southern California</i> ); Shin, Dae ( <i>University of Southern California</i> ); Zhang, Rong ( <i>University of Texas Southwestern Medical Center at Dallas</i> )	
11:00-11:15	ThB04.3
<b>The Influence of Vectorcardiogram Orientation on the T/QRS Ratio Obtained via Non-Invasive Fetal ECG</b> .....	1883-1886
Keenan, Emerson* ( <i>The University of Melbourne</i> ); Karmakar, Chandan ( <i>Deakin University</i> ); Palaniswami, Marimuthu ( <i>The University of Melbourne</i> )	
11:15-11:30	ThB04.4
<b>XLIF Interbody Cage Reduces Stress and Strain of Fixation in Spinal Reconstructive Surgery in Comparison with TLIF Cage with Bilateral or Unilateral Fixation: A Computational Analysis</b> .....	1887-1890
Zhang, Teng* ( <i>The University of Hong Kong, Queen Mary Hospital</i> ); Bai, Siwei ( <i>Technical University of Munich</i> ); Dokos, Socrates ( <i>University of New South Wales</i> ); Cheung, Jason Pui Yin ( <i>The University of Hong Kong</i> ); Diwan, Ashish ( <i>Spine Service, St George Hospital</i> )	
11:30-11:45	ThB04.5
<b>Identification of the Infarct Time in Patients with Acute Myocardial Infarction</b> .....	1891-1894
Procopio, Anna ( <i>Università degli Studi Magna Graecia di Catanzaro</i> ); De Rosa, Salvatore ( <i>Magna Graecia University</i> ); Covello, Caterina ( <i>Università degli Studi Magna Graecia di Catanzaro</i> ); Merola, Alessio ( <i>Università degli Studi Magna Graecia di Catanzaro</i> ); Sabatino, Jolanda ( <i>Università degli Studi Magna Graecia di Catanzaro</i> ); De Luca, Alessia ( <i>Università degli Studi Magna Graecia di Catanzaro</i> ); Liebetrau, Christoph ( <i>German Center for Cardiovascular Research (DZHK)</i> ); Hamm, Christian W. ( <i>German Center for Cardiovascular Research (DZHK)</i> ); Indolfi, Ciro ( <i>Magna Graecia University</i> ); Amato, Francesco ( <i>Università degli Studi Magna Graecia di Catanzaro</i> ); Cosentino, Carlo* ( <i>Università degli Studi Magna Graecia di Catanzaro</i> )	
11:45-12:00	ThB04.6
<b>Modeling RF-Induced Power Deposition and Temperature Rise of Coaxial Leads with Helical Wires</b> .....	1895-1898
Kozlov, Mikhail* ( <i>Max Planck Institute for Human Cognitive &amp; Brain Sciences</i> ); Horner, Marc ( <i>ANSYS, Inc.</i> ); Kainz, Wolfgang ( <i>Food &amp; Drug Administration</i> )	
ThB05: 10:30-12:00	Hall A2 – Level 1
<b>Neural Networks for Cardiovascular Signal Applications</b> (Oral Session)	
<b>Chair:</b> Valenza, Gaetano ( <i>University of Pisa</i> )	
<b>Co-Chair:</b> Barbieri, Riccardo ( <i>Politecnico di Milano</i> )	
10:30-10:45	ThB05.1
<b>PPGnet: Deep Network for Device Independent Heart Rate Estimation from Photoplethysmogram</b> .....	1899-1902
A, Shyam* ( <i>Healthcare Technology Innovation Centre</i> ); R, Vignesh ( <i>Healthcare Technology Innovation Center, IIT Madras</i> ); SP, Preejith ( <i>Healthcare Technology Innovation Center – IIT Madras</i> ); Joseph, Jayaraj ( <i>HTIC, Indian Institute of Technology Madras</i> ); Sivaprakasam, Mohanasankar ( <i>Indian Institute of Technology Madras</i> )	
10:45-11:00	ThB05.2
<b>A Robust Machine Learning Architecture for a Reliable ECG Rhythm Analysis during CPR</b> .....	1903-1907
Isasi Liñero, Iraia* ( <i>UPV/EHU</i> ); Irusta, Unai ( <i>UPV/EHU</i> ); Elola, Andoni ( <i>University of the Basque Country</i> ); Aramendi, Elisabete ( <i>University of the Basque Country</i> ); Eftestøl, Trygve ( <i>University of Stavanger</i> ); Kramer-Johansen, Jo ( <i>Oslo University Hospital</i> ); Wik, Lars ( <i>Oslo University Hospital</i> )	
11:00-11:15	ThB05.3
<b>A Deep Learning Method to Detect Atrial Fibrillation based on Continuous Wavelet Transform</b> .....	1908-1912
Wu, Ziqian ( <i>Fudan University</i> ); Feng, Xujian ( <i>Fudan University</i> ); Yang, Cuiwei* ( <i>Fudan University</i> )	
11:15-11:30	ThB05.4
<b>An Electrocardiogram Delineator via Deep Segmentation Network</b> .....	1913-1916
Jia, Dongya* ( <i>Guangzhou Shiyuan Electronics Co., Ltd</i> ); Zhao, Wei ( <i>Guangzhou Shiyuan Electronics Co., Ltd</i> ); Li, Zhenqi ( <i>Guangzhou Shiyuan Electronics Co., Ltd</i> ); Hu, Jing ( <i>Guangzhou Shiyuan Electronic Technology Co., Ltd.</i> ); Yan, Cong ( <i>Guangzhou Shiyuan Electronics Co., Ltd</i> ); Wang, Hongmei ( <i>Guangzhou Shiyuan Electronics Co., Ltd</i> ); You, Tianyuan ( <i>Guangzhou Shiyuan Electronics Co., Ltd.</i> )	

11:30-11:45 ThB05.5  
**Novel Deep Convolutional Neural Network for Cuff-Less Blood Pressure Measurement using ECG and PPG Signals** ..... 1917-1920  
 Yan, Cong\* (*Guangzhou Shiyuan Electronics Co., Ltd*); Li, Zhenqi (*Guangzhou Shiyuan Electronics Co., Ltd*); Zhao, Wei (*Guangzhou Shiyuan Electronics Co., Ltd*); Hu, Jing (*Guangzhou Shiyuan Electronic Technology Co., Ltd.*); Jia, Dongya (*Guangzhou Shiyuan Electronics Co., Ltd*); Wang, Hongmei (*Guangzhou Shiyuan Electronics Co., Ltd*); You, Tianyuan (*Guangzhou Shiyuan Electronics Co., Ltd.*)

11:45-12:00 ThB05.6  
**Convolutional Recurrent Neural Networks to Characterize the Circulation Component in the Thoracic Impedance during Out-of-Hospital Cardiac Arrest** ..... 1921-1925  
 Elola, Andoni\* (*University of the Basque Country*); Aramendi, Elisabete (*University of the Basque Country*); Irusta, Unai (*UPV/EHU*); Picon, Artzai (*Tecnalia Research & Innovation*); Alonso, Erik (*University of the Basque Country*); Isasi Liñero, Iraia (*UPV/EHU*); Idris, Ahamed (*University of Texas Southwestern Medical Center*)

ThB06: 10:30-12:00 Hall A5 – Level 1  
**Neuromuscular Systems (II)** (Oral Session)  
**Chair:** Perreault, Eric (*Northwestern University*)  
**Co-Chair:** Al-Jumaily, Adel (*University of Technology Sydney*)

10:30-10:45 ThB06.1  
**Heterogeneity Counts More than Power for HD-sEMG-Based Joint Force Estimation** ..... 1926-1929  
 Zhang, Cong (*USTC*); Chen, Xiang\* (*University of Science & Technology of China*); Zhang, Xu (*University of Science & Technology of China*)

10:45-11:00 ThB06.2  
**A Wearable Neural Interface for Detecting and Decoding Attempted Hand Movements in a Person with Tetraplegia** ..... 1930-1933  
 Ting, Jordyn\* (*University of Pittsburgh*); Del Vecchio, Alessandro (*Imperial College London*); Friedenber, David (*Battelle Memorial Institute*); Liu, Monica (*University of Pittsburgh*); Schoenewald, Caroline (*University of Pittsburgh*); Sarma, Devapratim (*University of Pittsburgh*); Collinger, Jennifer (*University of Pittsburgh*); Colachis, Sam (*Battelle Memorial Institute*); Sharma, Gaurav (*Battelle*); Farina, Dario (*Imperial College London*); Weber, Douglas (*University of Pittsburgh*)

11:00-11:15 ThB06.3  
**Evaluation of Langevin Model for Human Stabilogram based on Reproducibility of Statistical Indicators** ..... 1934-1939  
 Tawaki, Yuta\* (*Keio University*); Murakami, Toshiyuki (*Keio University*)

11:15-11:30 ThB06.4  
**LQG Framework Explains Performance of Balancing Inverted Pendulum with Incongruent Visual Feedback** ..... 1940-1943  
 Leib, Raz\* (*Technical University of Munich*); Cesonis, Justinas (*Technical University of Munich*); Franklin, Sae (*Institute for Cognitive Systems, Technical University of Munich*); Franklin, David W. (*Technical University of Munich*)

11:30-11:45 ThB06.5  
**Investigation of the Neural Drive during Vibration Exercise by High-Density Surface- Electromyography** ..... 1944-1947  
 Xu, Lin\* (*Eindhoven University of Technology*); Negro, Francesco (*Aalborg University, Aalborg, Denmark*); Rabotti, Chiara (*Eindhoven University of Technology*); Farina, Dario (*Imperial College London*); Mischi, Massimo (*Eindhoven University of Technology*)

11:45-12:00 ThB06.6  
**Muscle Fatigue Analysis by using a Scale Mixture-Based Stochastic Model of Surface EMG Signals** ..... 1948-1951  
 Furui, Akira\* (*Hiroshima University*); Tsuji, Toshio (*Hiroshima University*)

ThB09: 10:30-12:00 M1 – Level 3  
**Modeling of Networks and Diseases** (Oral Session)  
**Chair:** Bouteiller, Jean-Marie Charles (*University of Southern California*)  
**Co-Chair:** Liang, Jie (*University of Illinois at Chicago*)

10:30-10:45 ThB09.1  
**Parameter Uncertainty Analysis of a Mathematical Ion Channel Model** ..... 1952-1955  
 Shimayoshi, Takao\* (*Kyushu University*)

10:45-11:00 ThB09.2  
**Pathogenic Processes Underlying Alzheimer's Disease: Modeling the Effects of Amyloid Beta on Synaptic Transmission** ..... 1956-1959  
 Bouteiller, Jean-Marie Charles\* (*University of Southern California*); Mergenthal, Adam (*University of Southern California*); Hu, Eric (*University of Southern California*); Berger, Theodore (*USC*)

11:00-11:15 ThB09.3  
**Quantifying Interactions between Neural Populations during Behavior using Dynamical Systems Models** ..... 1960-1964  
 D'Aleo, Raina\* (*Johns Hopkins University*); Rouse, Adam (*University of Rochester Medical Center*); Schieber, Marc (*University of Rochester*); Sarma, Sridevi V. (*Johns Hopkins University*)

11:15-11:30 ThB09.4  
**Sparse, Predictive, and Interpretable Functional Connectomics with Uol-Lasso** ..... 1965-1968  
 Sachdeva, Pratik\* (*University of California, Berkeley*); Bouchard, Kristofer E. (*LBNL*); Bhattacharyya, Sharmodeep (*Oregon State University*)

11:30-11:45 ThB09.5  
**Sensitivities of Regulation Intensities in Feed-Forward Loops with Multistability** ..... 1969-1972  
 Terebus, Anna (*University of Illinois at Chicago*); Cao, Youfang (*Merck & Co. Inc*); Liang, Jie\* (*University of Illinois at Chicago*)

11:45-12:00 ThB09.6  
**Overcoming Channel Uncertainties in Molecular-Communication-Inspired Direct Drug Targeting** ..... 1973-1976  
 Sharifi, Neda (*The University of Waikato*); Holmes, Geoffrey (*The University of Waikato*); Yu, Zhou (*Beijing Institute of Collaborative Innovation*); Ali, Muhammad (*University of Waikato*); Chen, Yifan\* (*The University of Waikato*)

ThB10: 10:30-12:00 M2 – Level 3  
**Image-Guided Therapies** (Oral Session)  
**Chair:** Haemmerich, Dieter (*Medical University of South Carolina*)  
**Co-Chair:** Linte, Cristian A. (*Rochester Institute of Technology*)

10:30-10:45 ThB10.1  
**Shoulder-Mounted Robot for MRI-Guided Arthrography: Clinically Optimized System** ..... 1977-1980  
 Kim, Gyeong Hu\* (*Johns Hopkins University*); Patel, Niravkumar (*Johns Hopkins University*); Yan, Jiawen (*Johns Hopkins University*); Wu, Di (*Johns Hopkins University*); Li, Gang (*Johns Hopkins University*); Iordachita, Iulian (*Johns Hopkins University*); Cleary, Kevin (*Children's National Medical Center*)

10:45-11:00 ThB10.2  
**Auditory and Visual User Interface for Optical Guidance during Stereotactic Brain Tumor Biopsies** ..... 1981-1984  
 Maintz, Michaela (*Fachhochschule Nordwestschweiz*); Black, David (*Fraunhofer MEVIS*); Haj-Hosseini, Neda\* (*University of Linköping*)

11:00-11:15 ThB10.3  
**Remotely Actuated Needle Driving Device for MRI-Guided Percutaneous Interventions: Force and Accuracy Evaluation** ..... 1985-1989  
 Wu, Di\* (*Johns Hopkins University*); Li, Gang (*Johns Hopkins University*); Patel, Niravkumar (*Johns Hopkins University*); Yan, Jiawen (*Johns Hopkins University*); Kim, Gyeong Hu (*Johns Hopkins University*); Monfaredi, Reza (*Children's National Health System*); Cleary, Kevin (*Children's National Medical Center*); Iordachita, Iulian (*Johns Hopkins University*)

11:15-11:30 ThB10.4  
**Body-Mounted MRI-Conditional Parallel Robot for Percutaneous Interventions Structural Improvement, Calibration, and Accuracy Analysis** ..... 1990-1993  
 Yan, Jiawen\* (*Johns Hopkins University*); Patel, Niravkumar (*Johns Hopkins University*); Li, Gang (*Johns Hopkins University*); Wu, Di (*Johns Hopkins University*); Cleary, Kevin (*Children's National Medical Center*); lordachita, Iulian (*Johns Hopkins University*)

11:30-11:45 ThB10.5  
**Primary Design Concept for Non-Metallic Needle for MRI Guided Spinal Applications** ..... 1994-1997  
 Al-Maatoq, Marwah\* (*Faculty of Electrical Engineering & Information Technology, Ot*); Boese, Axel (*Dept. of Medical Engineering, Otto-von-Guericke-University*); Werner Henke, Heinz (*Innovative Tomography Products (ITP), Bochum, Germany*); Friebe, Michael (*Otto-von-Guericke-University*)

11:45-12:00 ThB10.6  
**Tunability of Acoustic and Mechanical Behaviors in Breast Tissue Mimicking Materials** ..... 1998-2002  
 Ng, Si Yen (*National Cheng Kung University*); Lin, Chi-Lun\* (*National Cheng Kung University*)

ThB11: 10:30-12:00 M4 – Level 3  
**Heart Rate and Blood Pressure Variability** (Oral Session)  
 Chair: Zauneder, Sebastian (*Dortmund University of Applied Sciences and Arts*)

10:30-10:45 ThB11.1  
**Strength and Latency of the HP-SAP Closed Loop Variability Interactions in Subjects Prone to Develop Postural Syncope** ..... 2003-2006  
 Bari, Vlasta\* (*IRCCS Policlinico San Donato*); Cairo, Beatrice (*Universita' degli Studi di Milano*); Vaini, Emanuele (*IRCCS Policlinico San Donato*); De Maria, Beatrice (*IRCCS Fondazione Salvatore Maugeri, Milano*); Rossato, Gianluca (*Sacro Cuore Hospital, Negrar (VR)*); Tonon, Davide (*IRCCS Sacro Cuore Don Calabria Hospital, Negrar, Verona, Italy*); Faes, Luca (*University of Palermo*); Porta, Alberto (*Universita' degli Studi di Milano*)

10:45-11:00 ThB11.2  
**Cardiovascular Coupling-Based Classification of Ischemic and Dilated Cardiomyopathy Patients** ..... 2007-2010  
 Rodriguez, Javier\* (*Institut de Bioenginyeria de Catalunya (IBEC)*); Schulz, Steffen (*University of Applied Sciences Jena*); Voss, Andreas (*University of Applied Sciences Jena*); Giraldo, Beatriz (*Universitat Politècnica de Catalunya*)

11:00-11:15 ThB11.3  
**Assessment of the Coupling Strength of Cardiovascular Control via Joint Symbolic Analysis during Postural Challenge in Recreational Athletes** ..... 2011-2014  
 Martins de Abreu, Raphael\* (*Federal University of São Carlos*); Catai, Aparecida (*Dept. of Physiotherapy, Federal University of São Carlos, S*); Cairo, Beatrice (*Universita' degli Studi di Milano*); Rehder-Santos, Patricia (*Federal University of São Carlos*); De Maria, Beatrice (*IRCCS Fondazione Salvatore Maugeri, Milano*); Vaini, Emanuele (*IRCCS Policlinico San Donato*); Bari, Vlasta (*IRCCS Policlinico San Donato*); Porta, Alberto (*Universita' degli Studi di Milano*)

11:15-11:30 ThB11.4  
**The Complexity of Dreams: A Multiscale Entropy Study on Cardiovascular Variability Series** ..... 2015-2018  
 Nardelli, Mimma\* (*University of Pisa*); Faraguna, Ugo (*Dept. of Translational Research & of New Surgical & Med*); Grandi, Giulia (*Dept. of Translational Research & of New Surgical & Med*); Bruno, Rosa Maria (*Dept. of Clinical & Experimental Medicine, University of*); Valenza, Gaetano (*University of Pisa*); Scilingo, Enzo Pasquale (*University of Pisa*)

11:30-11:45 ThB11.5  
**Automatic Detection of General Anesthetic-States using ECG-Derived Autonomic Nervous System Features** ..... 2019-2022  
 Polk, Sam, L\* (*Tufts University*); Kashkooli, Kimia (*Tufts University School of Medicine*)



11:45-12:00 ThB11.6  
**Heartbeat Dynamics Analysis under Cold-Pressure Test using Wavelet P-Leader Non-Gaussian Multiscale Expansions** ..... 2023-2026  
 Catrambone, Vincenzo\* (*Università di Pisa*); Wendt, Herwig (*CNRS, University of Toulouse*); Scilingo, Enzo Pasquale (*University of Pisa*); Barbieri, Riccardo (*Politecnico di Milano*); Abry, Patrice (*ENS Lyon, CNRS*); Valenza, Gaetano (*University of Pisa*)

**ThB12: 10:30-12:00 M6 – Level 3**  
**Ophthalmic Imaging and Analysis (Oral Session)**

10:30-10:45 ThB12.1  
**Depthwise Separable Convolutional Neural Network Model for Intra-Retinal Cyst Segmentation** ..... 2027-2031  
 Girish, GN\* (*National Institute of Technology Karnataka, Surathkal*); Saikumar, Banoth (*Dept. of Computer Science & Engineering, National Institute*); Roychowdhury, Sohini (*University of Washington, Bothell*); R Kothari, Abhishek (*Dr. Agarwal's Eye Hospital, Jaipur, India*); Rajan, Jeny (*Dept. of Computer Science & Engineering, National Institute*)

10:45-11:00 ThB12.2  
**Conditional Adversarial Transfer for Glaucoma Diagnosis** ..... 2032-2035  
 Wang, Jingwen (*South China University of Technology*); Yan, Yuguang (*South China University of Technology*); Xu, Frank Yanwu\* (*Baidu*); Zhao, Wei (*Guangzhou Shiyuan Electronics Co., Ltd*); Min, Huaqing (*South China University of Technology*); Tan, Mingkui (*South China University of Technology*); Liu, Jiang (*Ningbo Institute of Materials Technology & Engineering, CAS*)

11:00-11:15 ThB12.3  
**Enhancing the Accuracy of Glaucoma Detection from OCT Probability Maps using Convolutional Neural Networks** ..... 2036-2040  
 Thakoor, Kaveri\* (*Columbia University*); Li, Xinhui (*Columbia University*); Tsamis, Emmanouil (*Columbia University*); Sajda, Paul (*Columbia University*); Hood, Donald (*Columbia University*)

11:15-11:30 ThB12.4  
**Accurate Cross-Section Estimation of Blood Vessels in Choroidal Haller's Layer: An Iterative Method based on 3D Tensor Voting** ..... 2041-2044  
 Ibrahim, Mohammed Nasar (*Indian Institute of Technology, Hyderabad*); Vupparaboina, Kiran Kumar (*Indian Institute of Technology Hyderabad*); Marupally, Abhilash Goud (*L V Prasad Eye Institute*); Bin Bashir, Sarforaz (*L V Prasad Eye Institute*); Chhablani, Jay (*L. V. Prasad Eye Institute Hyderabad*); Jana, Soumya\* (*Indian Institute of Technology Hyderabad*)

11:30-11:45 ThB12.5  
**An Interpretable Ensemble Deep Learning Model for Diabetic Retinopathy Disease Classification** ..... 2045-2048  
 Jiang, Hongyang\* (*Sino-Dutch Biomedical & Information Engineering School, Northe*); Yang, Kang (*Beijing ZhiZhen Internet Technology Co., Ltd .*); Gao, Mengdi (*Sino-Dutch Biomedical & Information Engineering School, Northe*); Zhang, Dongdong (*Beijing ZhiZhen Internet Technology Co., Ltd .*); Ma, He (*Northeastern University*); Qian, Wei (*Northeastern University*)

11:45-12:00 ThB12.6  
**Deep Learning Classification Models Built with Two-Step Transfer Learning for Age Related Macular Degeneration Diagnosis** ..... 2049-2052  
 An, Guangzhou\* (*RIKEN*); Yokota, Hideo (*RIKEN Center for Advanced Photonics*); Motozawa, Naohiro (*Dept. of Ophthalmology, Kobe City Eye Hospital*); Takagi, Seiji (*Teikyo University Mizonokuchi hospital*); Mandai, Michiko (*RIKEN BDR*); Kitahata, Shohei (*RIKEN Center for Biosystems Dynamics Research*); Hiramami, Yasuhiko (*RIKEN Center for Biosystems Dynamics Research*); Takahashi, Masayo (*RIKEN*); Kurimoto, Yasuo (*Kobe City Eye Hospital*); Akiba, Masahiro (*Topcon Corporation*)

ThB13: 10:30-12:00 R2 – Level 3  
**Clinical Applications of Inertial Sensors (Oral Session)**  
**Co-Chair:** Hedin, Daniel (*Advanced Medical Electronics*)

10:30-10:45 ThB13.1  
**Accuracy of the Orientation Estimate Obtained using Four Sensor Fusion Filters Applied to Recordings of Magneto-Inertial Sensors Moving at Three Rotation Rates** ..... 2053-2058  
 Caruso, Marco\* (*Politecnico di Torino*); Sabatini, Angelo Maria (*Scuola Superiore Sant'Anna*); Knaflitz, Marco (*Politecnico di Torino*); Gazzoni, Marco (*Politecnico di Torino*); Della Croce, Ugo (*University of Sassari*); Cereatti, Andrea (*University of Sassari*)

10:45-11:00 ThB13.2  
**Investigating Normal Day to Day Variations of Postural Control in a Healthy Young Population using Wii Balance Boards** ..... 2059-2062  
 Johnston, William\* (*University College Dublin, Insight Centre*); McGrath, Denise (*University College Dublin*); Greene, Barry R. (*Kinesio Health Technologies*); Caulfield, Brian (*UCD*)

11:00-11:15 ThB13.3  
**Capturing Concussion Related Changes in Dynamic Balance using the Quantified Y Balance Test – A Case Series of Six Elite Rugby Union Players** ..... 2063-2067  
 Johnston, William\* (*University College Dublin, Insight Centre*); O'Reilly, Martin (*Insight Centre for Data Analytics, University College Dublin*); Liston, Mairead (*IRFU*); McLoughlin, Rod (*IRFU*); Coughlan, Garrett (*University College Dublin*); Caulfield, Brian (*UCD*)

11:15-11:30 ThB13.4  
**Laboratory and On-Field Data Collected by a Head Impact Monitoring Mouthguard** ..... 2068-2072  
 Bartsch, Adam\* (*Prevent Biometrics*); Hedin, Daniel (*Advanced Medical Electronics*); Gibson, Paul (*Advanced Medical Electronics*); Miele, Vincent (*University of Pittsburg*); Benzel, Edward (*Cleveland Clinic*); Alberts, Jay (*Cleveland Clinic*); Samorezov, Sergey (*Cleveland Clinic*); Shah, Alok (*Medical College of Wisconsin*); Stemper, Brian (*Medical College of Wisconsin*); McCrea, Michael (*Medical College of Wisconsin*)

11:30-11:45 ThB13.5  
**Predictive Control for an Active Prosthetic Socket informed by FEA-Based Tissue Damage Risk Estimation** ..... 2073-2076  
 Mbithi, Florence M.\* (*University of Southampton*); Chipperfield, Andrew John (*University of Southampton*); Steer, Joshua W. (*University of Southampton*); Dickinson, Alexander S. (*University of Southampton*)

11:45-12:00 ThB13.6  
**Portable Gait Lab: Zero Moment Point for Minimal Sensing of Gait** ..... 2077-2081  
 Mohamed Refai, Mohamed Irfan\* (*University of Twente*); van Beijnum, Bert-Jan F. (*University of Twente*); Buurke, Jacob Hilbert (*Roessingh Research & Development*); Saes, Mique (*Amsterdam University Medical Centre*); Bussmann, Hans B.J. (*Erasmus MC*); Meskers, Carel (*VU University Medical Center*); Wegen, Erwin E.H. (*Dept. of Rehabilitation Medicine, VU University Medical Cen*); Kwakkel, Gert (*Dept. of Rehabilitation Medicine, VU University Medical Cen*); Veltink, Peter (*University of Twente*)

ThB15: 10:30-12:00 M3 – Level 3  
**Image Analysis and Classification – Machine Learning Approaches (II) (Oral Session)**  
**Chair:** Toschi, Nicola (*University of Rome "Tor Vergata", Faculty of Medicine*)  
**Co-Chair:** Cardoso, Jaime S. (*INESC TEC and University of Porto*)

10:30-10:45 ThB15.1  
**Hand and Object Segmentation from Depth Image using Fully Convolutional Network** ..... 2082-2086  
 Lim, Guan Ming\* (*Nanyang Technological University*); Jatesiktat, Prayook (*NTU*); Kuah, Christopher Wee Keong (*Tan Tock Seng Hospital Rehabilitation Centre*); Ang, Wei Tech (*Nanyang Technological University*)

10:45-11:00	ThB15.2
<b>Prediction of Multiple Sclerosis Patient Disability from Structural Connectivity using Convolutional Neural Networks</b> .....	2087-2090
Marzullo, Aldo* ( <i>University of Calabria</i> ); Kocevar, Gabriel ( <i>University Claude Bernard Lyon 1</i> ); Stamile, Claudio ( <i>CREATIS, Université Lyon 1</i> ); Calimeri, Francesco ( <i>University of Calabria</i> ); Terracina, Giorgio ( <i>University of Calabria</i> ); Durand-Dubief, Françoise ( <i>Hôpital Neurologique</i> ); Sappey-Marinier, Dominique ( <i>Université Claude Bernard – Lyon1</i> )	
11:00-11:15	ThB15.3
<b>Diagnostic Quality Assessment of Ocular Fundus Photographs: Efficacy of Structure-Preserving ScatNet Features</b> .....	2091-2094
Dev, Chander ( <i>Indian Institute of Technology Hyderabad</i> ); Sriramu, Sharang ( <i>IIT Hyderabad</i> ); Manne, Shanmukh Reddy* ( <i>Indian Institute of Technology Hyderabad</i> ); Marupally, Abhilash Goud ( <i>L V Prasad Eye Institute</i> ); Bin Bashar, Sarforaz ( <i>L V Prasad Eye Institute</i> ); Richhariya, Ashutosh ( <i>L.V. Prasad Eye Institute Hyderabad</i> ); Chhablani, Jay ( <i>L.V. Prasad Eye Institute Hyderabad</i> ); Vupparaboina, Kiran Kumar ( <i>Indian Institute of Technology Hyderabad</i> ); Jana, Soumya ( <i>Indian Institute of Technology Hyderabad</i> )	
11:15-11:30	ThB15.4
<b>Differential Diagnosis for Pancreatic Cysts in CT Scans using Densely-Connected Convolutional Networks</b> .....	2095-2098
Menze, Bjoern ( <i>TU Munich</i> ); Li, Hongwei* ( <i>Technical University of Munich</i> ); Shi, Kuangyu ( <i>University of Bern</i> )	
11:30-11:45	ThB15.5
<b>Motion Signatures for the Analysis of Seizure Evolution in Epilepsy</b> .....	2099-2105
Ahmedt-Aristizabal, David* ( <i>Queensland University of Technology</i> ); Sarfraz, Muhammad Saquib ( <i>Karlsruhe Institute of Technology</i> ); Denman, Simon ( <i>Queensland University of Technology</i> ); Nguyen, Kien ( <i>Queensland University of Technology</i> ); Fookes, Clinton ( <i>Queensland University of Technology</i> ); Dionisio, Sasha ( <i>Mater Hospital</i> ); Stiefelwagen, Rainer ( <i>Karlsruhe Institute of Technology</i> )	
11:45-12:00	ThB15.6
<b>Weight Rotation as a Regularization Strategy in Convolutional Neural Networks</b> .....	2106-2110
Castro, Eduardo* ( <i>INESCTEC</i> ); Costa Pereira, Jose ( <i>INESCTEC / Porto University</i> ); Cardoso, Jaime S. ( <i>INESCTEC &amp; University of Porto</i> )	
ThB16: 10:30-12:00	M5 – Level 3
<b>Joint Mechanics</b> (Oral Session)	
10:30-10:45	ThB16.1
<b>System Identification of Ankle Joint Dynamics based on Plane-Wave Ultrasound Muscle Imaging</b> .....	2111-2114
Ossenkoppele, Boudewine Willemine* ( <i>TU Delft</i> ); Daeichin, Varya ( <i>Delft University of Technology</i> ); Rodríguez Hernandez, Karen Elena ( <i>TU Delft</i> ); de Jong, Nico ( <i>Delft University of Technology &amp; Erasmus MC</i> ); Verweij, Martin D. ( <i>Delft University of Technology</i> ); Schouten, Alfred C. ( <i>Delft University of Technology</i> ); Mugge, Winfred ( <i>Delft University of Technology</i> )	
10:45-11:00	ThB16.2
<b>4D in-Vivo Quantification of Ankle Joint Space Width using Dynamic MRI</b> .....	2115-2118
Makki, Karim* ( <i>IMT Atlantique</i> ); Borotikar, Bhushan ( <i>University of Western Brittany</i> ); Garetier, Marc ( <i>Latim</i> ); Acosta, Oscar ( <i>Univ. Rennes, CLCC Eugène Marquis, INSERM, LTSI – UMR 1099</i> ); Brochard, Sylvain ( <i>CHRU Brest</i> ); Ben Salem, Douraied ( <i>CHRU Brest</i> ); Rousseau, François ( <i>Telecom Bretagne</i> )	
11:00-11:15	ThB16.3
<b>Estimation of Time-Varying Ankle Joint Stiffness under Dynamic Conditions via System Identification Techniques</b> .....	2119-2122
Moya Esteban, Alejandro* ( <i>University of Twente</i> ); van 't Veld, Ronald C. ( <i>University of Twente</i> ); Cop, Christopher P. ( <i>University of Twente</i> ); Durandau, Guillaume ( <i>University of Twente</i> ); Sartori, Massimo ( <i>University of Twente</i> ); Schouten, Alfred C. ( <i>Delft University of Technology</i> )	
11:15-11:30	ThB16.4
<b>Evaluation of Tibiofibular Joint Alignment in Ankle Osteoarthritis based on 3D Bone Thickness</b> .....	2123-2126
Fujinuma, Takuya* ( <i>Tokyo University of Science</i> ); Kosugi, Shinichi ( <i>Nara Prefectural Seiwa Medical Center</i> ); Kurokawa, Hiroaki ( <i>Nara Medical University</i> ); Tanaka, Yasuhito ( <i>Nara Medical University</i> ); Takemura, Hiroshi ( <i>Tokyo University of Science</i> ); Tsuichihara, Satoki ( <i>Tokyo University of Science</i> )	

11:30-11:45 ThB16.5  
**Prediction and Visualisation of Bony Impingement for Subject Specific Total Hip Arthroplasty** ..... 2127-2131  
 Palit, Arnab\* (*The University of Warwick*); King, Richard (*University Hospital Coventry & Warwickshire NHS Trust*); Gu, Yolanda (*Corin Group Pty Ltd*); Pierrepont, James (*Corin Group Pty Ltd*); Hart, Zoe (*Corin Group Pty Ltd*); Elliott, Mark (*IDH, WMG, University of Warwick*); Williams, Mark (*WMG, The University of Warwick*)

11:45-12:00 ThB16.6  
**Using Time-Frequency Analysis to Characterize Altered Knee Dynamics in Post ACL Reconstruction Individuals** ..... 2132-2135  
 Morgan, Kristin\* (*University of Connecticut*)

ThB18: 10:30-12:00	R13 – Level 3
<b>Brain Physiology and Modeling (Oral Session)</b>	
<b>Chair:</b> Butera, Robert ( <i>Georgia Institute of Technology</i> )	

10:30-10:45 ThB18.1  
**Evaluation of Epistemic Uncertainties for Bipolar Deep Brain Stimulation in Rodent Models** ..... 2136-2140  
 Butenko, Konstantin\* (*University of Rostock*); Bahls, Christian Rüdiger (*University of Rostock, Institute of General Electrical Engineering*); van Rienen, Ursula (*University of Rostock*)

10:45-11:00 ThB18.2  
**Change in Evoked Response of Mature Neuronal Network to Spatial Pattern Stimulation by Immature Neurons** ..... 2141-2144  
 Moriya, Fumika\* (*The University of Tokyo*); Shimba, Kenta (*The University of Tokyo*); Kotani, Kiyoshi (*University of Tokyo*); Jimbo, Yasuhiko (*University of Tokyo*)

11:00-11:15 ThB18.3  
**A Thalamo-Cortex Microcircuit Model of Beta Oscillations in the Parkinsonian Motor Cortex** ..... 2145-2148  
 Farokhniaee, AmirAli\* (*University College Dublin*); Lowery, Madeleine (*University College Dublin*)

11:15-11:30 ThB18.4  
**Neural Activity from Attention Networks Predicts Movement Errors** ..... 2149-2152  
 Breault, Macauley S.\* (*Johns Hopkins University*); Gonzalez-Martinez, Jorge (*Cleveland Clinic*); Gale, John (*Cleveland Clinic*); Sarma, Sridevi V. (*Johns Hopkins University*)

11:30-11:45 ThB18.5  
**Optimal Trajectories of Brain State Transitions Indicate Motor Function Changes Associated with Aging** ..... 2153-2156  
 Zhu, Hong (*Shanghai Jiao Tong University*); Zhou, Jie (*Shanghai Jiao Tong University*); Shu, Pin (*Shanghai Jiao Tong University*); Tong, Shanbao (*Shanghai Jiao Tong University*); Sun, Junfeng\* (*Shanghai Jiao Tong University*)

11:45-12:00 ThB18.6  
**Force-Temporal Characteristics of EEG-EMG Coherence during Isometric Contraction of Lateral Head of Gastrocnemius Muscle** ..... 2157-2160  
 Igasaki, Tomohiko\* (*Kumamoto University*); Yamashita, Kento (*Kumamoto University*); Ushijima, Takeshi (*Kumamoto University*)

ThB19: 10:30-12:00	R4 – Level 3
<b>General and Theoretical Informatics – Machine Learning (II) (Oral Session)</b>	
<b>Chair:</b> Holmes, David ( <i>Mayo Clinic</i> )	
<b>Co-Chair:</b> Chouvarda, Ioanna ( <i>Aristotle University</i> )	

10:30-10:45 ThB19.1  
**Machine Learning for Classification of Uterine Activity Outside Pregnancy** ..... 2161-2164  
 Bakkes, Tom Hendricus Gerardus Franciscus\* (*Eindhoven University of Technology*); Sammali, Federica (*Eindhoven University of Technology*); Kuijsters, Nienke Pertronella Maria (*Catharina Hospital Eindhoven*); Turco, Simona (*Eindhoven University of Technology*); Rabotti, Chiara (*Eindhoven University of Technology*); Schoot, Benedictus Christiaan (*Catharina Hospital Eindhoven*); Mischi, Massimo (*Eindhoven University of Technology*)

10:45-11:00	ThB19.2
<b>Predicting Lymphoma Outcomes and Risk Factors in Patients with Primary Sjögren's Syndrome using Gradient Boosting Tree Ensembles</b> .....	2165-2168
Pezoulas, Vasileios C. ( <i>University of Ioannina</i> ); Exarchos, Themis P. ( <i>Unit of Medical Tech &amp; Intelligent Info</i> ); Tzioufas, Athanasios ( <i>National &amp; Kapodistrian University of Athens</i> ); De Vita, Salvatore ( <i>Udine University</i> ); Fotiadis, Dimitrios I.* ( <i>University of Ioannina</i> )	
11:00-11:15	ThB19.3
<b>1D Convolutional Neural Networks for Estimation of Compensatory Reserve from Blood Pressure Waveforms</b> .....	2169-2173
Techentin, Robert ( <i>Mayo Clinic</i> ); Felton, Christopher ( <i>Mayo Clinic</i> ); Schlotman, Taylor ( <i>US Army Institute of Surgical Research</i> ); Gilbert, Barry ( <i>Mayo Clinic College of Medicine</i> ); Joyner, Michael ( <i>Mayo Clinic</i> ); Curry, Timothy ( <i>Mayo Clinic</i> ); Convertino, Victor ( <i>U.S. Army Institute of Surgical Research</i> ); Holmes, David* ( <i>Mayo Clinic</i> ); Haider, Clifton ( <i>Mayo Clinic</i> )	
11:15-11:30	ThB19.4
<b>Facilitating Machine Learning on Big Health Data Networks</b> .....	2174-2177
Pitoglou, Stavros* ( <i>Research &amp; Development Dpt. Computer Solutions SA, Biomedical Eng</i> ); Anastasiou, Athanasios ( <i>Biomedical Engineering Laboratory, National Technical University</i> ); Androutsou, Thelma ( <i>National Technical University of Athens</i> ); Giannouli, Dimitra ( <i>Research &amp; Development Dpt. Computer Solutions SA</i> ); Kostalas, Evaggelos ( <i>Research &amp; Development Dpt. Computer Solutions SA</i> ); MATSOPOULOS, GEORGE K ( <i>Inst of Comm &amp; Computer Systems</i> ); Koutsouris, Dimitrios ( <i>Biomedical Engineering Laboratory, School of Electrical &amp; Comp</i> )	
11:30-11:45	ThB19.5
<b>Machine Learning-Based Risk of Hospital Readmissions: Predicting Acute Readmissions within 30 Days of Discharge</b> .....	2178-2181
Baig, Mirza Mansoor* ( <i>Orion Health</i> ); Hua, Ning ( <i>Orion Health</i> ); Zhang, Edmond ( <i>Orion Health</i> ); Robinson, Reece ( <i>Orion Health</i> ); Armstrong, Delwyn ( <i>Waitemata District Health Board</i> ); Whittaker, Robyn ( <i>University of Auckland</i> ); Robinson, Tom ( <i>Waitemata District Health Board</i> ); Mirza, Farhaan ( <i>Auckland University of Technology</i> ); Ullah, Ehsan ( <i>Auckland District Health Board</i> )	
11:45-12:00	ThB19.6
<b>A Reliable Multi-Classifer Multi-Objective Model for Predicting Recurrence in Triple Negative Breast Cancer</b> .....	2182-2185
Chen, Xi* ( <i>Xi'an Jiao Tong University</i> ); Zhou, Zhiguo ( <i>UT Southwestern Medical Center</i> ); Thomas, Kimberly ( <i>Weill Cornell Medicine</i> ); Folkert, Michael ( <i>The University of Texas Southwestern Medical Center</i> ); Kim, Nathan ( <i>University of Texas Southwestern Medical Center</i> ); Rahimi, Asal ( <i>The University of Texas Southwestern Medical Center</i> ); Wang, Jing ( <i>University of Texas Southwestern Medical Center</i> )	

ThB20: 10:30-12:00	R5 – Level 3
<b>Stress Monitoring</b> (Oral Session)	
<b>Chair:</b> Leonhardt, Steffen ( <i>RWTH Aachen University</i> )	

10:30-10:45	ThB20.1
<b>Daytime Data and LSTM can Forecast Tomorrow's Stress, Health, and Happiness</b> .....	2186-2190
Umematsu, Terumi* ( <i>NEC Corporation</i> ); Sano, Akane ( <i>Rice University</i> ); Picard, Rosalind ( <i>Massachusetts Institute of Technology</i> )	
10:45-11:00	ThB20.2
<b>Prediction of Self-Perceived Stress and Arousal based on Electrodermal Activity</b> .....	2191-2195
Pakarinen, Tomppa Oskari* ( <i>Tampere University</i> ); Pietilä, Julia ( <i>Tampere University of Technology</i> ); Nieminen, Hannu ( <i>Tampere University of Technology</i> )	
11:00-11:15	ThB20.3
<b>Multi-Modal Acute Stress Recognition using Off-the-Shelf Wearable Devices</b> .....	2196-2201
Montesinos, Victoriano ( <i>EPFL</i> ); Dell'Agnola, Fabio ( <i>Ecole Polytechnique Fédérale de Lausanne (EPFL)</i> ); Arza Valdés, Adriana* ( <i>École Polytechnique Fédérale de Lausanne EPFL</i> ); Aminifar, Amir ( <i>EPFL</i> ); Aienza, David ( <i>EPFL</i> )	

11:15-11:30	ThB20.4
<b>Effect of Mental Workload on Breathing Pattern and Heart Rate for a Working Memory Task: A Pilot Study</b> .....	2202-2206
Jaiswal, Dibyanshu* ( <i>TCS Research &amp; Innovation</i> ); Chowdhury, Arijit ( <i>TCS Innovation Lab</i> ); Banerjee, Tanushree ( <i>TCS Innovation Lab</i> ); Chatterjee, Debatri ( <i>TCS Innovation Lab</i> )	
11:30-11:45	ThB20.5
<b>Evaluation and Classification of Physical and Psychological Stress in Firefighters using Heart Rate Variability</b> .....	2207-2212
Pluntke, Ulrike ( <i>IBM Deutschland GmbH</i> ); Gerke, Sebastian ( <i>IBM Research – Zurich</i> ); Sridhar, Arvind ( <i>IBM Research – Zurich</i> ); Weiss, Jonas ( <i>IBM Research – Zurich</i> ); Michel, Bruno* ( <i>IBM Research – Zurich</i> )	
11:45-12:00	ThB20.6
<b>A Comparative Study of Stress and Anxiety Estimation in Ecological Settings using a Smart-Shirt and a Smart-Bracelet</b> .....	2213-2216
Tiwari, Abhishek* ( <i>Institut National de la Recherche Scientifique</i> ); Cassani, Raymundo ( <i>Institut National de la Recherche Scientifique</i> ); Narayanan, Shrikanth ( <i>University of Southern California</i> ); Falk, Tiago ( <i>Institut National de la Recherche Scientifique</i> )	
ThB21: 10:30-12:00	R8 – level 3
<b>Diagnostic Devices – Physiological Monitoring</b> (Oral Session)	
<b>Co-Chair:</b> Fletcher, Richard Ribon ( <i>Massachusetts Institute of Technology</i> )	
10:30-10:45	ThB21.1
<b>A Force Line Trajectory Measuring System and Algorithms for Unicondylar Knee Replacement Surgery</b> .....	2217-2221
Su, Zhe ( <i>Tsinghua University</i> ); Wang, Zhihua ( <i>Tsinghua University</i> ); Chen, Hong* ( <i>Tsinghua Univ.</i> )	
10:45-11:00	ThB21.2
<b>Methods for Visualization of Gastric Endoscopic Mapping Data from Three-Dimensional, Non-Uniform Electrode Arrays</b> .....	2222-2225
Chan, Chih-Hsiang Alexander* ( <i>University of Auckland</i> ); Aghababae, Zahra ( <i>University of Auckland</i> ); Paskaranandavadeivel, Niranchan ( <i>The University of Auckland</i> ); Cheng, Leo K ( <i>The University of Auckland</i> ); Angeli, Timothy Robert ( <i>Auckland Bioengineering Institute, University of Auckland</i> )	
11:00-11:15	ThB21.3
<b>A Sampler Prototype for the Simultaneous Collection of Exhaled Air and Breath Condensate</b> .....	2226-2229
Lomonaco, Tommaso ( <i>University of Pisa, Dept. of Chemistry &amp; Industrial Chemi</i> ); Salvo, Pietro* ( <i>National Research Council</i> ); Ghimenti, Silvia ( <i>University of Pisa, Dept. of Chemistry &amp; Industrial Chemi</i> ); Biagini, Denise ( <i>University of Pisa, Dept. of Chemistry &amp; Industrial Chemi</i> ); Antoni, Shaula ( <i>University of Pisa, Dept. of Chemistry &amp; Industrial Chemis</i> ); Bellagambi, Francesca ( <i>University of Pisa, Dept. of Chemistry &amp; Industrial Chemi</i> ); Di Francesco, Fabio ( <i>University of Pisa</i> ); Fuoco, Roger ( <i>University of Pisa, Dept. of Chemistry &amp; Industrial Chemi</i> )	
11:15-11:30	ThB21.4
<b>Sleep Staging Monitoring based on Sonar Smartphone Technology</b> .....	2230-2233
Zaffaroni, Alberto Antonio ( <i>ResMed Inc.</i> ); Coffey, Sam ( <i>ResMed Inc.</i> ); Dodd, Stephen ( <i>ResMed Inc.</i> ); Kilroy, Hannah ( <i>ResMed</i> ); Lyon, Graeme* ( <i>ResMed Inc.</i> ); O'Rourke, Damien ( <i>ResMed Inc.</i> ); Lederer, Katharina ( <i>Advanced Sleep Research Berlin</i> ); Fietze, Ingo ( <i>Charité-Universitaetsmedizin Berlin</i> ); Penzel, Thomas ( <i>Charité Universitätsmedizin Berlin</i> )	
11:30-11:45	ThB21.5
<b>Application of Machine Learning to Prediction of Surgical Site Infection</b> .....	2234-2237
Fletcher, Richard Ribon* ( <i>Massachusetts Institute of Technology</i> ); Olubeko, Olasubomi ( <i>MIT</i> ); Sonthalia, Harsh ( <i>Massachusetts Institute of Technology</i> ); Kateera, Fredrick ( <i>Partners In Health</i> ); Nkurunziza, Theoneste ( <i>Partners In Health/ Inshuti Mu Buzima</i> ); Ashby, Joanna L. ( <i>Program in Global Surgery &amp; Social Change, Harvard Medical Sch</i> ); Riviello, Robert ( <i>Brigham &amp; Women's Hospital/ Harvard Medical School</i> ); Hedt-Gauthier, Bethany ( <i>Harvard Medical School</i> )	

11:45-12:00 ThB21.6  
**Assessment of Lumbar Muscles Coordinated Activity based on High-Density Surface Electromyography: A Pilot Study** ..... 2238-2241  
 Jiang, Naifu (*Shenzhen Institutes of Advanced Technology, Chinese Academy of S*); Xue, Jinwei (*Shenzhen Institutes of Advanced Technology, Chinese Academy of S*); Li, Guanglin\* (*Shenzhen Institutes of Advanced Technology*)

ThC02: 14:00-15:30 Hall A8 – Level 1  
**Data Mining for Biosignals** (Oral Session)  
**Co-Chair:** Kraemer, Jan F. (*Humboldt-Universität zu Berlin*)

14:00-14:15 ThC02.1  
**Facial Recognition Task for the Classification of Mild Cognitive Impairment with Ensemble Sparse Classifier** ..... 2242-2245  
 Williams, Patrick (*East Carolina University*); White, Austin T. (*East Carolina University*); Merino, Rubi (*East Carolina University*); Hardin, Sonya (*East Carolina University*); Mizelle, John Christopher (*East Carolina University*); Kim, Sunghan\* (*East Carolina University*)

14:15-14:30 ThC02.2  
**Uncovering Low-Dimensional Structure in High-Dimensional Representations of Long-Term Recordings in People with Epilepsy** ..... 2246-2251  
 Rapela, Joaquin (*Brown University*); Proix, Timothée (*Université de Genève*); Todorov, Dmitrii (*Brown University*); Truccolo, Wilson\* (*Brown University*)

14:30-14:45 ThC02.3  
**Cigarettes and Straws: Late Positive Potential Modulation in Mental Illness and Nicotine Addiction** ..... 2252-2255  
 White, Austin T. (*East Carolina University*); Williams, Patrick (*East Carolina University*); Anand, Vivek (*East Carolina University*); Kim, Sunghan\* (*East Carolina University*)

14:45-15:00 ThC02.4  
**Extremely Reduced Data Sets Indicate Optimal Stimulation Parameters for Classification in Brain-Computer Interfaces** ..... 2256-2260  
 Sosulski, Jan\* (*University of Freiburg*); Tangermann, Michael (*University of Freiburg*)

15:00-15:15 ThC02.5  
**Serologic Diagnosis of Taenia Solium Cysticercosis through Linear Unmixing Analysis of Biosignals from ACEK Capacitive Sensing Method** ..... 2261-2264  
 Liang, Jia\* (*University of Tennessee at Knoxville*); Wang, Fanqi (*University of Tennessee*); Lin, Xiaogang (*Chongqing University*); Qi, Hairong (*University of Tennessee*); Wu, Jayne (*The University of Tennessee*)

15:15-15:30 ThC02.6  
**Scalable Automatic Sleep Staging in the Era of Big Data** ..... 2265-2268  
 Nakamura, Takashi\* (*Imperial College London*); Davies, Harry (*Imperial College London*); Mandic, Danilo (*Imperial College*)

ThC05: 14:00-15:30 Hall A2 – Level 1  
**Nonlinear Analysis of Cardiovascular Signals** (Oral Session)  
**Co-Chair:** Loewe, Axel (*Karlsruhe Institute of Technology (KIT)*)

14:00-14:15 ThC05.1  
**Application of Dispersion Entropy to Healthy and Pathological Heartbeat ECG Segments** ..... 2269-2272  
 Kafantaris, Evangelos\* (*University of Edinburgh*); Piper, Ian (*University of Edinburgh*); Lo, Tsz-Yan Milly (*University of Edinburgh*); Escudero, Javier (*University of Edinburgh*)

14:15-14:30 ThC05.2  
**Compressed Segmented Beat Modulation Method using Discrete Cosine Transform** ..... 2273-2276  
 Nasim, Amnah (*Università Politecnica delle Marche*); Sbröllini, Agnese (*Università Politecnica delle Marche*); Marcantoni, Ilaria (*Università Politecnica delle Marche*); Morettini, Micaela (*Università Politecnica delle Marche*); Burattini, Laura\* (*Università Politecnica delle Marche*)

14:30-14:45	ThC05.3
<b>Recurrence Quantification Analysis for Investigating Atrial Fibrillation Dynamics in a Heterogeneous Simulation Setup</b> .....	2277-2280
Almeida, Tiago P* ( <i>Instituto Tecnológico de Aeronáutica</i> ); Unger, Laura Anna ( <i>Institute of Biomedical Engineering, Karlsruhe Institute of Tech</i> ); Soriano, Diogo Coutinho ( <i>UFABC</i> ); Li, Xin ( <i>University of LEICESTER</i> ); Doessel, Olaf ( <i>Karlsruhe Institute of Technology (KIT)</i> ); Yoneyama, Takashi ( <i>Instituto Tecnológico de Aeronáutica</i> ); Loewe, Axel ( <i>Karlsruhe Institute of Technology (KIT)</i> )	
14:45-15:00	ThC05.4
<b>Attractor Reconstruction Analysis for Blood Flow Signals</b> .....	2281-2284
Thanaj, Marjola* ( <i>University of Southampton</i> ); Chipperfield, Andrew John ( <i>University of Southampton</i> ); Clough, Geraldine Frances ( <i>University of Southampton</i> )	
15:00-15:15	ThC05.5
<b>The Application of Non-Linear Flow Resistance in Cerebral Artery: Compared with Windkessel Model based on Genetic Algorithm</b> .....	2285-2288
Liu, Haipeng ( <i>Anglia Ruskin University</i> ); Wang, Li ( <i>The Chinese University of Hong Kong</i> ); Chan, Ka Lung ( <i>The Chinese University of Hong Kong</i> ); Xiong, Li ( <i>The Chinese University of Hong Kong</i> ); Leng, Xinyi ( <i>The Chinese University of Hong Kong</i> ); Shi, Lin ( <i>The Chinese University of Hong Kong</i> ); Leung, Thomas ( <i>The Chinese University of Hong Kong</i> ); Chen, Fei ( <i>Southern University of Science &amp; Technology</i> ); Zheng, Dingchang* ( <i>Anglia Ruskin University</i> )	
15:15-15:30	ThC05.6
<b>A Method for Estimating Pulse Wave Amplitude Variability in Children with Sleep Disordered Breathing</b> .....	2289-2292
Liu, Xiao* ( <i>University of Adelaide</i> ); Pamula, Yvonne ( <i>Adelaide Women's &amp; Children's Hospital</i> ); Kohler, Mark ( <i>University of South Australia</i> ); Baumert, Mathias ( <i>The University of Adelaide</i> )	

ThC06: 14:00-15:30	Hall A5 – Level 1
<b>Neuromuscular Systems (III)</b> (Oral Session)	
<b>Co-Chair:</b> Guiraud, David ( <i>INRIA</i> )	

14:00-14:15	ThC06.1
<b>Investigating the Effect of Persistent Inward Currents on Motor Unit Firing Rates and Beta-Band Coherence in a Model of the First Dorsal Interosseous Muscle</b> .....	2293-2296
Senneff, Sageanne* ( <i>University College Dublin</i> ); McManus, Lara ( <i>University College Dublin</i> ); Lowery, Madeleine ( <i>University College Dublin</i> )	
14:15-14:30	ThC06.2
<b>An Approach to Extract Nonlinear Muscle Synergies from sEMG through Multi-View Learning</b> .....	2297-2301
Dwivedi, Sanjay Kumar ( <i>Kyushu Institute of Technology</i> ); Shibata, Tomohiro* ( <i>Kyushu Institute of Technology</i> )	
14:30-14:45	ThC06.3
<b>Experimentally Modifiable Parameters and their Relation to the Tonic Vibration Reflex in Chronic Hemiparetic Stroke</b> .....	2302-2306
Beauchamp, James A.* ( <i>Northwestern University</i> ); Patterson, Jacqueline R. ( <i>Northwestern University</i> ); Heckman, CJ ( <i>Feinberg School of Medicine, Northwestern University</i> ); Dewald, Julius P. A. ( <i>Northwestern University</i> )	
14:45-15:00	ThC06.4
<b>A HD-sEMG Framework for the Study of Motor Neurons Controlling the Intrinsic and Extrinsic Muscles of the Hand</b> .....	2307-2310
Tanzarella, Simone* ( <i>Imperial College London</i> ); Muceli, Silvia ( <i>Imperial College London</i> ); Del Vecchio, Alessandro ( <i>Imperial College London</i> ); Casolo, Andrea ( <i>Imperial College London</i> ); Farina, Dario ( <i>Imperial College London</i> )	
15:00-15:15	ThC06.5
<b>Characterizing Strategic Contributions of Physical Therapy to Natural Standing Motion in the Muscle Synergy Space</b> .....	2311-2315
Lao, Bryan* ( <i>Nara Institute of Science &amp; Technology</i> ); Tamei, Tomoya ( <i>Nara Institute of Science &amp; Technology</i> ); Ikeda, Kazushi ( <i>Nara Institute of Science &amp; Technology</i> )	



15:15-15:30 ThC06.6  
**Assessment of Postural Control after Sleep Deprivation with a Low-Cost Force Plate** ..... 2316-2319  
Umamura, Guilherme Silva\* (*University of São Paulo*); Pinho, João Pedro (*University of São Paulo*); Santos, Fabia Camile (*University of Sao Paulo*); Forner-Cordero, Arturo (*Escola Politécnica da Universidade de Sao Paulo*)

ThC09: 14:00-15:30 M1 – Level 3  
**Modeling Sensory and Neural Activities** (Oral Session)  
**Co-Chair:** Castaneda-Villa, Norma (*Universidad Autónoma Metropolitana-Izt*)

14:00-14:15 ThC09.1  
**Computational Model for Cross-Depolarization in DRG Neurons via Satellite Glial Cells using [K]<sub>o</sub>: Role of Kir4.1 Channels and Extracellular Leakage** ..... 2320-2323  
Mandge, Darshan (*Indian Institute of Technology Bombay, Mumbai, India*); Shukla, Pooja Rajesh (*University of Missouri, Columbia*); Bhatnagar, Archit\* (*Max Planck Institute of Cellular Biology & Genetics, Dresden*); Manchanda, Rohit (*IIT Bombay*)

14:15-14:30 ThC09.2  
**Modeling Responses to Peripheral Nerve Stimulation in the Dorsal Horn** ..... 2324-2327  
Beauchene, Christine\* (*Johns Hopkins University*); Sacré, Pierre (*University of Liège*); Yang, Fei (*Johns Hopkins University*); Guan, Yun (*Johns Hopkins University School of Medicine*); Sarma, Sridevi V. (*Johns Hopkins University*)

14:30-14:45 ThC09.3  
**Virtual Cortical Stimulation Mapping of Epilepsy Networks to Localize the Epileptogenic Zone** ..... 2328-2331  
Li, Adam\* (*Neuromedical Control Systems Laboratory*); Fitzgerald, Zachary (*Cleveland Clinic*); Hopp, Jennifer (*University of Maryland School of Medicine*); Johnson, Emily (*Johns Hopkins University*); Crone, Nathan E. (*Johns Hopkins University, School of Medicine*); Bulacio, Juan (*Cleveland Clinic*); Martinez-Gonzalez, Jorge (*Cleveland Clinic*); Inati, Sara (*National Institute of Health*); Zaghloul, Kareem (*National Institute of Health*); Sarma, Sridevi V. (*Johns Hopkins University*)

14:45-15:00 ThC09.4  
**Simulation of the Efficiency of Inner Hair Cell Secretion in the Auditory Pathway** ..... 2332-2335  
Soto-Bear, Jessica (*Universidad Autónoma Metropolitana*); Castaneda-Villa, Norma\* (*Universidad Autónoma Metropolitana-Izt*); González-Vélez, Virginia (*Universidad Autónoma Metropolitana*); Gil, Amparo (*Universidad de Cantabria*)

15:00-15:15 ThC09.5  
**Source Localization for Gastric Electrical Activity using Simulated Magnetogastrographic Data** ..... 2336-2339  
Avci, Recep\* (*University of Auckland*); Paskaranandavadivel, Niranchan (*The University of Auckland*); Calder, Stefan (*Auckland Bioengineering Institute, University of Auckland*); Du, Peng (*The University of Auckland*); Bradshaw, Alan (*Vanderbilt University*); Cheng, Leo K (*The University of Auckland*)

15:15-15:30 ThC09.6  
**Mathematical Modeling of Neurostimulation for Post-Traumatic Stress Disorder: A Migration towards Multiscale Modeling to Assess Neural Response to Transcranial Direct Current Stimulation Treatments** ..... 2340-2343  
Small, Abigail\* (*Roger Williams University*); Dougherty, Edward (*Roger Williams University*)

ThC11: 14:00-15:30 M4 – Level 3  
**Respiratory Signal Processing and Modeling** (Oral Session)  
**Chair:** Chbat, Nicolas W. (*Quadrus Medical Technologies*)  
**Co-Chair:** Jané, Raimon (*Institut de Bioenginyeria de Catalunya (IBEC)*)

14:00-14:15 ThC11.1  
**Neural Offset Time Evaluation in Surface Respiratory Signals during Controlled Respiration** ..... 2344-2347  
Estrada, Luis (*Institut de Bioenginyeria de Catalunya (IBEC). The Barcelona Ins*); Sarlabous, Leonardo (*Institute for Bioengineering of Catalonia (IBEC)*); Lozano-García, Manuel (*Institute for Bioengineering of Catalonia (IBEC), The Barcelona*); Jané, Raimon (*Institut de Bioenginyeria de Catalunya (IBEC)*); Torres, Abel\* (*Institute for Bioengineering of Catalonia (IBEC) – BarcelonaTech*)

14:15-14:30	ThC11.2
<b>A Pilot Bench Study of Decision Support for Proportional Assist Ventilation</b> .....	2348-2352
Karbing, Dan Stieper* ( <i>Aalborg University</i> ); Lobo-Valbuena, Beatriz ( <i>Intensive Medicine, Hospital Universitario del Henares</i> ); Poulsen, Mathias Krogh ( <i>Respiratory &amp; Critical Care Group at Dept. of Health Scie</i> ); Brohus, Jakob Bredal ( <i>Mermaid Care A/S</i> ); Abella, Ana ( <i>Intensive Medicine, Hospital Universitario del Henares</i> ); Gordo, Federico ( <i>Intensive Medicine, Hospital Universitario del Henares</i> ); Rees, Stephen Edward ( <i>Aalborg University</i> )	
14:30-14:45	ThC11.3
<b>Design and Study of a Portable High-Frequency Ventilator for Clinical Applications</b> .....	2353-2356
Lu, Shao-Yung ( <i>National Chiao Tung University</i> ); Lin, Hau ( <i>National Chiao Tung University</i> ); Kuo, Hsu-Tah ( <i>Mackay Memorial Hospital</i> ); Chen, Chao-Hsien ( <i>Mackay Memorial Hospital</i> ); Wu, Wen-Jui ( <i>Mackay Memorial Hospital</i> ); Wu, Chien-Liang ( <i>Mackay Memorial Hospital</i> ); Liao, Yu-Te* ( <i>National Chiao Tung University</i> )	
14:45-15:00	ThC11.4
<b>High Oxygen Fraction during Airway Opening is Key to Effective Airway Rescue in Obese Subjects</b> .....	2357-2360
Laviola, Marianna* ( <i>University of Nottingham</i> ); Niklas, Christian ( <i>University of Nottingham</i> ); Alahmadi, Husam ( <i>University of Nottingham</i> ); Das, Anup ( <i>University of Warwick</i> ); Bates, Declan Gerard ( <i>University of Warwick</i> ); Hardman, Jonathan G. ( <i>University of Nottingham</i> )	
15:00-15:15	ThC11.5
<b>Modeling of Transport Mechanisms in the Respiratory System: Validation via Congestive Heart Failure Patients</b> .....	2361-2364
Yuan, Jiayao ( <i>Columbia University</i> ); Chiofalo, Caitlyn ( <i>Quadrus Medical Technologies</i> ); Czerwin, Benjamin ( <i>Columbia University</i> ); Chbat, Nicolas W.* ( <i>Quadrus Medical Technologies</i> )	
15:15-15:30	ThC11.6
<b>Analysis of Time Delay between Bioimpedance and Respiratory Volume Signals under Inspiratory Loaded Breathing</b> .....	2365-2368
Blanco-Almazán, Dolores* ( <i>Institute for Bioengineering of Catalonia</i> ); Groenendaal, Willemijn ( <i>imec Netherlands</i> ); Catthoor, Francky ( <i>imec</i> ); Jané, Raimon ( <i>Institut de Bioenginyeria de Catalunya (IBEC)</i> )	

ThC14: 14:00-15:30	R3 – Level 3
<b>Novel Methods for the Detection and Prediction of Epileptic Seizures</b> (Oral Session)	
<b>Chair:</b> Mitsis, Georgios D. ( <i>McGill University</i> )	
<b>Co-Chair:</b> Tautan, Alexandra-Maria ( <i>University Politehnica of Bucharest</i> )	

14:00-14:15	ThC14.1
<b>Semi-Supervised Seizure Prediction with Generative Adversarial Networks</b> .....	2369-2372
Truong, Nhan, Duy* ( <i>The University of Sydney</i> ); Kavehei, Omid ( <i>University of Sydney</i> ); Zhou, Luping ( <i>University of Sydney</i> )	
14:15-14:30	ThC14.2
<b>Feature Generation and Dimensionality Reduction using the Discrete Spectrum of the Schrodinger Operator for Epileptic Spikes Detection</b> .....	2373-2376
Chahid, Abderrazak ( <i>King Abdullah University of Science &amp; Technology</i> ); Alotaiby, Turkey ( <i>KACST</i> ); Alshebeili, Saleh ( <i>KSU</i> ); Laleg, Taous-Meriem* ( <i>King Abdullah University of Science &amp; Technology (KAUST)</i> )	
14:30-14:45	ThC14.3
<b>Detection of Epileptic Seizures using Unsupervised Learning Techniques for Feature Extraction</b> .....	2377-2381
Tautan, Alexandra-Maria ( <i>University Politehnica of Bucharest</i> ); Dogariu, Mihai* ( <i>University Politehnica of Bucharest</i> ); Ionescu, Bogdan ( <i>Universitatea Politehnica of Bucharest</i> )	
14:45-15:00	ThC14.4
<b>Epileptic State Classification based on Intrinsic Mode Function and Wavelet Packet Decomposition</b> .....	2382-2385
Hu, Dinghan ( <i>Hangzhou Dianzi University</i> ); Cao, Jiuwen* ( <i>School of Automation Hangzhou Dianzi University / COGNACG, CNRS</i> ); Lai, Xiaoping ( <i>Hangzhou Dianzi University</i> ); Liu, Junbiao ( <i>Hangzhou Neuro Science &amp; Technology Co. Ltd</i> )	

15:00-15:15 ThC14.5  
**Ongoing Intracortical Neural Activity Predicts Upcoming Interictal Epileptiform Discharges in Human Epilepsy** ..... 2386-2391  
 Saha, Dipta (*Brown University*); Proix, Timothée (*Université de Genève*); Cash, Sydney (*Massachusetts General Hospital*); Truccolo, Wilson\* (*Brown University*)

15:15-15:30 ThC14.6  
**Epileptic Signal Classification with Deep Transfer Learning Feature on Mean Amplitude Spectrum** ..... 2392-2395  
 Wang, Yaomin (*Hangzhou Dianzi University*); Cao, Jiuwen\* (*School of Automation Hangzhou Dianzi University / COGNACG, CNRS*); Wang, Jianzhong (*Hangzhou Dianzi University*); Hu, Dinghan (*Hangzhou Dianzi University*); Deng, Muqing (*Hangzhou Dianzi University*)

<b>ThC15: 14:00-15:30</b>	<b>M3 – Level 3</b>
<b>Image Analysis and Classification – Machine Learning Approaches (III) (Oral Session)</b>	

14:00-14:15 ThC15.1  
**Classification of Alzheimer’s Disease using Volumetric Features of Multiple MRI Scans** ..... 2396-2401  
 Bloch, Louise (*University of Applied Sciences & Arts*); Friedrich, Christoph M.\* (*University of Applied Sciences & Arts Dortmund; Dept. of*)

14:15-14:30 ThC15.2  
**Automated Detection of Non-Informative Frames for Colonoscopy through a Combination of Deep Learning and Feature Extraction** ..... 2402-2406  
 Yao, Heming\* (*University of Michigan*); Stidham, Ryan W. (*University of Michigan*); Soroushmehr, S.M.Reza (*University of Michigan, Ann Arbor*); Gryak, Jonathan (*University of Michigan*); Najarian, Kayvan (*University of Michigan – Ann Arbor*)

14:45-15:00 ThC15.4  
**Deep-Learning-Based Fully Automatic Spine Centreline Detection in CT Data** ..... 2407-2410  
 Jakubicek, Roman\* (*Brno University of Technology*); Chmelik, Jiri (*Brno University of Technology, Faculty of Electrical Engineering*); Ourednicek, Petr (*Philips Nederland*); Jan, Jiri (*Brno University of Technology*)

15:00-15:15 ThC15.5  
**Noncontact Blood Pressure Monitoring Technology using Facial Photoplethysmograms** ..... 2411-2415  
 Adachi, Yoshihisa\* (*Sharp Corporation*); Edo, Yuki (*Sharp Corporation*); Ogawa, Rieko (*Sharp Corporation*); Tomizawa, Ryota (*Sharp Corporation*); Iwai, Yoshifumi (*Sharp Corporation*); Okumura, Tetsuya (*Sharp Corporation*)

15:15-15:30 ThC15.6  
**Human Induced Pluripotent Stem Cell Reprogramming Prediction in Microscopy Images using LSTM based RNN** ..... 2416-2419  
 Chang, Yuan-Hsiang (*Chung Yuan Christian University*); Abe, Kuniya (*Mammalian Genome Dynamics, RIKEN BioResource Center*); Yokota, Hideo (*RIKEN Center for Advanced Photonics*); Sudo, Kazuhiro (*BioResource Center, RIKEN*); Nakamura, Yukio (*RIKEN BioResource Center*); Chu, Slo-Li (*Chung Yuan Christian University*); Hsu, Chih-Yung (*Chung Yuan Christian University*); Tsai, Ming-Dar\* (*Chung-Yuan Christian University*)

<b>ThC16: 14:00-15:30</b>	<b>M5 – Level 3</b>
<b>Mechanics of Locomotion (Oral Session)</b>	
<b>Co-Chair:</b> Saleh, Soha ( <i>Kessler Foundation</i> )	

14:00-14:15 ThC16.1  
**A PID Controller Approach to Explain Human Ankle Biomechanics across Walking Speeds** ..... 2420-2423  
 Herve, Ophelie\* (*Student at SMU*); Martin, Anne (*Pennsylvania State University*); Villarreal, Dario Jose (*Southern Methodist University*)

14:15-14:30 ThC16.2  
**Prediction of Smooth Gait Transitioning for Active Lower Limb Prosthetics** ..... 2424-2429  
 Boudali, A. Mounir\* (*The University of Sydney*); Sinclair, Peter James (*The University of Sydney*); Manchester, Ian (*University of Sydney*.)

14:30-14:45	ThC16.3
<b>Pre-Impact Detection Algorithm to Identify Lack of Balance Due to Tripping-Like Perturbations</b> .....	2430-2433
Aprigliano, Federica* ( <i>The BioRobotics Institute of Scuola Superiore Sant'Anna, Pisa</i> ); Guaitolini, Michelangelo ( <i>The BioRobotics Institute, Scuola Superiore Sant'Anna, Pi</i> ); Sabatini, Angelo Maria ( <i>Scuola Superiore Sant'Anna</i> ); Micera, Silvestro ( <i>Scuola Superiore Sant'Anna</i> ); Monaco, Vito ( <i>Scuola Superiore Sant'Anna, Pisa</i> )	
14:45-15:00	ThC16.4
<b>Evaluation of Toe Function based on the Plantar Pressure Distribution while Walking and its Relationships with General Gait Parameters</b> .....	2434-2438
Imaizumi, Kazuya* ( <i>Tokyo Healthcare University</i> ); Iwakami, Yumi ( <i>Tokyo Healthcare University</i> ); Kumamoto, Masazumi ( <i>Kao Corporation</i> ); Tomisaki, Masumi ( <i>Kao Corporation</i> ); Sudo, Motoki ( <i>Kao Corporation</i> ); Niki, Yoshifumi ( <i>Kao Corporation</i> )	
15:00-15:15	ThC16.5
<b>Singular Value Decomposition Entropy as a Measure of Ankle Dynamics Efficacy in a Y-Balance Test Following Supportive Lower Limb Taping</b> .....	2439-2442
Jelinek, Herbert Franz ( <i>Charles Sturt University</i> ); Donnan, Luke ( <i>Charles Sturt University</i> ); Khandoker, Ahsan H* ( <i>Khalifa University of Science, Technology &amp; Research</i> )	
15:15-15:30	ThC16.6
<b>Evaluation of Time-Frequency Features as Detectors of Lack of Balance Due to Tripping-Like Perturbations</b> .....	2443-2446
Guaitolini, Michelangelo* ( <i>The BioRobotics Institute, Scuola Superiore Sant'Anna, Pi</i> ); Aprigliano, Federica ( <i>The BioRobotics Institute of Scuola Superiore Sant'Anna, Pisa</i> ); Mannini, Andrea ( <i>Scuola Superiore Sant'Anna</i> ); Monaco, Vito ( <i>Scuola Superiore Sant'Anna, Pisa</i> ); Micera, Silvestro ( <i>Scuola Superiore Sant'Anna</i> ); Sabatini, Angelo Maria ( <i>Scuola Superiore Sant'Anna</i> )	
ThC19: 14:00-15:30	R4 – Level 3
<b>General and Theoretical Informatics – Predictive Analytics (Oral Session)</b>	
Chair: Reilly, Richard ( <i>Trinity College Dublin</i> )	
14:00-14:15	ThC19.1
<b>Predicting Gastrointestinal Bleeding Events from Multimodal In-Hospital Electronic Health Records using Deep Fusion Networks</b> .....	2447-2450
Hung, Chen-Ying ( <i>National Tsing Hua University</i> ); Lin, Ching-Heng ( <i>Dept. of Medical Research, Taichung Veterans General Hospit</i> ); Chang, Chi-Sen ( <i>Dept. of Internal Medicine, Taichung Veterans General Hospit</i> ); Li, Jeng-Lin ( <i>Dept. of Electrical Engineering, National Tsing Hua Univers</i> ); Lee, Chi-Chun* ( <i>National Tsing Hua University</i> )	
14:15-14:30	ThC19.2
<b>Predicting States of Abstract Reasoning: EEG Connectivity Markers</b> .....	2451-2454
Miasnikova, Aleksandra* ( <i>Institute of Higher Nervous Activity &amp; Neurophysiology of RAS</i> ); Troshkov, Daniil ( <i>Elvees RnD Center, JSC</i> ); Baklushev, Mikhail ( <i>Institute of Higher Nervous Activity &amp; Neurophysiology of RAS</i> ); Perevoznyuk, Gleb ( <i>Lomonosov Moscow State University, Faculty of Fundamental Medici</i> )	
14:30-14:45	ThC19.3
<b>A BLSTM with Attention Network for Predicting Acute Myeloid Leukemia Patient's Prognosis using Comprehensive Clinical Parameters</b> .....	2455-2458
Lu, Chih-Chuan ( <i>Dept. of Electrical Engineering, National Tsing Hua Unvers</i> ); Li, Jeng-Lin ( <i>Dept. of Electrical Engineering, National Tsing Hua Unvers</i> ); Wang, Yu-Fen ( <i>Tai-Cheng Stem Cell Therapy Center, National Taiwan University</i> ); Ko, Bor-Sheng ( <i>Dept. of Internal Medicine, National Taiwan University Hosp</i> ); Tang, Jih-Luh ( <i>Dept. of Internal Medicine, National Taiwan University Hosp</i> ); Lee, Chi-Chun* ( <i>National Tsing Hua University</i> )	
14:45-15:00	ThC19.4
<b>Model Predictive Control of Shallow Drowsiness: Improving Productivity of Office Workers</b> .....	2459-2465
Kogo, Takuma* ( <i>NEC Corporation</i> ); Tsujikawa, Masanori ( <i>NEC Corporation</i> ); Kiuchi, Yukihiro ( <i>NEC Corporation</i> ); Nishino, Atsushi ( <i>DAIKIN Industries, LTD.</i> ); Hashimoto, Satoshi ( <i>DAIKIN Industries, LTD.</i> )	

15:00-15:15 ThC19.5  
**Automatic Disability Categorisation based on ADLs among Older Adults in a Nationally Representative Population using Data Mining Methods** ..... 2466-2469  
 de Melo Oliveira, Isadora\* (*Trinity College Dublin*); Hernandez, Belinda (*TILDA The Irish Longitudinal Study in Ageing, Trinity College Du*); Kenny, Rose Anne (*Trinity College Dublin*); Reilly, Richard (*Trinity College Dublin*)

15:15-15:30 ThC19.6  
**Prediction of the Adherence to a Home-Based Cardiac Rehabilitation Program** ..... 2470-2473  
 Claes, Jomme\* (*KU Leuven*); Filos, Dimitrios (*Aristotle University o Thessaloniki*); Cornelissen, Veronique (*KU Leuven*); Chouvarda, Ioanna (*Aristotle University*)

ThC20: 14:00-15:30	R5 – Level 3
<b>Wearable Activity Monitoring</b> (Oral Session)	
<b>Chair:</b> Jovanov, Emil ( <i>University of Alabama in Huntsville</i> )	

14:00-14:15 ThC20.1  
**Development of an Automated 30 Second Chair Stand Test using Smartwatch Application** ..... 2474-2477  
 Jovanov, Emil\* (*University of Alabama in Huntsville*); Wright, Shelton (*The University of Alabama in Huntsville*); Ganegoda, Harsha (*The University of Alabama in Huntsville*)

14:15-14:30 ThC20.2  
**Visualizing Inertial Data for Wearable Sensor based Daily Life Activity Recognition using Convolutional Neural Network** ..... 2478-2481  
 Huynh-The, Thien\* (*Kumoh National Institute of Technology*); Hua, Cam-Hao (*Kyung Hee University*); Kim, Dong-Seong (*Kumoh National Institute of Technology*)

14:30-14:45 ThC20.3  
**Evaluation of Daily Walking Activity and Gait Profiles: A Novel Application of a Time Series Analysis Framework** ..... 2482-2485  
 Buckley, Christopher\* (*Newcastle University*); Mc Ardle, Riona (*Newcastle University*); Galna, Brook (*Newcastle University*); Thomas, Alan (*Newcastle University*); Rochester, Lynn (*Newcastle University*); Del Din, Silvia (*Newcastle University*)

14:45-15:00 ThC20.4  
**Building Robust Models for Human Activity Recognition from Raw Accelerometers Data using Gated Recurrent Units and Long Short Term Memory Neural Networks** ..... 2486-2491  
 Okai, Jeremiah (*Universiteit Leiden*); Paraschiakos, Stylianos\* (*Leiden University Medical Center*); Beekman, Marian (*Molecular Epidemiology, Dept. Biomedical Data Science, LUMC*); Knobbe, Arno (*Leiden Institute of Advanced Computing Science, Universiteit Lei*); Rebelo de Sa, Claudio (*Data Science Group, University of Twente*)

15:00-15:15 ThC20.5  
**Experimental Analysis of Artificial Neural Networks Performance for Home-Based Physical Activity Recognition using Belt and Wristband Devices** ..... 2492-2495  
 Qi, Jun (*Liverpool John Moores University*); Yang, Yun (*Yunnan University*); Peng, XiYang (*Yunnan University*); Newcombe, Lee (*Liverpool John Moores University*); Simpson, Andrew (*Liverpool John Moores University*); Yang, Po\* (*Liverpool John Moores University*)

15:15-15:30 ThC20.6  
**A Wearable EIT System for Detection of Muscular Activity in the Extremities** ..... 2496-2499  
 Gibas, Christian\* (*University of Siegen Institute of Medical Informatics & Micros*); Gruenewald, Armin (*University of Siegen*); Wunderlich, Hans-Werner (*University of Siegen Institute of Medical Informatics & Micros*); Marx, Philipp (*University of Siegen*); Brück, Rainer (*University of Siegen*)

ThC21: 14:00-15:30 R8 – level 3  
**Focused Ultrasound and Other Thermal Therapies (Oral Session)**  
**Chair:** Gerlach, Thomas (*Otto-von-Guericke University Magdeburg*)  
**Co-Chair:** Holmes, David (*Mayo Clinic*)

14:00-14:15 ThC21.1  
**High-Intensity Focused Ultrasound Therapy in the Uterine Fibroid: A Clinical Case Study of Poor Heating Efficacy** ..... 2500-2503  
 Suomi, Visa\* (*Turku University Hospital*); Viitala, Antti (*Turku University Hospital*); Sainio, Teija (*Turku University Hospital*); Komar, Gaber (*Turku University Hospital*); Blanco, Roberto (*Turku University Hospital*)

14:15-14:30 ThC21.2  
**Ultrasound-Enhanced Drug Delivery for Treatment of Acanthamoeba Keratitis** ..... 2504-2507  
 Karpinecz, Bianca\* (*The George Washington University*); Edwards, Natalie (*George Washington University*); Zderic, Vesna (*The George Washington University*)

14:30-14:45 ThC21.3  
**Setup of an Ablation Magnetic Resonance Imaging Hybrid System: Using MR Imaging Sequences to Destroy Tissue** ..... 2508-2512  
 Gerlach, Thomas\* (*Otto-von-Guericke University Magdeburg*); Pannicke, Enrico (*Otto-von-Guericke University Magdeburg*); Prier, Marcus (*Otto-von-Guericke University Magdeburg*); Seifert, Frank (*Physikalisch-Technische Bundesanstalt Berlin-Braunschweig*); Speck, Oliver (*University of Magdeburg*); Vick, Ralf (*Otto-von-Guericke University Magdeburg*)

14:45-15:00 ThC21.4  
**Highly Controlled and Usable System for Low-Intensity Pulsed Ultrasound Stimulation of Cells** ..... 2513-2516  
 Fontana, Francesco\* (*The BioRobotics Institute, Sant'Anna School of Advanced Studies*); Iberite, Federica (*Scuola Superiore Sant'Anna*); Morchi, Laura (*The BioRobotics Institute, Scuola Superiore Sant'Anna*); Pratellesi, Tiziano (*BAC srl*); Cafarelli, Andrea (*Scuola Superiore Sant'Anna*); Ricotti, Leonardo (*Scuola Superiore Sant'Anna*)

15:00-15:15 ThC21.5  
**A Pilot Study for a Quantitative Evaluation of Acoustic Coupling in US-Guided Focused Ultrasound Surgery** ..... 2517-2520  
 Morchi, Laura\* (*The BioRobotics Institute, Scuola Superiore Sant'Anna*); Mariani, Andrea (*Politecnico di Milano*); Cafarelli, Andrea (*Scuola Superiore Sant'Anna*); Diodato, Alessandro (*Scuola Superiore Sant'Anna/The BioRobotics Institute*); Tognarelli, Selene (*Scuola Superiore Sant'Anna*); Menciassi, Arianna (*Scuola Superiore Sant'Anna*)

15:15-15:30 ThC21.6  
**Validation of Noninvasive Ultrasound Temperature Measurement System through Experiments using Resonant Cavity Applicator** ..... 2521-2524  
 Shindo, Yasuhiro\* (*Toyo University*); Kato, Kazuo (*Meiji University*)

ThPOS-01: 18:00-19:30 Hall B  
**Signal Processing and Classification for Wearable Systems and Smartphones – Poster (Poster Session)**

18:00-19:30 ThPOS-01.1  
**Signal Quality for RR Interval Prediction on Wearable Sensors** ..... 2525-2528  
 Gonzalez, Laura\* (*North Carolina State University*); Paniagua, Thomas (*North Carolina State University*); Starliper, Nathan (*North Carolina State University*); Lobaton, Edgar (*North Carolina State University*)

18:00-19:30 ThPOS-01.2  
**Imputing Missing Data in Large-Scale Multivariate Biomedical Wearable Recordings using Bidirectional Recurrent Neural Networks with Temporal Activation Regularization** ..... 2529-2534  
 Feng, Tiantian\* (*Signal Analysis & Interpretation Lab, USC*); Narayanan, Shrikanth (*University of Southern California*)

18:00-19:30 ThPOS-01.3  
**A Two-Stage Tremor Detection Algorithm for Wearable Inertial Sensors during Normal Daily Activities** . 2535-2538  
 McNames, James\* (*Portland State University*); Shah, Vrutangkumar V (*Oregon Health & Science University*);  
 Mancini, Martina (*OHSU*); Curtze, Carolin (*University of Nebraska at Omaha*); El-Gohary, Mahmoud (*APDM Inc*);  
 Aboy, Mateo (*University of Cambridge, UK*); Carlson-Kuhta, Patricia (*Oregon Health & Science University*);  
 Nutt, John (*Oregon Health & Science University*); Horak, Fay (*Oregon Health & Science University*)

**ThPOS-02: 18:00-19:30 Hall B**  
**Signal Processing and Classification in Epilepsy – Poster (Poster Session)**

18:00-19:30 ThPOS-02.1  
**Epileptic States Recognition using Transfer Learning** ..... 2539-2542  
 Shen, Lei (*Fudan University; Institute of Science & Technology for Brain-*); Geng, Xinyi (*Fudan University*); Luo,  
 Huichun (*University of Science & Technology of China, Hefei*); Wang, Jingying (*Fudan University*); Wang,  
 Shouyan\* (*Fudan University*)

18:00-19:30 ThPOS-02.2  
**Estimation of the Epileptogenic-Zone with HFO Sub-Groups Exhibiting Various Levels of Epileptogenicity** ..... 2543-2546  
 Lachner-Piza, Daniel\* (*University Medical Center Freiburg*); Jacobs, Julia (*Montreal Neurological Institute*);  
 Schulze-Bonhage, Andreas (*University Hospital Freiburg*); Stieglitz, Thomas (*University of Freiburg*);  
 Dümpelmann, Matthias (*University Medical Center Freiburg*)

18:00-19:30 ThPOS-02.3  
**A Convolutional Neural Network based Framework for Classification of Seizure Types** ..... 2547-2550  
 Raghu, Raghu\* (*Maastricht University*); Natarajan, Sriraam (*M.S.Ramaiah Institute of Technology, Bangalore, India*);  
 Yasin, Temel (*Maastricht University*); Rao, Shyam Vasudeva (*Forus Health Pvt Ltd*); Kubben, Pieter  
 Leonard (*Maastricht University Medical Center*)

18:00-19:30 ThPOS-02.4  
**Feature Extraction of Epileptic EEG using Wavelet Power Spectra and Functional PCA** ..... 2551-2554  
 Xie, Shengkun (*Ryerson University, Canada*); Krishnan, Sridhar\* (*Ryerson University*)

18:00-19:30 ThPOS-02.5  
**Central Sulcus Is a Barrier to Causal Propagation in Epileptic Networks** ..... 2555-2559  
 Maharathi, Biswajit\* (*University of Illinois at Chicago, Chicago*); Loeb, Jeffrey A. (*University of Illinois at Chicago*);  
 Patton, James (*U. Illinois at Chicago (UIC), & the Shirley Ryan Ability Lab (fo)*)

18:00-19:30 ThPOS-02.6  
**Novel Automatic Epilepsy Detection Method from EEG based on Multi-Weight Transition Network** ..... 2560-2563  
 Li, Yang (*University of Jinan*); Meng, Qingfang\* (*University of Jinan*); Wu, Peng (*University of Jinan*); Zhang,  
 Hanyong (*University of Jinan*); Du, Lei (*University of Jinan*); Jiang, Hui (*University of Jinan*)

**ThPOS-03: 18:00-19:30 Hall B**  
**Signal Processing and Classification in Sleep Studies – Poster (Poster Session)**

18:00-19:30 ThPOS-03.1  
**Electroencephalographic Slow-Wave Activity during Sleep in Different Phases of Blood Pressure and Respiration Oscillations** ..... 2564-2567  
 Forouzanfar, Mohamad\* (*SRI International*); Baker, Fiona (*SRI International*); Colrain, Ian (*SRI International*);  
 de Zambotti, Massimiliano (*SRI International*)

18:00-19:30 ThPOS-03.2  
**An Investigation of Critical Frequency Sub-Bands of Snoring Sounds for OSA Diagnosis** ..... 2568-2571  
 Herath, Dulip (*The University of Queensland*); Abeyratne, Udantha R (*University of Queensland*); Hukins, Craig  
 (*Prince Alexandra Hospital*); Markandeya, Mrunal\* (*University of Queensland*)

18:00-19:30 ThPOS-03.3  
**Airflow from Nasal Pulse Oximetry in the Screening of Obstructive Sleep Apnea** ..... 2572-2575  
Hoppenbrouwer, Xenia L.R.\* (*University of Twente*); Fabius, Timon (*Dept of Pulmonology, Medisch Spectrum Twente*); Eijsvogel, Michiel (*Medisch Spectrum Twente*); de Jongh, Frans (*Medisch Spectrum Twente*); Garde, Ainara (*University of Twente*)

18:00-19:30 ThPOS-03.4  
**Sleep Apnea and Hypopnea Events Detection based on Airflow Signals using LSTM Network** ..... 2576-2579  
Yang, Wenming (*Tsinghua University*); Fan, Jiamin\* (*Graduate School at Shenzhen, Tsinghua University, China*); Wang, Xingjun (*Graduate School at Shenzhen, Tsinghua University*); Liao, Qingmin (*Tsinghua University*)

18:00-19:30 ThPOS-03.5  
**Feature Selection Algorithm based on Random Forest Applied to Sleep Apnea Detection** ..... 2580-2583  
Deviaene, Margot\* (*KU Leuven*); Testelmans, Dries (*Universitair Ziekenhuis Gasthuisberg*); Borzée, Pascal (*Katholieke Universiteit Leuven, University Hospitals*); Buyse, Bertien (*Katholieke Universiteit Leuven*); Van Huffel, Sabine (*KU Leuven*); Varon, Carolina (*Katholieke Universiteit Leuven*)

ThPOS-04: 18:00-19:30	Hall B
<b>Signal Processing and Classification of Acoustic and Auditory Signals – Poster (Poster Session)</b>	

18:00-19:30 ThPOS-04.1  
**Applying Machine Learning Algorithms for Automatic Detection of Swallowing from Sound** ..... 2584-2588  
Santoso, Laura Frances (*University of Texas at Austin*); Baqai, Faiz (*University of Texas at Austin*); Gwozdz, Mary (*University of Texas at Austin*); Lange, Justina (*University of Texas at Austin*); Rosenberger, Matthew (*University of Texas at Austin*); Sulzer, James (*University of Texas at Austin*); Paydarfar, David\* (*The University of Texas at Austin, Dell Medical School*)

18:00-19:30 ThPOS-04.2  
**A Novel Method for Automatic Identification of Respiratory Disease from Acoustic Recordings** ..... 2589-2592  
Kok, Xuen Hoong\* (*Imperial College London*); Imtiaz, Syed Anas (*Imperial College London*); Rodriguez-Villegas, Esther (*Imperial College London*)

18:00-19:30 ThPOS-04.3  
**Speaker Diarization during Noisy Clinical Diagnoses of Autism** ..... 2593-2596  
Gorodetski, Alex (*BGU*); Dinstein, Ilan (*Ben Gurion University*); Zigel, Yaniv\* (*Ben-Gurion University of the Negev*)

18:00-19:30 ThPOS-04.4  
**Assessment of Sound Features for Needle Perforation Event Detection** ..... 2597-2600  
Renna, Francesco (*Instituto de Telecomunicações e Faculdade de Ciências da Univers*); Illanes, Alfredo (*Otto-von-Guericke University of Magdeburg*); Oliveira, Jorge (*Instituto de Telecomunicações, Faculdade de Ciências da Universi*); Esmaeili, Nazila (*Otto-von-Guericke University Magdeburg, Magdeburg, Germany*); Friebe, Michael (*Otto-von-Guericke-University*); Coimbra, Miguel\* (*Instituto de Telecomunicações / Universidade do Porto*)

18:00-19:30 ThPOS-04.5  
**A Comparative Study of Features for Acoustic Cough Detection using Deep Architectures** ..... 2601-2605  
Miranda, Igor\* (*Stellenbosch University*); Diacon, Andreas (*Stellenbosch University*); Niesler, Thomas (*Stellenbosch University*)

18:00-19:30 ThPOS-04.6  
**Automatic Audio-Based Classification of Patient Inhaler Use: A Pharmacy based Study** ..... 2606-2609  
McNulty, Johnny (*Trinity College Dublin*); Reilly, Richard (*Trinity College Dublin*); Taylor, Terence E.\* (*Trinity College Dublin*); O'Dwyer, Susan M (*Boots Retail (Ireland) Limited*); Costello, Richard (*Royal College of Surgeons in Ireland (RCSI)*); Zigel, Yaniv (*Ben-Gurion University of the Negev*)



**Signal Processing and Classification of Cardiovascular Signals – Poster (Poster Session)**

- 18:00-19:30 ThPOS-05.1  
**ECG-Based Estimation of Potassium and Calcium Concentrations: Proof of Concept with Simulated Data** ..... 2610-2613  
 Pilia, Nicolas Alessandro\* (*Karlsruhe Institute of Technology (KIT)*); Hernández Mesa, María (*Karlsruhe Institute of Technology (KIT)*); Doessel, Olaf (*Karlsruhe Institute of Technology (KIT)*); Loewe, Axel (*Karlsruhe Institute of Technology (KIT)*)
- 18:00-19:30 ThPOS-05.2  
**Myocardial Infarction Detection based on Multi-Lead Ensemble Neural Network** ..... 2614-2617  
 Wang, Hongmei\* (*Guangzhou Shiyuan Electronics Co., Ltd*); Zhao, Wei (*Guangzhou Shiyuan Electronics Co., Ltd*); Jia, Dongya (*Guangzhou Shiyuan Electronics Co., Ltd*); Hu, Jing (*Guangzhou Shiyuan Electronic Technology Co., Ltd.*); Li, Zhenqi (*Guangzhou Shiyuan Electronics Co., Ltd*); Yan, Cong (*Guangzhou Shiyuan Electronics Co., Ltd*); You, Tianyuan (*Guangzhou Shiyuan Electronics Co., Ltd.*)
- 18:00-19:30 ThPOS-05.3  
**Detection of End of T-Wave in Fetal ECG Signals using Recurrence Plots** ..... 2618-2621  
 Widadalla, Namareq\* (*Tohoku University*); Khandoker, Ahsan H (*Khalifa University of Science, Technology & Research*); Kasahara, Yoshiyuki (*Tohoku University*); Kimura, Yoshitaka (*Tohoku University*)
- 18:00-19:30 ThPOS-05.4  
**Phase-Domain Deep Patient-ECG Image Learning for Zero-Effort Smart Health Security** ..... 2622-2628  
 Zhang, Qingxue\* (*Indiana University-Purdue University Indianapolis*)
- 18:00-19:30 ThPOS-05.5  
**Automatic Artifact Detection in Impedance Cardiogram using Pulse Similarity Index** ..... 2629-2632  
 Forouzanfar, Mohamad\* (*SRI International*); Baker, Fiona (*SRI International*); Colrain, Ian (*SRI International*); de Zambotti, Massimiliano (*SRI International*)
- 18:00-19:30 ThPOS-05.6  
**ECG Biometric Recognition: Template-Free Approaches based on Deep Learning** ..... 2633-2636  
 Hong, Pei-Lun (*National Tsing Hua University*); Hsiao, Jyun-Ya (*National Tsing Hua University*); Chung, Chi-Hsun (*National Tsing Hua University*); Feng, Yao-Min (*National Tsing Hua University*); Wu, Shun Chi\* (*National Tsing Hua University*)

**Signal Processing and Classification of Electromyographic Signals – Poster (Poster Session)**

- 18:00-19:30 ThPOS-06.1  
**Spatio-Temporal based Descriptor for Limb Movement-Intent Characterization in EMG-Pattern Recognition System** ..... 2637-2640  
 Samuel, Oluwarotimi Williams (*Shenzhen Institutes of Advanced Technology*); Asogbon, Mojisola Grace (*Shenzhen Institutes of Advanced Technology, Chinese Academy of S*); Geng, Yanjuan (*Shenzhen Institutes of Advanced Technology*); Li, Xiangxin (*Shenzhen Institutes of Advanced Technology, Chinese Academy of Sc*); Pirbhulal, Sandeep (*Shenzhen Institutes of Advanced Technology, Chinese Academy of S*); Chen, Shixiong (*Shenzhen Institutes of Advanced Technology*); Naik, Ganesh R (*Western Sydney University*); Fang, Peng (*Shenzhen Institutes of Advanced Technology, Chinese Academy of S*); Li, Guanglin\* (*Shenzhen Institutes of Advanced Technology*)
- 18:00-19:30 ThPOS-06.2  
**Visualized Evidences for Detecting Novelty in Myoelectric Pattern Recognition using 3D Convolutional Neural Networks** ..... 2641-2644  
 Wu, Le (*University of Science & Technology of China*); Zhang, Xu\* (*University of Science & Technology of China*); Chen, Xiang (*University of Science & Technology of China*); Chen, Xun (*University of British Columbia*)

18:00-19:30	ThPOS-06.3
<b>Investigation on the Contributions of Different Muscles to the Generated Force based on HD-sEMG and DBN</b> .....	2645-2648
Hu, Ruo Chen ( <i>University of Science &amp; Technology of China</i> ); Chen, Xiang* ( <i>University of Science &amp; Technology of China</i> ); Cao, Shuai ( <i>University of Science &amp; Technology of China</i> ); Zhang, Xu ( <i>University of Science &amp; Technology of China</i> ); Chen, Xun ( <i>University of British Columbia</i> )	
18:00-19:30	ThPOS-06.4
<b>Synergy Estimation for Myoelectric Control using Regularized NMF</b> .....	2649-2652
Bahadur, Rabya* ( <i>SS CASE IT, Islamabad</i> ); Rahman, Saeed ur ( <i>SS CASE IT, Islamabad</i> ); Khattak, Shahid ( <i>COMSATS University Islamabad, Abbottabad Campus</i> )	
18:00-19:30	ThPOS-06.5
<b>Analysis of Dynamic Contractions from Biceps Brachii Muscle using Surface Electromyography Signals and Multiscale Visibility Graph Features</b> .....	2653-2656
Makaram, Navaneethakrishna* ( <i>Indian Institute of Technology Madras</i> ); Ramakrishnan, Swaminathan ( <i>IIT Madras, India</i> )	
18:00-19:30	ThPOS-06.6
<b>A Simple Method to Estimate Muscle Currents from HD-sEMG and MRI using Electrical Network and Graph Theory</b> .....	2657-2662
Piovanelli, Enrico* ( <i>The University of Tokyo</i> ); Piovesan, Davide ( <i>Gannon University</i> ); Shirafuji, Shouhei ( <i>The University of Tokyo</i> ); Ota, Jun ( <i>The University of Tokyo</i> )	
18:00-19:30	ThPOS-06.7
<b>Gesture Classification from Compressed EMG based on Compressive Covariance Sensing</b> .....	2663-2666
Park, Chanki ( <i>Gwangju Institute of Science &amp; Technology</i> ); Yoo, Hyun-Joon ( <i>Gwangju Institute of Science &amp; Technology.</i> ); Lee, Sangbaek ( <i>Gwangju Institute of Science &amp; Technology</i> ); Lee, Boreom* ( <i>Gwangju Institute of Science &amp; Technology (GIST)</i> )	
18:00-19:30	ThPOS-06.8
<b>Identification of Neuromuscular Causal Relationship between Brain and Muscles in Limb Movement by using Ensemble Empirical Mode Decomposition based Causal Decomposition</b> .....	2667-2670
Zhang, Yi* ( <i>University of Electronic Science &amp; Technology of China</i> ); Tie, Yi ( <i>The University of Sydney</i> ); Wang, Yingxue ( <i>University of Sydney</i> ); Zhang, Xiabing ( <i>University of Electronic Science &amp; Technology of China</i> ); Cui, Yan ( <i>University of Electronic Science &amp; Technology of China</i> ); Hao, Jianmin ( <i>University of Electronic Science &amp; Technology of China</i> ); Wu, Xiaofeng ( <i>University of Sydney</i> ); Su, Steven Weidong ( <i>University of Technology, Sydney</i> ); Xu, Peng ( <i>University of Electronic, Science &amp; Technology of China (UESTC)</i> ); Yao, Dezhong ( <i>University of Electronic Science &amp; Technology of China</i> )	
18:00-19:30	ThPOS-06.9
<b>Spatially Filtered Low-Density EMG and Time-Domain Descriptors Improves Hand Movement Recognition</b> .....	2671-2674
Ahmed, Ahmed ( <i>University of Technology Sydney</i> ); Khushaba, Rami N. ( <i>University of Technology, Sydney (UTS)</i> ); Al-Jumaily, Adel* ( <i>University of Technology Sydney</i> )	
18:00-19:30	ThPOS-06.10
<b>Analysis of Muscle Fatigue Conditions in Surface EMG Signal with a Novel Hilbert Marginal Spectrum Entropy Method</b> .....	2675-2678
Sam Jeeva Raj, Edward Jero* ( <i>Indian Institute of Technology Madras</i> ); Ramakrishnan, Swaminathan ( <i>IIT Madras, India</i> )	

ThPOS-07: 18:00-19:30	Hall B
<b>Image Enhancement – Denoising – Poster</b> (Poster Session)	

18:00-19:30	ThPOS-07.1
<b>OCT Image Denoising based on Asymmetric Normal Laplace Mixture Model</b> .....	2679-2682
Jorjandi, Sahar ( <i>Student Research Committee, School of Advanced Technologies in M</i> ); Rabbani, Hossein* ( <i>Isfahan Univ. of Medical Sciences</i> ); Amini, Zahra ( <i>MUI</i> ); Kafieh, Raheleh ( <i>Isfahan University of Medical Sciences</i> )	

18:00-19:30	ThPOS-07.2
<b>Semi-Supervised Learning for Low-Dose CT Image Restoration with Hierarchical Deep Generative Adversarial Network (HD-GAN)</b> .....	2683-2686
Choi, Kihwan* ( <i>Korea Institute of Science &amp; Technology</i> ); Malinda, Vania ( <i>Korea Institute of Science &amp; Technology</i> ); Kim, Sungwon ( <i>Yonsei University</i> )	
18:00-19:30	ThPOS-07.3
<b>Adaptive Weighted Nuclear Norm Minimization for Removing Speckle Noise from Optical Coherence Tomography Images</b> .....	2687-2690
Yoo, Sunyoung* ( <i>Seoul National University</i> ); Wang, Zihuan ( <i>Seoul National University</i> ); Seo, Jong Mo ( <i>Seoul National University, School of Engineering</i> )	
18:00-19:30	ThPOS-07.4
<b>Geometrical X-Lets for Image Denoising</b> .....	2691-2694
Rabbani, Hossein* ( <i>Isfahan Univ. of Medical Sciences</i> )	

ThPOS-08: 18:00-19:30	Hall B
<b>Image Feature Extraction – Poster (Poster Session)</b>	

18:00-19:30	ThPOS-08.1
<b>Differentiating Cancerous and Non-Cancerous Prostate Tissue using Multi-Scale Texture Analysis on MRI</b> .....	2695-2698
Alvarez-Jimenez, Charlems ( <i>Universidad Nacional de Colombia</i> ); Barrera, Cristian ( <i>Universidad Nacional de Colombia</i> ); Munera, Nicolas ( <i>Universidad Nacional de Colombia</i> ); Viswanath, Satish ( <i>Case Western Reserve University</i> ); Romero, Eduardo* ( <i>Universidad Nacional de Colombia</i> )	
18:00-19:30	ThPOS-08.2
<b>Automatic Screening of Fundus Images using a Combination of Convolutional Neural Network and Hand-Crafted Features</b> .....	2699-2702
Harangi, Balazs* ( <i>University of Debrecen</i> ); Toth, Janos ( <i>University of Debrecen, Faculty of Informatics</i> ); Baran, Agnes ( <i>Faculty of Informatics, University of Debrecen</i> ); Hajdu, Andras ( <i>University of Debrecen</i> )	
18:00-19:30	ThPOS-08.3
<b>A Preliminary Study on Automatic Characterization and Classification of Vascular Patterns of Contact Endoscopy Images</b> .....	2703-2706
Esmaeili, Nazila* ( <i>Otto-von-Guericke University Magdeburg, Magdeburg, Germany</i> ); Illanes, Alfredo ( <i>Otto-von-Guericke University of Magdeburg</i> ); Boese, Axel ( <i>Dept. of Medical Engineering, Otto-von-Guericke-University</i> ); Davaris, Nikolaos ( <i>Dept. of Otorhinolaryngology, Head &amp; Neck Surgery, Magdeb</i> ); Arens, Christoph ( <i>Dept. of Otorhinolaryngology, Head &amp; Neck Surgery, Magdeb</i> ); Friebe, Michael ( <i>Otto-von-Guericke-University</i> )	
18:00-19:30	ThPOS-08.4
<b>Gait Estimation and Analysis from Noisy Observations</b> .....	2707-2712
Ismail, Hafsa* ( <i>University of Canberra</i> ); Radwan, Ibrahim ( <i>Australian National University</i> ); Suominen, Hanna ( <i>Data61/CSIRO, Australian National University</i> ); Goecke, Roland ( <i>University of Canberra</i> )	
18:00-19:30	ThPOS-08.5
<b>Waveform Analysis for Camera-Based Photoplethysmography Imaging</b> .....	2713-2718
Paul, Michael* ( <i>RWTH Aachen University</i> ); Yu, Xinchu ( <i>RWTH Aachen University</i> ); Wu, Bin ( <i>RWTH Aachen University</i> ); Weiss, Christoph ( <i>RWTH Aachen University</i> ); Hoog Antink, Christoph ( <i>RWTH Aachen University, Aachen, Germany</i> ); Blazek, Vladimir ( <i>Philips Chair for Medical Information Technology, RWTH Aachen Un</i> ); Leonhardt, Steffen ( <i>RWTH Aachen University</i> )	

ThPOS-09: 18:00-19:30	Hall B
<b>Image Reconstruction and Enhancement – Poster (Poster Session)</b>	

18:00-19:30	ThPOS-09.2
<b>Auditory White Noise Affects Left/Right Visual Working Memory in an Opposite Pattern</b> .....	2719-2722
Wang, Ruimin* ( <i>Kyushu University</i> ); Ge, Sheng ( <i>Key Laboratory of Child Development &amp; Learning Science, Ministr</i> ); Zommaro, Noha Mohsen ( <i>Dept. of Human Science, Kyushu University</i> ); Zheng, WenWei ( <i>Kyushu University</i> ); Iramina, Keiji ( <i>Kyushu University, Japan</i> )	

18:00-19:30	ThPOS-09.3
<b>Mechanically Powered Motion Imaging Phantoms: Proof of Concept</b> .....	2723-2726
Gomez, Alberto ( <i>King's College London</i> ); Schmitz, Cornelia ( <i>King's College London</i> ); Henningsson, Markus ( <i>King's College London</i> ); Housden, Richard James ( <i>King's College London</i> ); Noh, Yohan ( <i>King's College London</i> ); Zimmer, Veronika ( <i>King's College London</i> ); Clough, James ( <i>Kings College London</i> ); Oksuz, Ilkay ( <i>King's College London</i> ); Toussaint, Nicolas ( <i>King's College London</i> ); King, Andy ( <i>King's College London</i> ); Schnabel, Julia* ( <i>King's College London</i> )	
18:00-19:30	ThPOS-09.4
<b>Lateral Resolution Improvement in Ultrasound Imaging System using Compressed Sensing: Initial Results</b> .....	2727-2730
R, Anand R ( <i>Indian Institute of Technology Madras, Chennai, India</i> ); Thittai, Arun Kumar* ( <i>IIT MADRAS</i> )	
18:00-19:30	ThPOS-09.5
<b>Image Reconstruction Method with Compressed Sensing for High-Speed MR Temperature Measurement of Abdominal Organs</b> .....	2731-2735
Nakagawa, Yusuke ( <i>Kobe University</i> ); Kokuryo, Daisuke* ( <i>Kobe University</i> ); Kaihara, Toshiya ( <i>Faculty of Engineering, Kobe University</i> ); Fujii, Nobutada ( <i>Kobe University</i> ); Kumamoto, Etsuko ( <i>Kobe University</i> )	
18:00-19:30	ThPOS-09.6
<b>Synthetic Retinal Images from Unconditional GANs</b> .....	2736-2739
Biswas, Sangeeta* ( <i>Brno University of Technology</i> ); Rohdin, Johan ( <i>Brno University of Technology</i> ); Drahansky, Martin ( <i>Brno University of Technology</i> )	
18:00-19:30	ThPOS-09.7
<b>A Portable Ultrasound Imaging System Utilizing Deep Generative Learning-Based Compressive Sensing on Pre-Beamformed RF Signals</b> .....	2740-2743
Gupta, Saurabh Kumar* ( <i>Indian Institute of Science, Bangalore</i> ); Kumar, Kundan ( <i>Indian Institute of Science</i> ); Seelamantula, Chandra Sekhar ( <i>Indian Institute of Science, Bangalore</i> ); Thakur, Chetan Singh ( <i>Indian Institute of Science, Bangalore</i> )	
18:00-19:30	ThPOS-09.8
<b>Evaluating Accuracy of Respiratory Rate Estimation from Super Resolved Thermal Imagery</b> .....	2744-2747
Kwasniewska, Alicja ( <i>Gdansk University of Technology</i> ); Szankin, Maciej ( <i>Intel Corporation</i> ); Ruminski, Jacek* ( <i>Gdansk University of Technology</i> ); Kaczmarek, Mariusz ( <i>Gdansk University of Technology</i> )	
18:00-19:30	ThPOS-09.9
<b>Shape, Pose and Density Statistical Model for 3D Reconstruction of Articulated Structures from X-Ray Images</b> .....	2748-2751
Tchinde Fotsin, Ted Julien* ( <i>Laboratoire de Recherche en Imagerie et Orthopédie (LIO), École</i> ); Vazquez, Carlos ( <i>École de Technologie Supérieure</i> ); Cresson, Thierry ( <i>Ecole de Technologie Supérieure</i> ); de Guise, Jacques A. ( <i>École de Technologie Supérieure</i> )	
18:00-19:30	ThPOS-09.10
<b>Hole Filling in 3D Scans for Digital Anthropometric Applications</b> .....	2752-2757
Sobhiyeh, Sima ( <i>LSU Pennington Biomedical Research Center</i> ); Dechenaud, Marcelline* ( <i>Louisiana State University</i> ); Dunkel, Alexander ( <i>Louisiana State University</i> ); LaBorde, Margerite ( <i>Louisiana State University</i> ); Kennedy, Samantha ( <i>LSU Pennington Biomedical Research Center</i> ); Shepherd, John ( <i>University of Hawaii Cancer Center</i> ); Heymsfield, Steven ( <i>Pennington Biomedical Research Center</i> ); Wolenski, Peter ( <i>Louisiana State University</i> )	

ThPOS-10: 18:00-19:30	Hall B
<b>Image Registration – Poster</b> (Poster Session)	

18:00-19:30	ThPOS-10.1
<b>Towards CNN-Based Registration of Craniocaudal and Mediolateral Oblique 2-D X-Ray Mammographic Images</b> .....	2758-2764
Walton, William* ( <i>JHU/APL</i> ); Kim, Seung-Jun ( <i>University of Maryland, Baltimore County</i> ); Harvey, Susan ( <i>Johns Hopkins Medicine Dept. of Radiology</i> ); Mullen, Lisa ( <i>JHU</i> ); Porter, David ( <i>JHU/APL</i> )	

18:00-19:30 ThPOS-10.3  
**A Pipeline for the Registration of Calcium Transient Data to Structural Networks of the Interstitial Cells of Cajal** ..... 2765-2768  
 Qian, Anna\* (*The University of Auckland*); Means, Shawn (*The University of Auckland*); Malysz, John (*University of Tennessee Health Science Center*); Farrugia, Gianrico (*Mayo Clinic College of Medicine*); Gibbons, Simon J (*Mayo Clinic College of Medicine*); Du, Peng (*The University of Auckland*)

18:00-19:30 ThPOS-10.4  
**Breathing Deformation Model – Application to Multi-Resolution Abdominal MRI** ..... 2769-2772  
 Sarasaen, Chompunuch\* (*Otto-von-Guericke-Universität Magdeburg*); Chatterjee, Soumick (*Otto von Guericke University Magdeburg*); Breittkopf, Mario (*Otto von Guericke University Magdeburg*); Iuso, Domenico (*Otto von Guericke University Magdeburg*); Rose, Georg (*Otto-von-Guericke University, Magdeburg*); Speck, Oliver (*University of Magdeburg*)

ThPOS-11: 18:00-19:30	Hall B
<b>Image Segmentation – Poster (Poster Session)</b>	

18:00-19:30 ThPOS-11.1  
**Study of Tissue Variation and Analysis of MR Brain Images using Optimized Multilevel Threshold and Deep CNN Features in Neurodegenerative Disorders** ..... 2773-2776  
 N, Ahana Priyanka (*ANNA University*); Ganesan, Kavitha\* (*MIT Campus, Anna University,*)

18:00-19:30 ThPOS-11.2  
**Automatic Aorta and Left Ventricle Segmentation for TAVI Procedure Planning using Convolutional Neural Networks** ..... 2777-2780  
 Złahoda-Huzior, Adriana\* (*AGH University of Science & Technology, Dept. of Measurement*); Stanuch, Maciej (*AGH University of Science & Technology, Dept. of Measurement*); Witowski, Jan Sylwester (*2nd Dept. of General Surgery, Jagiellonian University Medic*); Dudek, Dariusz (*Jagiellonian University Medical College, Institute of Cardiology*)

18:00-19:30 ThPOS-11.3  
**A Novel Method for Retinal Vessel Segmentation and Diameter Measurement using High Speed Video** . 2781-2784  
 Rezaeian, Mahdiah (*Macquarie University*); Butlin, Mark (*Macquarie University*); Golzan, S.Mojtaba (*Macquarie University*); Graham, Stuart L (*Macquarie University*); Avolio, Alberto P\* (*Macquarie University*)

18:00-19:30 ThPOS-11.4  
**Skin Lesion Segmentation with C-UNet** ..... 2785-2788  
 Wu, Junyan\* (*Cleerly*); Chen, Eric Z. (*Dana-Farber Cancer Institution*); Rong, Ruichen (*UT Southwestern*); Li, Xiaoxiao (*Yale University*); Dong, Xu (*Virginia Tech*); Jiang, Hongda (*East China University of Science & Technology*)

18:00-19:30 ThPOS-11.5  
**Automatic Segmentation of the Paranasal Sinus from Computer Tomography Images using a Probabilistic Atlas and a Fully Convolutional Network** ..... 2789-2792  
 Xiong, Kun (*Ritsumeikan University*); Chen, Yen-Wei\* (*Ritsumeikan University*); Iwamoto, Yutaro (*Ritsumeikan University*); Han, Xian-Hua (*Ritsumeikan University*); Kitamura, Takahiro (*National Hospital Organization Osaka National Hospital*); Matsushiro, Naoki (*Osaka Police Hospital*)

18:00-19:30 ThPOS-11.6  
**Automated Optic Nerve Sheath Diameter Measurement using Super-Pixel Analysis** ..... 2793-2796  
 Soroushmehr, S.M.Reza\* (*University of Michigan, Ann Arbor*); Rajajee, Krishna (*University of Michigan*); Williamson, Craig (*University of Michigan*); Gryak, Jonathan (*University of Michigan*); Najarian, Kayvan (*University of Michigan – Ann Arbor*); Ward, Kevin (*University of Michigan*); Tiba, Mohamad H. (*University of Michigan*)

ThPOS-12: 18:00-19:30 Hall B  
**Image Visualization – Poster** (Poster Session)

- 18:00-19:30 ThPOS-12.1  
**What Evidence Does Deep Learning Model use to Classify Skin Lesions?** ..... 2797-2800  
Wu, Junyan\* (*Cleerly*); Li, Xiaoxiao (*Yale University*); Chen, Eric Z. (*Dana-Farber Cancer Institution*); Jiang, Hongda (*East China University of Science & Technology*)
- 18:00-19:30 ThPOS-12.2  
**Automatic Masseter Thickness Measurement and Ideal Point Localization for Botulinum Toxin Injection** ..... 2801-2804  
Xia, Wenjin (*Shanghai Jiao Tong University*); Han, Wenqing (*Shanghai Ninth People's Hospital, Shanghai Jiao Tong University*); Zhang, Yan (*Shanghai Ninth People's Hospital, Shanghai Jiao Tong University*); Wang, Lisheng (*Shanghai Jiao Tong University*); Chai, Gang (*Shanghai Ninth People's Hospital, Shanghai Jiao Tong University*); Huang, Yi-Jie\* (*Shanghai Jiao Tong University*)
- 18:00-19:30 ThPOS-12.3  
**Retinal Thickness Analysis in High Myopia based on Medial Axis Transforms** ..... 2805-2808  
Michikawa, Takashi\* (*RIKEN*); Wada, Satoshi (*RIKEN*); Yokota, Hideo (*RIKEN Center for Advanced Photonics*); An, Guangzhou (*RIKEN*); Akiba, Masahiro (*Topcon Corporation*); Omodaka, Kazuko (*Dept. of Ophthalmology, Tohoku University Graduate School o*); Nakazawa, Toru (*Tohoku University Graduate School of Medicine*)
- 18:00-19:30 ThPOS-12.4  
**Deep Reinforcement Learning for Task-Based Feature Learning in Prosthetic Vision** ..... 2809-2812  
White, Jack Andrew\* (*Swinburne University of Technology*); McCarthy, Chris (*Swinburne University of Technology*); Kameneva, Tatiana (*Swinburne University of Technology*)
- 18:00-19:30 ThPOS-12.5  
**FPGA Implementation and Evaluation of an Approximate Hilbert Transform-Based Envelope Detector for Ultrasound Imaging using the DSP Builder Development Tool** ..... 2813-2816  
Assef, Amauri Amorin\* (*Federal University of Technology-Parana (UTFPR)*); De Oliveira, Jonathan (*UTFPR, PPGSE*); Maia, Joaquim Miguel (*Federal University of Technology-Parana*); Costa, Eduardo Tavares (*State University of Campinas*)

ThPOS-13: 18:00-19:30 Hall B  
**Infra-Red Imaging – Poster** (Poster Session)

- 18:00-19:30 ThPOS-13.1  
**The Association of Temperature of Diabetic Foot Ulcers with Chronic Kidney Disorder** ..... 2817-2820  
Rani, Priya\* (*RMIT University*); Aliahmad, Behzad (*RMIT University*); Kant Kumar, Dinesh (*RMIT University*)
- 18:00-19:30 ThPOS-13.2  
**Thermal Asymmetries and Mean Foot Temperature** ..... 2821-2824  
Zolet, Cerise M. L. S. (*Graduate Program in Biomedical Engineering of the Federal Univer*); Neves, Eduardo Borba (*Federal Technological University of Paraná (UTFPR)*); Romaneli, Eduardo F. R. (*UTFPR – Federal University of Technology – Paraná*); Ulbricht, Leandra\* (*UTFPR – Federal University of Technology – Paraná*)

ThPOS-14: 18:00-19:30 Hall B  
**Magnetic Resonance Imaging – Poster** (Poster Session)

- 18:00-19:30 ThPOS-14.1  
**The Effect of the Number of Fibers in Tractography Reconstruction of White Matter Bundles** ..... 2825-2829  
Román, Claudio\* (*Universidad de Concepcion*); Cárdenas, Nicolás (*Universidad de Concepción*); Poupon, Cyril (*CEA I2BM NeuroSpin*); Mangin, Jean-François (*CEA I2BM NeuroSpin*); Guevara, Pamela (*Universidad de Concepción*)
- 18:00-19:30 ThPOS-14.2  
**Super-Resolution Diffusion Tensor Imaging using SRCNN: A Feasibility Study** ..... 2830-2834  
Elsaid, Nahla M H\* (*Indiana University School of Medicine*); Wu, Yu-Chien (*Indiana University School of Medicine*)

18:00-19:30 ThPOS-14.3  
**Towards the Precise Microstructural Mapping. Testing New Anisotropic Phantoms with Layered and Capillary Geometries** ..... 2835-2839  
Mazur, Weronika\* (AGH University of Science & Technology); Krzyzak, Artur, Tadeusz (AGH University of Science & Technology, Faculty of Geology, G); Raszewski, Zbigniew (Military University of Technology, Faculty of Advanced Technolog)

18:00-19:30 ThPOS-14.4  
**On Single-Image Super-Resolution in 3D Brain Magnetic Resonance Imaging** ..... 2840-2843  
Bazzi, Farah\* (University of Toulouse 3, Paul Sabatier, IRIT); Mescam, Muriel (CNRS – University of Toulouse 3); Basarab, Adrian (Université de Toulouse); Kouamé, Denis (Université de Toulouse III, IRIT UMR CNRS)

18:00-19:30 ThPOS-14.5  
**Altered Cortical Morphometry in Pre-Manifest Huntington's Disease: Cross-Sectional Data from the IMAGE-HD Study** ..... 2844-2847  
Shishegar, Rosita\* (Monash University); Rajapakse, Sudeshna (Monash University); Georgiou-Karistianis, Nellie (Monash University)

18:00-19:30 ThPOS-14.6  
**in-Vivo Cortical Thickness Estimation from High-Resolution T1w MRI Scans in Healthy and Mucopolysaccharidosis Affected Dogs** ..... 2848-2851  
Labounek, Rene (University of Minnesota); Mai, Khoi (University of Minnesota); Mueller, Bryon (University of Minnesota); Ellinwood, Matthew (Iowa State University); Dickson, Patricia (Harbor-UCLA Medical Center); Neustrasil, Igor\* (University of Minnesota)

ThPOS-15: 18:00-19:30 Hall B  
**Cell, Tissue, and Organ Modeling – Poster (Poster Session)**

18:00-19:30 ThPOS-15.1  
**Development of a Physiologically-Based Mathematical Model for Quantifying Nanoparticle Distribution in Tumors** ..... 2852-2855  
Dogra, Prashant (Houston Methodist Research Institute); Chuang, Yao-Li (University of New Mexico); Butner, Joseph (University of New Mexico); Cristini, Vittorio (University of New Mexico); Wang, Zhihui\* (Houston Methodist Research Institute)

18:00-19:30 ThPOS-15.2  
**Pharmacotherapeutic Effects of Quinidine on Short QT Syndrome by using Purkinje-Ventricle Model: A Simulation Study** ..... 2856-2859  
Luo, Cunjin\* (Key Lab of Medical Electrophysiology, Ministry of Education, Ins); Whittaker, Dominic G (University of Leeds); Liu, Tong (Tianjin Medical University); Wang, Kuanquan (Harbin Institute of Technology); Li, Yacong (Harbin Institute of Technology); He, Ying (De Montfort University); Zhang, Henggui (Harbin Institute of Technology, School of Computer Science & T)

18:00-19:30 ThPOS-15.3  
**Experimental Mechanical Examination of Artificial 3D Printed and Post Processed Vascular Silicone Models** ..... 2860-2866  
Riedle, Hannah\* (Friedrich-Alexander-University of Erlangen-Nuremberg); Braunias, Kim (Friedrich-Alexander-University of Erlangen-Nuremberg); Mukai, Barbara (Friedrich-Alexander-University of Erlangen-Nuremberg); Franke, Jörg (Friedrich-Alexander-University of Erlangen-Nuremberg)

18:00-19:30 ThPOS-15.4  
**3D-Printed Whole Prostate Models with Tumor Hotspots using Dual-Extruder Printer** ..... 2867-2871  
Liimatainen, Kaisa Maria\* (Tampere University of Technology); Latonen, Leena (University of Tampere); Kartasalo, Kimmo (Faculty of Medicine & Health Technology, Tampere University, F); Ruusuvoori, Pekka (Tampere University of Technology)

18:00-19:30 ThPOS-15.5  
**Optimizing Stimulation Strategies for Retinal Electrical Stimulation: A Modelling Study** ..... 2872-2875  
Alqahtani, Abdulrahman\* (University of New South Wales); Al Abed, Amr (University of New South Wales); Lovell, Nigel H. (University of New South Wales); Dokos, Socrates (University of New South Wales)

18:00-19:30 ThPOS-15.6  
**A Soliton-Based Model Mimics the Arterial Pulse Propagation as Much as a Widely Used 1D Model** ..... 2876-2879  
 Manuel, Alfonso (*Buenos Aires Regional Faculty, National Technological University*); Gabaldon, Felipe (*Technical University of Madrid*); Cymberknop, Leandro Javier\* (*Universidad Tecnológica Nacional*); Armentano, Ricardo Luis (*Republic University*); Legnani, Walter (*Universidad Tecnológica Nacional*)

18:00-19:30 ThPOS-15.7  
**On a Novel, Simplified Model Framework Describing Ascorbic Acid Concentration Dynamics** ..... 2880-2886  
 Nygaard, Gerhard\* (*Western Norway University of Applied Sciences*)

18:00-19:30 ThPOS-15.8  
**A Numerical Study on the No-Touch Bipolar Radiofrequency Ablation** ..... 2887-2890  
 Yap, Shelley\* (*Monash University Malaysia*); Cheong, Jason Kin Kit (*Monash University Malaysia*); Ooi, Ean Hin (*Monash University Malaysia*); Liao, Iman Yi (*University of Nottingham Malaysia Campus*); Foo, Ji Jinn (*Monash University Malaysia*); Nair, Shalini R (*National Cancer Institute*); Mohd Ali, Ahmad Faizal (*Universiti Malaysia Sarawak*)

18:00-19:30 ThPOS-15.9  
**Possibility of Acoustic Resonance in Hair Cells in Human's Auditory System** ..... 2891-2894  
 Hong, Wenjia (*Kansai University*); Tamaki, Airi (*Kansai University*); Kitamura, Toshiaki (*Kansai University*); Horii, Yasushi\* (*Kansai University*)

ThPOS-16: 18:00-19:30	Hall B
<b>Model Construction: Algorithms, Parameters, and Sensitivity – Poster (Poster Session)</b>	

18:00-19:30 ThPOS-16.1  
**A Faster DiSH: Hardware Implementation of a Discrete Cell Signaling Simulator** ..... 2895-2899  
 Gilboy, Kevin (*University of Pittsburgh*); Sayed, Khaled\* (*University of Pittsburgh*); Sundaram, Niteesh (*University of Pittsburgh*); Bocan, Kara (*University of Pittsburgh*); Miskov-Zivanov, Natasa (*University of Pittsburgh*)

18:00-19:30 ThPOS-16.2  
**A Simulated Environment for Early Development Stages of Reinforcement Learning Algorithms for Closed-Loop Deep Brain Stimulation** ..... 2900-2904  
 Castaño-Candamil, Sebastián\* (*University of Freiburg*); Vaihinger, Mara (*University of Freiburg*); Tangermann, Michael (*University of Freiburg*)

18:00-19:30 ThPOS-16.3  
**Identification of a Neural Mass Model of Burst Suppression** ..... 2905-2908  
 Jafarian, Amirhossein\* (*University Collage London*); Freestone, Dean Robert (*The University of Melbourne*); Nestic, Dragan (*The University of Melbourne*); Grayden, David B. (*The University of Melbourne*)

18:00-19:30 ThPOS-16.4  
**EEG Complexity and Functional Connectivity during Precise Timing Prediction** ..... 2909-2912  
 Meng, Jiayuan\* (*Tianjin University*); Xu, Minpeng (*Tianjin University*); Zhou, Peng (*Tianjin University*); He, Feng (*Tianjin University*); Ming, Dong (*Tianjin University*)

18:00-19:30 ThPOS-16.5  
**Sensitivity Analysis of a Model of Human Papillomavirus Late Promoter Regulation** ..... 2913-2916  
 Giaretta, Alberto\* (*University of Padova, Dept. of Information Engineering*); Toffolo, Gianna (*University of Padova*)

18:00-19:30 ThPOS-16.6  
**Influence of Anatomical Model and Skin Conductivity on the Electric Field Induced in the Head by Transcranial Magnetic Stimulation** ..... 2917-2920  
 Colella, Micol\* (*University of Rome "Sapienza"*); Paffi, Alessandra (*ICEmB@La Sapienza Univ. Rome*); Fontana, Sara (*Dept. of Information Engineering, Electronics & Telecommu*); Rossano, Federico (*Dept. of Information Engineering, Electronics & Telecommu*); De Santis, Valerio (*University of L'Aquila*); Apollonio, Francesca (*ICEmB@La Sapienza Univ. Rome*); Liberti, Micaela (*ICEmB at Sapienza University of Rome*)



**Systems Biology and Systems Biomedicine – Poster (Poster Session)**

- 18:00-19:30 ThPOS-17.1  
**Influence of Tissue Anisotropy on Molecular Communication** ..... 2921-2924  
 Al-Zu'bi, Muneer (*University of Technology Sydney*); Sanagavarapu, Ananda Mohan\* (*University of Technology Sydney*); Ling, Sai Ho, Steve (*University of Technology Sydney*)
- 18:00-19:30 ThPOS-17.2  
**Human Papillomavirus Early Promoter Regulatory Core as a Bistable Switch** ..... 2925-2928  
 Giarretta, Alberto\* (*University of Padova, Dept. of Information Engineering*)
- 18:00-19:30 ThPOS-17.3  
**Measurement and Analysis of Complex Permittivity of Breast Cancer in Microwave Band** ..... 2929-2932  
 Kuwahara, Yoshihiko\* (*Shizuoka University*); Nakada, Yuuji (*Shizuoka University*); Nozaki, Akira (*Shizuoka University*); Fujii, Kimihito (*Aichi Medical University*)
- 18:00-19:30 ThPOS-17.4  
**Continuous Prediction of Cognitive State using a Marked-Point Process Modeling Framework** ..... 2933-2938  
 Amidi, Yalda\* (*Isfahan University of Technology*); Paulk, Angelique C (*Massachusetts General Hospital*); Dougherty, Darin (*Massachusetts General Hospital*); Cash, Sydney (*Massachusetts General Hospital*); Widge, Alik (*Massachusetts General Hospital*); Eden, Uri (*Boston University*); Yousefi, Ali (*Massachusetts General Hospital & Harvard Medical School*)
- 18:00-19:30 ThPOS-17.5  
**Modeling and Analysis of Gab1 Mediated Feedback Loops to Understand Gab's Role in Erk-Akt Signaling and Cancer** ..... 2939-2942  
 Arkun, Yaman\* (*Koc University*)
- 18:00-19:30 ThPOS-17.6  
**Determining the Effects of Insulin Detemir on Endogenous Secretion of Insulin** ..... 2943-2946  
 Klenner, Jacob B. (*University of Canterbury*); Van Noorden, Benjamin A. (*University of Canterbury*); Knopp, Jennifer L.\* (*University of Canterbury*); Holder Pearson, Lui R. (*University of Canterbury*); Hardy, Anna R. (*University of Canterbury*); Vergeer, Sarah L. (*University of Canterbury*); Shaw, Geoffrey M (*Christchurch Hospital*); Chase, J. Geoffrey (*University of Canterbury*)
- 18:00-19:30 ThPOS-17.7  
**Effect of Two Different Pose Estimation Approaches on Lower Extremity Biomechanics in Professional Dancers** ..... 2947-2950  
 Azevedo, Ana\* (*George Mason University*); Wei, Qi (*George Mason University*); Oliveira, Raul (*Faculty of Human Kinetics*); Vaz, Joao (*Universidade Europeia*); Cortes, Nelson (*George Mason University*)
- 18:00-19:30 ThPOS-17.8  
**State Analysis of Total Stressed Blood Volume and Arterial Elastance during Induced Sepsis** ..... 2951-2954  
 Murphy, Liam (*University of Canterbury*); Davidson, Shaun\* (*University of Oxford*); Knopp, Jennifer L. (*University of Canterbury*); Chase, J. Geoffrey (*University of Canterbury*); Zhou, Tony (*University of Canterbury*); Desai, Thomas (*University of Liege*)
- 18:00-19:30 ThPOS-17.9  
**A Minimal-Model Approach to Analyze Neuronal Circuit Dynamics from Multifocal ERG (mERG)** ..... 2955-2958  
 Schröder, Pascal\* (*Dept. of Human Sciences, University of Osnabrück, Osnabrück*); Martinez-Canada, Pablo (*CITIC-UGR, University of Granada, Granada*); Amorim, André (*Clinical & Experimental Optometry Research Lab-CEORLab, Center o*); Fernandes, Paulo (*Clinical & Experimental Optometry Research Lab-CEORLab, Center o*); Amorim-de-Sousa, Ana (*Clinical & Experimental Optometry Research Lab-CEORLab, Center o*); González-Méijome, José Manuel (*Clinical & Experimental Optometry Research Lab-CEORLab, Center o*)
- 18:00-19:30 ThPOS-17.10  
**Alzheimer's Disease Brain Network Classification using Improved Transfer Feature Learning with Joint Distribution Adaptation** ..... 2959-2963  
 Wang, Binglin (*Huazhong University of Science & Technology*); Li, Wei (*Huazhong University of Science & Technology*); Fan, Wenliang (*Huazhong University of Science & Technology*); Chen, Xi (*Hua Zhong University of Science & Technology*); Wu, Dongrui\* (*Huazhong University of Science & Technology*)

18:00-19:30 ThPOS-17.11  
**A Predictive Coding Model for Evoked and Spontaneous Pain Perception** ..... 2964-2967  
Song, Yuru (*University of Science & Technology of China*); Kemprecos, Helen (*New York University*); Wang,  
Jing (*New York University School of Medicine*); Chen, Zhe\* (*New York University School of Medicine*)

18:00-19:30 ThPOS-17.12  
**Comprehensive Fully Automated Left-Ventricular Ejection and Contractility Analysis** ..... 2968-2972  
Baldwin, Bryant\* (*University of South Alabama*); Figgel, Robert\* (*University of South Alabama*); Kar, Julia  
(*University of South Alabama*)

WITHDRAWN

18:00-19:30 ThPOS-17.13  
**Estimation of Dispersive Properties of Encapsulation Tissue Surrounding Deep Brain Stimulation  
Electrodes in the Rat** ..... 2973-2976  
Sridhar, Karthik\* (*University College Dublin*); Evers, Judith (*University College Dublin*); Pereira Botelho, Diego  
(*University College Dublin*); Lowery, Madeleine (*University College Dublin*)

18:00-19:30 ThPOS-17.14  
**Network Activity Due to Topographic Organization of Schaffer Collaterals in a Large-Scale Model of  
Rat CA1** ..... 2977-2980  
Yu, Gene\* (*University of Southern California*); Feng, Zhicheng (*University of Southern California*); Berger,  
Theodore (*USC*)

ThPOS-18: 18:00-19:30 Hall B  
**Brain Functional Imaging – Poster** (Poster Session)

18:00-19:30 ThPOS-18.1  
**Lateralization of Processing Spectrally-Degraded Music in the Auditory Cortex: An fNIRS Study** ..... 2981-2984  
Guo, Zengzhi (*Southern University of Science & Technology*); Ma, Ting (*Harbin Institute of Technology at  
Shenzhen*); Chen, Fei\* (*Southern University of Science & Technology*)

18:00-19:30 ThPOS-18.2  
**Directed Connectivity in Large-Scale Brain Networks for Precision Grip Force Control** ..... 2985-2989  
Lv, Yadong (*Shandong University*); Wei, Na (*Qilu Hospital, Shandong University*); Li, Ke\* (*Shandong University*)

ThPOS-19: 18:00-19:30 Hall B  
**Brain Physiology and Modeling – Poster** (Poster Session)

18:00-19:30 ThPOS-19.1  
**Identification of Midbrain Dopamine Neurons using Features from Spontaneous Spike Activity  
Patterns** ..... 2990-2993  
Ishikawa, Tsuyoshi\* (*Kwansei Gakuin University*); Miura, Keiji (*Kwansei Gakuin University*); Matsumoto,  
Hideyuki (*Osaka City University*)

18:00-19:30 ThPOS-19.2  
**Deriving Functional Astrocytes from Mouse Embryonic Stem Cells with a Fast and Efficient Protocol** ... 2994-2996  
Juneja, Deppo (*University of Reading*); Nasuto, Slawomir (*University of Reading*); Delivopoulos, Evangelos\*  
(*University of Reading*)

18:00-19:30 ThPOS-19.3  
**Effect of Topology and Time Window on Probability Distribution Underlying Baclofen Induced Ca<sup>2+</sup>  
Response in Hippocampal Neurons** ..... 2997-3000  
Saxena, Abha\* (*Indian Institute of Technology Hyderabad*,); Dhyani, Vaibhav (*Indian Institute of Technology  
Hyderabad*,); Gare, Suman (*Indian Institute of Technology Hyderabad*); Giri, Lopamudra (*Indian Institute of  
Technology Hyderabad*)

18:00-19:30 ThPOS-19.4  
**Simulation Study of Intermittent Responses of Neuronal Populations to Axonal High-Frequency  
Stimulation** ..... 3001-3004  
Zheng, Lvpio (*Zhejiang University*); Feng, Zhouyan\* (*Zhejiang University*); Guo, Zheshan (*Zhejiang  
University*); Huang, Lu (*Zhejiang University*)

18:00-19:30 ThPOS-19.5  
**Implementation of an Advanced Frequency-Based Hebbian Spike Timing Dependent Plasticity** ..... 3005-3009  
Antonietti, Alberto (*Politecnico di Milano*); Orza, Vasco (*Politecnico di Milano*); Casellato, Claudia (*Politecnico di Milano*); D'Angelo, Egidio (*University of Pavia*); Pedrocchi, Alessandra\* (*Politecnico di Milano*)

18:00-19:30 ThPOS-19.6  
**Difference in Cortical Modulation of Walking between Persons with Multiple Sclerosis and Healthy Controls: An EEG Pilot Study** ..... 3010-3013  
Hoxha, Armand (*Kessler Foundation*); Glassen, Michael (*Kessler Foundation*); DeLuca, John (*Kessler Foundation*); Kwasnica, Marek (*Kessler Foundation*); Yue, Guang (*Kessler Foundation*); Saleh, Soha\* (*Kessler Foundation*)

ThPOS-20: 18:00-19:30 Hall B  
**Brain-Computer Interface – Poster (Poster Session)**

18:00-19:30 ThPOS-20.1  
**Reconstructing Degree of Forearm Rotation from Imagined Movements for BCI-Based Robot Hand Control** ..... 3014-3017  
Yun, Yong-Deok (*Korea University*); Jeong, Ji-Hoon (*Korea University*); Cho, Jeong-Hyun (*Korea University*); Kim, Dong-Joo (*Korea University*); Lee, Seong-Whan\* (*Korea University*)

18:00-19:30 ThPOS-20.2  
**Two Player Online Brain-Controlled Chess** ..... 3018-3021  
Hübner, David (*Albert-Ludwigs Universität Freiburg*); Schall, Albrecht (*University of Freiburg*); Tangemann, Michael\* (*University of Freiburg*)

18:00-19:30 ThPOS-20.3  
**A Cross-Subject SSVEP-BCI based on Task Related Component Analysis** ..... 3022-3025  
Liu, Wentao\* (*Tianjin University*); Ke, Yufeng (*Tianjin University*); Liu, Pengxiao (*Tianjin University*); Du, Jiale (*Tianjin University*); Kong, Linghan (*Tianjin University*); Liu, Shuang (*Tianjin University*); An, Xingwei (*Tianjin University*); Ming, Dong (*Tianjin University*)

18:00-19:30 ThPOS-20.4  
**SLES: A Novel CNN-Based Method for Sensor Reduction in P300 Speller** ..... 3026-3031  
Shan, Hongchang\* (*Leiden University*); Stefanov, Todor (*Leiden University*)

18:00-19:30 ThPOS-20.5  
**A Comparison of Classification Methods for Recognizing Single-Trial P300 in Brain-Computer Interfaces** ..... 3032-3035  
Xiao, Xiaolin\* (*Tianjin University*); Xu, Minpeng (*Tianjin University*); Wang, Yijun (*Institute of Semiconductors, Chinese Academy of Sciences*); Jung, Tzyy-Ping (*University of California San Diego*); Ming, Dong (*Tianjin University*)

18:00-19:30 ThPOS-20.6  
**Combining Frequency and Time-Domain EEG Features for Classification of Self-Paced Reach-and-Grasp Actions** ..... 3036-3041  
Schwarz, Andreas\* (*Graz, University of Technology*); Pereira, Joana (*Graz University of Technology*); Lindner, Lydia (*Graz University of Technology*); Müller-Putz, Gernot (*Graz University of Technology*)

18:00-19:30 ThPOS-20.7  
**Study on Brain Computer Interface Combined Tactile Enhancement and Time-Varying Features** ..... 3042-3045  
Zhang, Lei (*Tianjin University*); Chen, Long (*Tianjin University*); Wang, Zhongpeng (*Tianjin University*); Liu, Shuang (*Tianjin University*); Wang, Mengya (*Tianjin University*); Chen, Shanguang (*China Astronaut Research & Training Center*); Ming, Dong\* (*Tianjin University*)

18:00-19:30 ThPOS-20.8  
**Classification and Transfer Learning of EEG during a Kinesthetic Motor Imagery Task using Deep Convolutional Neural Networks** ..... 3046-3049  
Craik, Alexander (*University of Houston*); Contreras-Vidal, José (*University of Houston*); Kilicarslan, Atilla\* (*University of Houston*)

18:00-19:30	ThPOS-20.9
<b>A Novel EEG-Based Four-Class Linguistic BCI</b> .....	3050-3053
Jahangiri, Amir* ( <i>University of Essex</i> ); Achancaray, David ( <i>Tohoku University</i> ); Sepulveda, Francisco ( <i>University of Essex</i> )	
18:00-19:30	ThPOS-20.10
<b>Decoding with Calcium Signals from Layer 2/3 Motor Cortex during a Pressing Movement</b> .....	3054-3057
Wang, Ruixue ( <i>Qiushi Academy for Advanced Studies, Zhejiang University</i> ); Han, Jiawei ( <i>Zhejiang University</i> ); Chen, Jing ( <i>Qiushi Academy of Advanced Studies &amp; College of Biomedical Eng</i> ); Li, Mingkang ( <i>Zhejiang University</i> ); Feng, Linqing ( <i>Korea Institute of Science &amp; Technology</i> ); Zhang, Shaomin* ( <i>Zhejiang University</i> )	
18:00-19:30	ThPOS-20.11
<b>A Fast Brain Switch based on Multi-Class Code-Modulated VEPs</b> .....	3058-3061
Zheng, Li ( <i>Institute of Semiconductors, Chinese Academy of Sciences</i> ); Wang, Yijun* ( <i>Institute of Semiconductors, Chinese Academy of Sciences</i> ); Pei, Weihua ( <i>Institute of Semiconductors, CAS</i> ); Chen, Hongda ( <i>Institute of Semiconductors, CAS</i> )	
18:00-19:30	ThPOS-20.12
<b>A P300-Based Brain Computer Interface using Stereo-Electroencephalography Signals</b> .....	3062-3066
Huang, Weichen ( <i>South China University of Technology</i> ); Yu, Tianyou ( <i>South China University of Technology, Chinese</i> ); Jing, Xiao ( <i>South China University of Technology</i> ); Guo, Qiang ( <i>Guangdong 999 Brain Hospital</i> ); Li, Yuanqing* ( <i>South China University of Technology</i> )	
18:00-19:30	ThPOS-20.13
<b>Stereoscopic Motion Perception Research based on Steady-State Visual Motion Evoked Potential</b> .....	3067-3070
Han, Chengcheng ( <i>Xi'an Jiao Tong University</i> ); Xu, Guanghua* ( <i>Xi'an Jiao Tong University</i> ); Jiang, Yimin ( <i>Xi'an Jiao Tong University</i> ); Wang, Haochong ( <i>Xi'an Jiao Tong University</i> ); Chen, Xiaobi ( <i>Xi'an Jiao Tong University</i> ); Zhang, Kai ( <i>Xi'an Jiao Tong University</i> ); Xie, Jun ( <i>Xi'an Jiao Tong University</i> ); Liu, Fei ( <i>Xi'an Jiao Tong University</i> )	
18:00-19:30	ThPOS-20.14
<b>Multimodal Emotion Recognition from Eye Image, Eye Movement and EEG using Deep Neural Networks</b> .....	3071-3074
Guo, Jiangjian ( <i>Shanghai Jiao Tong University</i> ); Zhou, Rong ( <i>Shanghai Jiao Tong University</i> ); Zhao, Li-Ming* ( <i>Shanghai Jiao Tong University</i> ); Lu, Bao-Liang ( <i>Shanghai Jiao Tong University</i> )	
18:00-19:30	ThPOS-20.15
<b>Improving the Performance of Motor Imagery based Brain Computer Interface using Phase Space Reconstruction</b> .....	3075-3078
Bagh, Niraj* ( <i>Indian Institute of Technology, Madras</i> ); M, Ramasubba Reddy ( <i>Indian Institute of Technology Madras</i> )	
18:00-19:30	ThPOS-20.16
<b>Adaptive Learning in the Detection of Movement Related Cortical Potentials Improves usability of Associative Brain-Computer Interfaces</b> .....	3079-3082
Colamarino, Emma* ( <i>Sapienza University of Rome</i> ); Muceli, Silvia ( <i>Imperial College London</i> ); Ibáñez, Jaime ( <i>Institute of Neurology, University College London</i> ); Mrachacz-Kersting, Natalie ( <i>the Center for Sensory-Motor Interaction, Dept. of Health Sc</i> ); Mattia, Donatella ( <i>Fondazione Santa Lucia IRCCS</i> ); Cincotti, Febo ( <i>Sapienza University of Rome</i> ); Farina, Dario ( <i>Imperial College London</i> )	
18:00-19:30	ThPOS-20.17
<b>Motor Imagery Classification with Covariance Matrices and Non-Negative Matrix Factorization</b> .....	3083-3086
Curve, Dharmendra* ( <i>Ryerson University</i> ); Delisle-Rodriguez, Denis ( <i>Federal University of Espirito Santo, UFES</i> ); Bastos, Teodiano ( <i>Universidade Federal do Espirito Santo</i> ); Krishnan, Sridhar ( <i>Ryerson University</i> )	
18:00-19:30	ThPOS-20.18
<b>Deep Learning of Motor Imagery EEG Classification for Brain-Computer Interface Illiterate Subject</b> .....	3087-3090
Zhang, Rui* ( <i>Zhengzhou University</i> ); Wang, Yinwang ( <i>Zhengzhou University</i> ); Li, Xianpeng ( <i>Industrial Technology Research Institute, Zhengzhou University</i> ); Liu, Bo ( <i>Zhengzhou University</i> ); Zhang, Lipeng ( <i>Zhengzhou University</i> ); Chen, Mingming ( <i>Zhengzhou University</i> ); Hu, Yuxia ( <i>Zhengzhou University</i> )	

18:00-19:30	ThPOS-20.19
<b>Towards a Fully Spatially Coded Brain-Computer Interface: Simultaneous Decoding of Visual Eccentricity and Direction</b> .....	3091-3094
Chen, Jingjing ( <i>Tsinghua University</i> ); Hong, Bo ( <i>Tsinghua University</i> ); Wang, Yijun ( <i>Institute of Semiconductors, Chinese Academy of Sciences</i> ); Gao, Xiaorong ( <i>Tsinghua University</i> ); Zhang, Dan* ( <i>Tsinghua University</i> )	
18:00-19:30	ThPOS-20.20
<b>A Two-Step Idle-State Detection Method for SSVEP BCI</b> .....	3095-3098
Du, Jiale* ( <i>Tianjin University</i> ); Ke, Yufeng ( <i>Tianjin University</i> ); Liu, Pengxiao ( <i>Tianjin University</i> ); Liu, Wentao ( <i>Tianjin University</i> ); Kong, Linghan ( <i>Tianjin University</i> ); Wang, Ningci ( <i>Tianjin University</i> ); Xu, Minpeng ( <i>Tianjin University</i> ); An, Xingwei ( <i>Tianjin University</i> ); Ming, Dong ( <i>Tianjin University</i> )	
18:00-19:30	ThPOS-20.21
<b>Collaborative Brain-Computer Interfaces to Enhance Group Decisions in an Outpost Surveillance Task</b> .....	3099-3102
Bhattacharyya, Saugat* ( <i>University of Essex</i> ); Valeriani, Davide ( <i>Massachusetts Eye &amp; Ear, Harvard Medical School</i> ); Cinel, Caterina ( <i>University of Essex</i> ); Citi, Luca ( <i>University of Essex</i> ); Poli, Riccardo ( <i>University of Essex</i> )	
18:00-19:30	ThPOS-20.22
<b>Decoding Mental Workload in Virtual Environments: A fNIRS Study using an Immersive N-Back Task</b> ...	3103-3106
Putze, Felix* ( <i>University of Bremen</i> ); Herff, Christian ( <i>Maastricht University</i> ); Tremmel, Christoph ( <i>Old Dominion University</i> ); Schultz, Tanja ( <i>University of Bremen</i> ); Krusienski, Dean ( <i>Virginia Commonwealth University</i> )	
18:00-19:30	ThPOS-20.23
<b>Classification of Movement Direction from Electroencephalogram during Working Memory Time</b> .....	3107-3110
Fukuda, Naoki* ( <i>Nagaoka University of Technology</i> ); Nambu, Isao ( <i>Nagaoka University of Technology</i> ); Wada, Yasuhiro ( <i>Nagaoka University of Technology</i> )	
18:00-19:30	ThPOS-20.24
<b>Towards Restoration of Articulatory Movements: Functional Electrical Stimulation of Orofacial Muscles</b> .....	3111-3114
Schultz, Tanja* ( <i>University of Bremen</i> ); Angrick, Miguel ( <i>University of Bremen, Cognitive Systems Lab</i> ); Diener, Lorenz ( <i>Universität Bremen</i> ); Küster, Dennis ( <i>University of Bremen, Cognitive Systems Lab</i> ); Meier, Moritz ( <i>University of Bremen, Cognitive Systems Lab</i> ); Krusienski, Dean ( <i>Virginia Commonwealth University</i> ); Herff, Christian ( <i>Maastricht University</i> ); Brumberg, Jonathan ( <i>Boston University</i> )	

ThPOS-21: 18:00-19:30	Hall B
<b>Human Performance – Poster (Poster Session)</b>	

18:00-19:30	ThPOS-21.1
<b>Two-Step Deep Learning for Estimating Human Sleep Pose Occluded by Bed Covers</b> .....	3115-3118
Mahvash Mohammadi, Sara* ( <i>University of Surrey</i> ); Kouchaki, Samaneh ( <i>University of Oxford</i> ); Khan, Sofia ( <i>University of Surrey</i> ); Dijk, Derk-Jan ( <i>U Surrey</i> ); Hilton, Adrian ( <i>University of Surrey</i> ); Wells, Kevin ( <i>University of Surrey</i> )	
18:00-19:30	ThPOS-21.2
<b>The Effect of Perceived Sound Quality of Speech in Noisy Speech Perception by Normal Hearing and Hearing Impaired Listeners</b> .....	3119-3122
Akbarzadeh, Sara* ( <i>University of Texas at Dallas</i> ); Lee, Sungmin ( <i>University of Texas at Dallas</i> ); Chen, Fei ( <i>Southern University of Science &amp; Technology</i> ); Tan, Chin-Tuan ( <i>University of Texas, Dallas</i> )	
18:00-19:30	ThPOS-21.3
<b>Respiration Rate Change Induced by Controlling the Phasic Relationship between Melodic Sound and Respiration</b> .....	3123-3126
Sato, G Takashi* ( <i>NTT Communication Science Laboratories</i> ); Moriya, Takehiro ( <i>NTT Communication Science Laboratories</i> )	

18:00-19:30	ThPOS-21.4
<b>Research of the Regulation Effect of Cooling Stimulation on Vigilance</b> .....	3127-3130
Zhou, Linying ( <i>School of Precision Instrument &amp; Optoelectronics Engineering,</i> ); Cao, Hongbao ( <i>NIH</i> ); An, Xingwei ( <i>Tianjin University</i> ); Liu, Shuang ( <i>Tianjin University</i> ); Qi, Hongzhi ( <i>Tianjin University</i> ); Ming, Dong ( <i>Tianjin University</i> ); Jiao, Xuejun ( <i>China Astronaut Research &amp; Training Center</i> ); Wu, Meng ( <i>Tianjin University</i> ); Zhou, Peng* ( <i>Tianjin University</i> )	
18:00-19:30	ThPOS-21.5
<b>Validation of a Low-Cost EEG Device in Detecting Neural Correlates of Social Conformity</b> .....	3131-3134
Pierguidi, Lapu ( <i>University of Florence</i> ); Guazzini, Andrea ( <i>University of Florence</i> ); Imbimbo, Enrico ( <i>University of Florence</i> ); Righi, Stefania ( <i>University of Florence</i> ); Sorelli, Michele ( <i>University of Florence</i> ); Bocchi, Leonardo* ( <i>Università degli Studi di Firenze, Firenze, Italy</i> )	
18:00-19:30	ThPOS-21.6
<b>Correlation Between Gait Perception and Autistic Traits in the General Population: A Study on Event-Related Evoked Potentials</b> .....	3135-3138
Ichikawa, Taichi* ( <i>Tokyo University of Science</i> ); Shigeta, Masahiro ( <i>Tokyo University of Science</i> ); Tomokazu, Urakawa ( <i>Tokyo University of Science</i> ); Sawatome, Akira ( <i>Tokyo University of Science</i> ); Tanaka, Motoyoshi ( <i>Tokyo University of Science</i> ); Kurita, Yuki ( <i>Tokyo University of Science</i> ); Araki, Osamu ( <i>Tokyo University of Science</i> ); Ichikawa, Hiroko ( <i>Tokyo University of Science</i> ); Takemura, Hiroshi ( <i>Tokyo University of Science</i> )	
18:00-19:30	ThPOS-21.7
<b>Using Passive BCI to Online Control the Air Conditioner for Obtaining the Individual Specific Thermal Comfort</b> .....	3139-3142
Wu, Meng* ( <i>Tianjin University</i> ); Qi, Hongzhi ( <i>Tianjin University</i> )	
18:00-19:30	ThPOS-21.8
<b>A Surface Electromyogram Evaluation of the Postural Freedom Effects in Laparoscopic Surgery</b> .....	3143-3146
Pace-Bedetti, Horacio M. ( <i>Universidad Politécnica de Valencia</i> ); Martinez-de-Juan, Jose Luis* ( <i>Centro de investigación e Innovación</i> ); Conejero, Andres ( <i>Universidad Politécnica de Valencia</i> ); Prats-Boluda, Gema ( <i>UniversitatPolitécnica de València</i> )	
18:00-19:30	ThPOS-21.9
<b>Evaluation of the Walking-Emotion Relationship for Applying to an Assistive Walking Device</b> .....	3147-3150
Zhuang, Jyunrong* ( <i>Waseda University</i> ); Wu, Guanyu ( <i>Waseda University</i> ); Lee, Heehyol ( <i>Waseda University</i> ); Tanaka, Eiichiro ( <i>Waseda University</i> )	
18:00-19:30	ThPOS-21.10
<b>A Basic Study on Detection of Movement State in Stride by Artificial Neural Network for Estimating Stride Length of Hemiplegic Gait using IMU</b> .....	3151-3154
Nozaki, Yoshitaka* ( <i>Tohoku University</i> ); Watanabe, Takashi ( <i>Tohoku University</i> )	
18:00-19:30	ThPOS-21.11
<b>Quantifying Functional Difference in Centre of Pressure Post Achilles Tendon Rupture using Sensor Insoles</b> .....	3155-3158
Walsh, Lorcan* ( <i>Novartis</i> ); Muaremi, Amir ( <i>Novartis</i> ); Stanton, Tom ( <i>Novartis</i> ); Blauth, Michael ( <i>Dept. for Trauma Surgery, Medical University Innsbruck</i> ); Clay, Ieuan ( <i>Novartis Institutes for Biomedical Research</i> ); Schieker, Matthias ( <i>Novartis Institutes for Biomedical Research</i> ); Laurent, Didier ( <i>Novartis Institutes for Biomedical Research</i> )	
18:00-19:30	ThPOS-21.12
<b>Fractal Analysis of Motor Control in Knee Arthroplasty Patients</b> .....	3159-3162
Mengarelli, Alessandro* ( <i>Università Politecnica delle Marche</i> ); Cardarelli, Stefano ( <i>Università Politecnica delle Marche</i> ); Tigrini, Andrea ( <i>Università Politecnica delle Marche</i> ); Strazza, Annachiara ( <i>Università Politecnica delle Marche</i> ); Di Nardo, Francesco ( <i>Polytechnic University of Marche</i> ); Marchesini, Lorenzo ( <i>Dept. of Information Engineering, Università Politecnica de</i> ); Fioretti, Sandro ( <i>Università Politecnica delle Marche</i> ); Verdini, Federica ( <i>Università Politecnica delle Marche</i> )	

18:00-19:30	ThPOS-21.13
<b>Gaze Fixation Comparisons between Amputees and Able-Bodied Individuals in Approaching Stairs and Level-Ground Transitions: A Pilot Study</b> .....	3163-3166
Li, Minhan ( <i>North Carolina State University &amp; University of North Carolina</i> ); Zhong, Boxuan ( <i>North Carolina State University</i> ); Liu, Ziwei ( <i>NC State University</i> ); Lee, I-Chieh ( <i>UNC/NCSU Joint Dept. of Biomedical Engineering</i> ); Fylstra, Bretta ( <i>North Carolina State University &amp; University of North Carolina</i> ); Lobaton, Edgar ( <i>North Carolina State University</i> ); Huang, He* ( <i>North Carolina State University &amp; University of North Carolina</i> )	
18:00-19:30	ThPOS-21.14
<b>Studying the Effect of Carrier Type on the Perception of Vocoded Stimuli via Mismatch Negativity</b> .....	3167-3170
Xu, Danying ( <i>Southern University of Science &amp; Technology</i> ); Zheng, Dingchang ( <i>Anglia Ruskin University</i> ); Chen, Fei* ( <i>Southern University of Science &amp; Technology</i> )	
18:00-19:30	ThPOS-21.15
<b>Development of a Quantitative Measurement System for Three-Dimensional Analysis of Foot Morphology using a Smartphone</b> .....	3171-3174
Yamashita, Kazuhiko* ( <i>Ryotokuji University</i> ); Yamashita, Tomoko ( <i>Takase Clinic</i> ); Sato, Mitsuru ( <i>Showa University</i> ); Masashi, Kawasumi ( <i>Tokyo Denki University</i> ); Yoshimasa, Takase ( <i>Takase Clinic</i> )	
18:00-19:30	ThPOS-21.16
<b>A Case Study Comparing Running Metrics Determined from Unshod and Various Shod Running Events</b> .....	3175-3178
Petroff, Neil* ( <i>Tarleton State University</i> )	
ThPOS-22: 18:00-19:30	Hall B
<b>Non-Contact Monitoring – Poster</b> (Poster Session)	
18:00-19:30	ThPOS-22.1
<b>Pulse Decomposition Analysis in Camera-Based Photoplethysmography</b> .....	3179-3182
Sorelli, Michele ( <i>University of Florence</i> ); Kopietz, Carlotta ( <i>TU Dresden</i> ); Zaunseder, Sebastian ( <i>Dortmund University of Applied Sciences &amp; Arts</i> ); Bocchi, Leonardo* ( <i>Università degli Studi di Firenze, Firenze, Italy</i> )	
18:00-19:30	ThPOS-22.2
<b>Infection Screening System using Thermography and CCD Camera with Good Stability and Swiftness for Non-Contact Vital-Signs Measurement by Feature Matching and MUSIC Algorithm</b> .....	3183-3186
Negishi, Toshiaki* ( <i>The University of Electro-Communications</i> ); Sun, Guanghao ( <i>The University of Electro-Communications</i> ); Sato, Shohei ( <i>Huawei Technologies Japan K.K.</i> ); Liu, He ( <i>Harbin University of Science &amp; Technology</i> ); Matsui, Takemi ( <i>Tokyo Metropolitan University</i> ); Abe, Shigeto ( <i>Takasaka Clinic</i> ); Nishimura, Hidekazu ( <i>Virus Research Center, Sendai Medical Center</i> ); Kirimoto, Tetsuo ( <i>The University of Electro-Communications</i> )	
18:00-19:30	ThPOS-22.3
<b>Use of Wearable Technology to Quantify Fall Risk in Psychogeriatric Environments: A Feasibility Study</b> .....	3187-3190
Mertens, Marc* ( <i>Thomas More University College, Geel, Belgium</i> ); Raepsaet, Julie ( <i>OPZ Geel, Belgium</i> ); Debard, Glen ( <i>Thomas More Kempen</i> ); Mondelaers, Mieke ( <i>OPZ Geel, Belgium</i> ); Vanrumste, Bart ( <i>Katholieke Universiteit Leuven</i> ); Davis, Jesse ( <i>KU Leuven, Dept. of Computer Sciences, Leuven, Belgium</i> )	
18:00-19:30	ThPOS-22.4
<b>Microwave Radar for Breast Screening: Initial Clinical Data with Suspicious-Lesion Patients</b> .....	3191-3194
Kranold, Lena ( <i>McGill University</i> ); Quintyne, Collin ( <i>McGill University</i> ); Coates, Mark ( <i>McGill University</i> ); Popovich, Milica* ( <i>McGill University</i> )	
18:00-19:30	ThPOS-22.5
<b>On-Site Evaluation of Rehabilitation Patients Monitoring System using Distributed Wireless Gateways</b> .....	3195-3198
Matsunaga, Kenichi* ( <i>NTT Corporation</i> ); Ogasawara, Takayuki ( <i>NTT Device Innovation Center</i> ); Kodate, Junichi ( <i>NTT Device Innovation Center</i> ); Mukaino, Masahiko ( <i>Asahikawa Medical University</i> ); Saitoh, Eiichi ( <i>Fujita Health University</i> )	

**Optical and Photonic Sensors – Poster** (Poster Session)

- 18:00-19:30 ThPOS-23.1  
**Optoelectronic Sensor-Based Shape Sensing Approach for Flexible Manipulators** ..... 3199-3203  
 Koh, Jia Han Benjamin (*King's College London*); Jeong, Taegyun (*Imperial College London*); Han, Sangjin (*Texas A&M University*); Li, Wanlin (*Queen Mary University of London*); Rhode, Kawal (*King's College London*); Noh, Yohan\* (*King's College London*)
- 18:00-19:30 ThPOS-23.2  
**A Pulsatile Optical Tissue Phantom for the Investigation of Light-Tissue Interaction in Reflectance Photoplethysmography** ..... 3204-3207  
 Nomoni, Michelle\* (*City, University of London*); May, James (*City, University of London*); Kyriacou, Panayiotis (*City University London*)
- 18:00-19:30 ThPOS-23.3  
**Bed-Exit Prediction Applying Neural Network Combining Bed Position Detection and Patient Posture Estimation** ..... 3208-3211  
 Inoue, Madoka\* (*Aiphone Co., Ltd.*); Taguchi, Ryo (*Nagoya Institute of Technology*); Umezaki, Taizo (*Nagoya Institute of Technology*)
- 18:00-19:30 ThPOS-23.4  
**Dual-Stiffness Force-Sensing Cannulation Tool for Retinal Microsurgery** ..... 3212-3216  
 He, Changyan\* (*Johns Hopkins University*); Yang, Emily (*The Johns Hopkins University*); Iordachita, Iulian (*Johns Hopkins University*)
- 18:00-19:30 ThPOS-23.5  
**The Sensing Endotracheal Tube** ..... 3217-3220  
 May, James\* (*City, University of London*); Phillips, Justin (*City University London*); Kyriacou, Panayiotis (*City University London*)
- 18:00-19:30 ThPOS-23.6  
**Wearable Fiber Optic Sensors for Biomechanical Sensing via Joint Angle Detection** ..... 3221-3225  
 D'Mello, Yannick\* (*McGill University*); Skoric, James (*McGill University*); Moukarzel, Lea (*McGill University*); Hakim, Siddiqui (*McGill University*); Plant, David (*McGill University*)
- 18:00-19:30 ThPOS-23.7  
**Sleep/Wake Classification via Remote PPG Signals** ..... 3226-3230  
 Zhang, Yawen (*Hong Kong University of Science & Technology*); Tsujikawa, Masanori\* (*NEC Corporation*); Onishi, Yoshifumi (*NEC Corporation*)
- 18:00-19:30 ThPOS-23.8  
**Nine Degree of Freedom Motion Estimation for Wrist PPG Heart Rate Measurements** ..... 3231-3234  
 Vazquez Galvez, Arturo\* (*The University of Manchester*); Casson, Alexander James (*The University of Manchester*)

**Physiological Monitoring – Poster** (Poster Session)

- 18:00-19:30 ThPOS-24.1  
**A Multilayer Monte Carlo Model for the Investigation of Optical Path and Penetration Depth at Different Perfusion States of the Colon** ..... 3235-3238  
 Patel, Zaibaa\* (*City, University of London*); Chatterjee, Subhasri (*Research Assistant*); Thaha, Mohamed (*The Royal London Hospital, Bart's Health NHS Trust*); Kyriacou, Panayiotis (*City University London*)
- 18:00-19:30 ThPOS-24.2  
**Comparison of a Genetic Algorithm Variable Selection and Interval Partial Least Squares for Quantitative Analysis of Lactate in Phosphate Buffer Solution** ..... 3239-3242  
 Mamouei, MohammadHossein\* (*City, University of London*); Qassem, Meha (*City University London*); Budidha, Karthik (*City, University of London*); Baishya, Nystha (*City, University of London*); Vadgama, Pankaj (*Queen Mary University of London*); Kyriacou, Panayiotis (*City University London*)



18:00-19:30	ThPOS-24.3
<b>Biovitals: A Personalized Multivariate Physiology Analytics using Continuous Mobile Biosensors</b> .....	3243-3248
Chen, Jin ( <i>Biofourmis</i> ); Yan, Minghao ( <i>Biofourmis</i> ); Howe, Robin Low Chin ( <i>Singapore Aeromedical Centre</i> ); Tong, Ng Wee ( <i>Singapore Aeromedical Centre</i> ); Chan, Soon Chee ( <i>Biofourmis</i> ); Niu, Wendou ( <i>Biofourmis</i> ); Rajput, Kuldeep Singh* ( <i>Biofourmis</i> ); Majmudar, Maulik ( <i>Massachusetts General Hospital</i> ); Chen, Gengbo ( <i>Biofourmis</i> )	
18:00-19:30	ThPOS-24.4
<b>Is There an Optimal Localization of Cardio-Microphone Sensors for Phonocardiogram Analysis?</b> .....	3249-3252
Fontecave-Jallon, Julie* ( <i>Univ. Grenoble Alpes, CNRS, CHU Grenoble Alpes, Grenoble INP</i> ); Fojtik, Karel ( <i>Univ. Grenoble Alpes, CNRS, CHU Grenoble Alpes, Grenoble INP</i> ); Rivet, Bertrand ( <i>Grenoble Universities</i> )	
18:00-19:30	ThPOS-24.5
<b>Heart Rate Estimation using PPG Signal during Treadmill Exercise</b> .....	3253-3256
Kong, Youngsun* ( <i>University of Connecticut</i> ); Chon, Ki ( <i>University of Connecticut</i> )	
18:00-19:30	ThPOS-24.6
<b>Noise Reduction for Efficient In-Vehicle Respiration Monitoring with Accelerometers</b> .....	3257-3261
Warnecke, Joana Maureen* ( <i>TU Braunschweig &amp; Hannover Medical School</i> ); Wang, Ju ( <i>TU Braunschweig</i> ); Deserno, Thomas ( <i>RWTH Aachen University</i> )	
18:00-19:30	ThPOS-24.7
<b>A Comparison of SVM and CNN-LSTM based Approach for Detecting Smoke Inhalations from Respiratory Signal</b> .....	3262-3265
Senyürek, Volkan ( <i>The University of Alabama</i> ); Imtiaz, Masudul Haider ( <i>University of Alabama</i> ); Belsare, Prajakta ( <i>The University of Alabama</i> ); Tiffany, Stephen ( <i>State University of New York at Buffalo</i> ); Sazonov, Edward* ( <i>University of Alabama</i> )	
18:00-19:30	ThPOS-24.8
<b>Low-Power BPSK Inductive Data Link for an Implanted Intracortical Visual Prosthesis</b> .....	3266-3270
Omisakin, Adedayo* ( <i>Eindhoven University of Technology</i> ); Mestrom, Rob ( <i>Eindhoven University of Technology</i> ); Bentum, Mark ( <i>Eindhoven University of Technology</i> )	
18:00-19:30	ThPOS-24.9
<b>A High-Resolution Wireless Power Transfer and Data Communication System for Studying Gastric Slow Waves</b> .....	3271-3274
Javan-Khoshkholgh, Amir ( <i>New York Institute of Technology</i> ); Alrofati, Wahib ( <i>New York Institute of Technology</i> ); Miller, Larry ( <i>Northwell</i> ); Vegesna, Anil ( <i>Northwell</i> ); Kiani, Mehdi ( <i>Pennsylvania State University</i> ); Farajidavar, Aydin* ( <i>New York Institute of Technology</i> )	

ThPOS-25: 18:00-19:30	Hall B
<b>Sensing Technologies for Biomechanical Analysis – Poster</b> (Poster Session)	

18:00-19:30	ThPOS-25.1
<b>Measurement of Camptocormia Trunk Flexion using a Dual-Sensor Measurement Setup</b> .....	3275-3278
Wolframm, Henrik* ( <i>Kiel University</i> ); Margraf, Nils ( <i>University of Kiel, Dept. of Neurology</i> ); Gunther, Deuschl ( <i>Dept. of Neurology</i> ); Wolke, Robin ( <i>Kiel University</i> ); Rieger, Robert ( <i>Kiel University</i> )	
18:00-19:30	ThPOS-25.2
<b>On Smartphone Sensability of Bi-Phasic User Intoxication Levels from Diverse Walk Types in Standardized Field Sobriety Tests</b> .....	3279-3285
Li, Ruojun ( <i>Worcester Polytechnic Institute</i> ); Balakrishnan, Ganesh ( <i>Worcester Polytechnic Institute</i> ); Nie, Jiaming ( <i>Worcester Polytechnic Institute</i> ); Li, Yu ( <i>Worcester Polytechnic Institute</i> ); Agu, Emmanuel* ( <i>Worcester Polytechnic Institute</i> ); Stein, Michael ( <i>Butler Hospital</i> ); Abrantes, Ana ( <i>Butler Hospital</i> ); Herman, Debra ( <i>Butler Hospital</i> ); Grimone, Kristin ( <i>Butler Hospital</i> )	

18:00-19:30	ThPOS-25.3
<b>Agreement between Opal and G-Walk Wearable Inertial Systems in Gait Analysis on Normal and Pathological Subjects</b> .....	3286-3289
D'Addio, Giovanni ( <i>ICS Maugeri Institute of Care &amp; Scientific Research of Telese</i> ); Donisi, Leandro* ( <i>Dept. of Advanced Biomedical Sciences, University Hospital</i> ); Pagano, Gaetano ( <i>ICS Maugeri Institute of Care &amp; Scientific Research of Telese</i> ); Improta, Giovanni ( <i>Dept. of Dept. of Public Health, University Hospital</i> ); Biancardi, Arcangelo ( <i>ICS Maugeri Institute of Care &amp; Scientific Research of Telese</i> ); Cesarelli, Mario ( <i>University "Federico II", Naples, Italy.</i> )	
18:00-19:30	ThPOS-25.4
<b>PI-Sole: A Low-Cost Solution for Gait Monitoring using Off-the-Shelf Piezoelectric Sensors and IMU</b> .....	3290-3296
Chandel, Vivek ( <i>TCS Research &amp; Innovation</i> ); Singhal, Shivam* ( <i>TCS Research &amp; Innovation</i> ); Sharma, Varsha ( <i>TCS Research &amp; Innovation Kolkata</i> ); Ahmed, Nasimuddin ( <i>TCS Research &amp; Innovation, Kolkata</i> ); Ghose, Avik ( <i>TCS Research &amp; Innovation</i> )	
18:00-19:30	ThPOS-25.5
<b>A Wearable System to Analyze the Human Arm for Predicting Injuries Due to Throwing</b> .....	3297-3301
Hettiarachchi, Chirath Yudara* ( <i>University of Moratuwa</i> ); Kodithuwakku, Janith ( <i>University of Moratuwa</i> ); Manamperi, Buddhi Shan ( <i>University of Moratuwa</i> ); Ifham, Ahamed ( <i>University of Moratuwa</i> ); Silva, Pujitha ( <i>University of Moratuwa, Kairos Sensing</i> )	
18:00-19:30	ThPOS-25.6
<b>Lower Limb Muscle Activity Control by using Jamming Footwear</b> .....	3302-3305
Sasagawa, Mana* ( <i>NTT Corporation</i> ); Nijijima, Arinobu ( <i>NTT Service Evolution Laboratories, NTT Corporation</i> ); Eguchi, Kana ( <i>NTT Corporation</i> ); Aoki, Ryosuke ( <i>NTT Corporation</i> ); Isezaki, Takashi ( <i>NTT Service Evolution Laboratories</i> ); Kimura, Toshitaka ( <i>NTT</i> ); Watanabe, Tomoki ( <i>NTT Corporation</i> )	
18:00-19:30	ThPOS-25.7
<b>Wearable Kinesthetic I/O Device for Sharing Wrist Joint Stiffness</b> .....	3306-3310
Nishida, Jun* ( <i>University of Chicago</i> ); Yagi, Keisuke ( <i>Ibaraki University</i> ); Hassan, Modar ( <i>University of Tsukuba</i> ); Suzuki, Kenji ( <i>University of Tsukuba</i> )	
18:00-19:30	ThPOS-25.8
<b>Quantifying the Influence of DBS Surgery in Patients with Parkinson's Disease during the Perioperative Period by using Wearable Sensors</b> .....	3311-3314
Wang, Jingying ( <i>Fudan University</i> ); Gong, Dawei ( <i>Nanjing Brain Hospital</i> ); Zhang, Wenbin ( <i>Nanjing Medical University</i> ); Zhang, Han ( <i>Fudan University</i> ); Wang, Shouyan* ( <i>Fudan University</i> )	
18:00-19:30	ThPOS-25.9
<b>An Automatic Navigation and Pressure Monitoring for Guided Insertion Procedure</b> .....	3315-3318
Alsunaydih, Fahad Nasser* ( <i>Monash University</i> ); Arefin, Md Shamsul ( <i>Monash University</i> ); Redouté, Jean-Michel ( <i>Monash University</i> ); Yuce, Mehmet ( <i>Monash University</i> )	
18:00-19:30	ThPOS-25.10
<b>GLOS: GLOve for Speech Recognition</b> .....	3319-3322
Crocioni, Giulia ( <i>University of Illinois at Chicago</i> ); Di Vece, Chiara* ( <i>University of Illinois at Chicago</i> ); Esmailbeigi, Hananeh ( <i>University of Illinois at Chicago (UIC)</i> )	
18:00-19:30	ThPOS-25.11
<b>Cuff-Less and Calibration-Free Blood Pressure Estimation using Convolutional Autoencoder with Unsupervised Feature Extraction</b> .....	3323-3326
Zhang, Jialun ( <i>Shenzhen Institutes of Advanced Technology, Chinese Academy of S</i> ); Wu, Dan* ( <i>Shenzhen Institutes of Advanced Technology, Chinese Academy of S</i> ); Li, Ye ( <i>Shenzhen Institutes of Advanced Technology, Chinese Academy of S</i> )	

ThPOS-26: 18:00-19:30	Hall B
<b>Wearable Technology – Poster</b> (Poster Session)	

18:00-19:30	ThPOS-26.1
<b>Wearable Lab on Body: Combining Sensing of Biochemical and Digital Markers in a Wearable Device</b> ..	3327-3332
Pataranutaporn, Pat* ( <i>MIT</i> ); Jain, Abhinandan ( <i>MIT</i> ); Johnson, Casey ( <i>MIT</i> ); Shah, Pratik ( <i>Massachusetts Institute of Technology (MIT)</i> ); Maes, Pattie ( <i>MIT Media Lab</i> )	

18:00-19:30	ThPOS-26.2
<b>Design and Simulation Analysis of a 17 Element Spiral Antenna Array for Brain Imaging</b> .....	3333-3336
Khan, Muhammad Saad* ( <i>RheinMain University of Applied Sciences, Ruesselsheim</i> ); Rose, Georg ( <i>Otto-von-Guericke University, Magdeburg</i> ); Schweizer, Bernd ( <i>RheinMain University of Applied Sciences, Ruesselsheim</i> ); Brensing, Andreas ( <i>RheinMain University of Applied Sciences, Ruesselsheim</i> )	
18:00-19:30	ThPOS-26.3
<b>An Investigation of Heart Rate Sensing Accuracy by Wrist-Worn Fitness Tracking Devices</b> .....	3337-3340
Turki, Ahmad Fawzi ( <i>University of Texas at Arlington/ King AbdulAziz University</i> ); Jani, Mahrshi ( <i>University of Texas At Arlington</i> ); Ding, Kan ( <i>The University of Texas Southwestern Medical Center</i> ); Zhang, Rong ( <i>University of Texas Southwestern Medical Center at Dallas</i> ); Behbehani, Khosrow* ( <i>University of Texas at Arlington</i> )	
18:00-19:30	ThPOS-26.4
<b>REWARD: Design, Optimization, and Evaluation of a Real-Time Relative-Energy Wearable R-Peak Detection Algorithm</b> .....	3341-3347
Orlandic, Lara* ( <i>Georgia Tech</i> ); De Giovanni, Elisabetta ( <i>Ecole Polytechnique Fédérale de Lausanne (EPFL)</i> ); Arza Valdés, Adriana ( <i>École Polytechnique Fédérale de Lausanne EPFL</i> ); Yazdani, Sasan ( <i>SmartCardia S.A.</i> ); Vesin, Jean-Marc ( <i>EPFL</i> ); Atienza, David ( <i>EPFL</i> )	
18:00-19:30	ThPOS-26.5
<b>Lower-Body Posture Estimation with a Wireless Smart Insole</b> .....	3348-3351
Tam, Wing Kin* ( <i>University of Minnesota Twin Cities</i> ); Wang, Alan ( <i>University of Minnesota</i> ); Wang, Baitong ( <i>National University of Singapore</i> ); Yang, Zhi ( <i>University of Minnesota</i> )	
18:00-19:30	ThPOS-26.6
<b>First Evaluation of a Transcutaneous Carbon Dioxide Monitoring Wristband Device during a Cardiopulmonary Exercise Test</b> .....	3352-3355
Grangeat, Pierre* ( <i>Univ. Grenoble, Alpes, CEA, LETI, MINATEC CAMPUS</i> ); Gharbi, Sadok ( <i>CEA/LETI/MINATEC</i> ); Accensi, Marc ( <i>Univ. Grenoble Alpes, CEA, LETI, Minatec Campus</i> ); Gâteau, Henri ( <i>Univ. Grenoble Alpes, CEA, LETI, Minatec Campus</i> )	
18:00-19:30	ThPOS-26.7
<b>Feasibility Study for a Real Time Notification System Promoting Self Awareness for People with Body-Rocking Behavior</b> .....	3356-3359
da Silva, Rafael Luiz ( <i>North Carolina State University</i> ); Lobaton, Edgar* ( <i>North Carolina State University</i> ); Stone, Emily ( <i>Governor Morehead School</i> )	
18:00-19:30	ThPOS-26.8
<b>Obstacle Recognition using Computer Vision and Convolutional Neural Networks for Powered Prosthetic Leg Applications</b> .....	3360-3363
Novo-Torres, Luis* ( <i>University of Guanajuato</i> ); Ramirez-Paredes, Juan-Pablo ( <i>University of Guanajuato</i> ); Villarreal, Dario Jose ( <i>Southern Methodist University</i> )	
18:00-19:30	ThPOS-26.9
<b>Design and Development of a Sitting Posture Recognition System</b> .....	3364-3367
Fragkiadakis, Emmanouil ( <i>National Technical University of Athens</i> ); Dalakleidi, Kalliopi* ( <i>National Technical University of Athens</i> ); Nikita, Konstantina ( <i>National Technical University of Athens</i> )	
18:00-19:30	ThPOS-26.10
<b>Categorizing Sleep in Older Adults with Wireless Activity Monitors using LSTM Neural Networks</b> .....	3368-3372
Yildiz, Selda ( <i>Oregon Health &amp; Science University</i> ); Elliott, Jonathan ( <i>VA Portland Health Care System, Oregon Health &amp; Science University</i> ); Opel, Ryan ( <i>VA Portland Health Care System</i> ); Kaye, Jeffrey A. ( <i>Oregon Health &amp; Science University</i> ); Cao, Hung* ( <i>University of California, Irvine</i> ); Lim, Miranda ( <i>VA Portland Health Care System, Oregon Health &amp; Science University</i> )	

**General, Theoretical and Imaging Informatics – Poster (Poster Session)**

- 18:00-19:30 ThPOS-27.1  
**Graph Theoretical Analysis of Cortical Networks based on Conscious Experience** ..... 3373-3376  
 Lee, Minji (*Korea University*); Baird, Benjamin (*University of Wisconsin*); Gosseries, Olivia (*University & University Hospital of Liege*); Nieminen, Jaakko (*Aalto University School of Science*); Boly, Melanie (*University of Wisconsin*); Tononi, Giulio (*University of Wisconsin*); Lee, Seong-Whan\* (*Korea University*)
- 18:00-19:30 ThPOS-27.2  
**PROVenance Patterns in Numerical Modelling and Finite Element Simulation Processes of Bio-Electric Systems** ..... 3377-3382  
 Schröder, Max\* (*University of Rostock*); Raben, Hendrikje (*Institute of General Electrical Engineering, University of Rostock*); Krüger, Frank (*Institute of Communications Engineering, University of Rostock*); Ruscheinski, Andreas (*Institute of Computer Science, University of Rostock*); van Rienen, Ursula (*University of Rostock*); Uhrmacher, Adelinde (*Institute of Computer Science, University of Rostock*); Spors, Sascha (*Institute of Communications Engineering, University of Rostock*)
- 18:00-19:30 ThPOS-27.3  
**Rapid Establishment Method of a Personalized Thermal Comfort Prediction Model** ..... 3383-3386  
 Wu, Jianhong (*Shanghai Jiao Tong University*); Shan, Chengcheng (*Shanghai Jiao Tong University*); Hu, Jiawen (*Shanghai Jiao Tong University*); Sun, Jianqi (*Shanghai Jiao Tong University*); Zhang, Aili\* (*Shanghai Jiao Tong University*)
- 18:00-19:30 ThPOS-27.4  
**Automated Process Incorporating Machine Learning Segmentation and Correlation of Oral Diseases with Systemic Health** ..... 3387-3393  
 Yauney, Gregory (*Massachusetts Institute of Technology*); Rana, Aman (*Massachusetts Institute of Technology*); Wong, Lawrence (*Tufts University School of Dental Medicine*); Javia, Perikumar (*Massachusetts Institute of Technology*); Muftu, Ali (*Tufts University School of Dental Medicine*); Shah, Pratik\* (*Massachusetts Institute of Technology (MIT)*)
- 18:00-19:30 ThPOS-27.5  
**Representation Learning of 3D Brain Angiograms, an Application for Cerebral Vasospasm Prediction** .. 3394-3398  
 Capoglu, Seymanur\* (*UT-Health Sciences at Houston*); Savarraj, Jude (*University of Texas Health Science Center at Houston*); Sheth, Sunil (*University of Texas Health Science Center at Houston*); Choi, H. Alex (*University of Texas Health Science Center at Houston*); Giancardo, Luca (*University of Texas Health Science Center at Houston*)
- 18:00-19:30 ThPOS-27.6  
**Evaluation of Facial Pulse Signals using Deep Neural Net Models** ..... 3399-3403  
 Ruminski, Jacek\* (*Gdansk University of Technology*); Kwasniewska, Alicja (*Gdansk University of Technology*); Szankin, Maciej (*Intel Corporation*); Kocejko, Tomasz (*Gdansk University of Technology*); Mazur-Milecka, Magdalena (*Gdańsk University of Technology*)

**Health Informatics for Gait and Balance Assessment and Neuromusculoskeletal Disorders – Poster (Poster Session)**

- 18:00-19:30 ThPOS-28.1  
**Machine Learning based Physical Human-Robot Interaction for Walking Support of Frail People** ..... 3404-3407  
 Coviello, Luigi (*The Biorobotics Institute, Scuola Superiore Sant'Anna*); Cavallo, Filippo (*Scuola Superiore Sant'Anna*); Limosani, Raffaele (*The Biorobotics Institute, Scuola Superiore Sant'Anna*); Rovini, Erika (*Scuola Superiore Sant'Anna*); Fiorini, Laura\* (*Scuola Superiore Sant'Anna*)
- 18:00-19:30 ThPOS-28.2  
**Improving Automatic Tremor and Movement Motor Disorder Severity Assessment for Parkinson's Disease with Deep Joint Training** ..... 3408-3411  
 Chang, Chun-Min (*National Tsing Hua University*); Huang, Yu-Lin (*Dept. of Electrical Engineering, National Tsing Hua University*); Chen, Jui-Cheng (*Dept. of Neurology, China Medical University*); Lee, Chi-Chun\* (*National Tsing Hua University*)

18:00-19:30	ThPOS-28.3
<b>New Insights into Parkinson's Disease through Statistical Analysis of Standard Clinical Scales Quantifying Symptom Severity</b> .....	3412-3415
Tsanas, Athanasios* ( <i>University of Edinburgh</i> )	
18:00-19:30	ThPOS-28.4
<b>An Exploratory Study on the use of Virtual Reality in Balance Rehabilitation</b> .....	3416-3419
Andreikanich, Anna ( <i>Universidade de Aveiro, DETI</i> ); Sousa Santos, Beatriz* ( <i>Aveiro University</i> ); Amorim, Paula ( <i>Rovisco Pais Rehabilitation Center</i> ); Zagalo, Helder ( <i>Universidade de Aveiro, DETI/IEETA</i> ); Marques, Bernardo ( <i>Universidade de Aveiro, DETI/IEETA</i> ); Margalho, Paulo ( <i>Rovisco Pais Rehabilitation Center</i> ); Lains, Jorge ( <i>Rovisco Pais Rehabilitation Center</i> ); Faim, Fátima ( <i>Rovisco Pais Rehabilitation Center</i> ); Coelho, Margarida ( <i>Rovisco Pais Rehabilitation Center</i> ); Cardoso, Teresa ( <i>Rovisco Pais Rehabilitation Center</i> ); Dias, Paulo ( <i>Universidade de Aveiro, DETI/IEETA</i> )	
18:00-19:30	ThPOS-28.5
<b>Utilizing Key Item Method to Manage Musculoskeletal Disorders in the Hospital Workplace</b> .....	3420-3423
Koklonis, Kyriakos ( <i>Biomedical Engineering Laboratory National Technical University</i> ); Anastasiou, Athanasios ( <i>Biomedical Engineering Laboratory, National Technical University</i> ); Petropoulou, Ourania ( <i>National Technical University of Athens</i> ); Pitoglou, Stavros* ( <i>Research &amp; Development Dpt. Computer Solutions SA, Biomedical Eng</i> ); Iliopoulou, Dimitra ( <i>National Technical University of Athens</i> ); Koutsouris, Dimitrios ( <i>Biomedical Engineering Laboratory, School of Electrical &amp; Comp</i> )	
18:00-19:30	ThPOS-28.6
<b>Gait Speed Measurement using a Doppler Radar Sensor for In-Home Functional Capacity Tests</b> .....	3424-3428
Alshama, Daniel ( <i>University of Technology of Troyes</i> ); Chkeir, Aly ( <i>University of Technology of Troyes</i> ); Soubra, Racha* ( <i>Université de Technologie de Troyes</i> )	

ThPOS-29: 18:00-19:30	Hall B
<b>Predictive Analytics for Health – Poster</b> (Poster Session)	

18:00-19:30	ThPOS-29.1
<b>Predictive Modeling using Intensive Care Unit Data: Considerations for Data Pre-Processing and Analysis</b> .....	3429-3432
Chan, Brandon* ( <i>Queen's University</i> ); Sedghi, Alireza ( <i>Queen's University</i> ); Laird, Philip ( <i>Queen's University</i> ); Maslove, David M ( <i>Queen's University</i> ); Mousavi, Parvin ( <i>Queen's University</i> )	
18:00-19:30	ThPOS-29.2
<b>Implant Failure Prediction using Discriminant Analysis</b> .....	3433-3437
Jeong, In Cheol ( <i>Icahn School of Medicine at Mount Sinai</i> ); Papapanou, Panos N. ( <i>Columbia University</i> ); Finkelstein, Joseph* ( <i>Icahn School of Medicine at Mount Sinai</i> )	
18:00-19:30	ThPOS-29.3
<b>Sparse Embedding for Interpretable Hospital Admission Prediction</b> .....	3438-3441
Huo, Zepeng* ( <i>Texas A&amp;M University</i> ); Sundararajhan, Harinath ( <i>Texas A&amp;M University</i> ); Hurley, Nate ( <i>Texas A&amp;M University</i> ); Haimovich, Adrian ( <i>Yale University</i> ); Taylor, Richard Andrew ( <i>Yale University</i> ); Mortazavi, Bobak ( <i>Texas A&amp;M University</i> )	
18:00-19:30	ThPOS-29.4
<b>Probabilistic Prediction of Epileptic Seizures using SVM</b> .....	3442-3445
Abbaszadeh, Behrooz* ( <i>University of Ottawa</i> ); Haddad, Tahar ( <i>University of Quebec Outaouais</i> ); Yagoub, Mustapha ( <i>University of Ottawa</i> )	
18:00-19:30	ThPOS-29.5
<b>Class Imbalance Impact on the Prediction of Complications during Home Hospitalization: A Comparative Study</b> .....	3446-3449
Calvo, Mireia* ( <i>Institute for Bioengineering of Catalonia (IBEC)</i> ); Cano, Isaac ( <i>Hospital Clínic de Barcelona</i> ); Herández, Carme ( <i>Hospital Clínic de Barcelona</i> ); Ribas, Vicent ( <i>Eurecat</i> ); Miralles, Felip ( <i>Eurecat</i> ); Roca, Josep ( <i>Hospital Clínic de Barcelona</i> ); Jané, Raimon ( <i>Institut de Bioenginyeria de Catalunya (IBEC)</i> )	

**Security, Cloud Computing, and Interoperability in Health Informatics – Poster (Poster Session)**

- 18:00-19:30 ThPOS-30.1  
**Secure Stream Processing for Medical Data** ..... 3450-3453  
 Segarra, Carlos (CSEM); Muntané Calvo, Enric (CSEM); Lemay, Mathieu (CSEM); Schiavoni, Valerio (Université de Neuchâtel); Delgado-Gonzalo, Ricard\* (CSEM)
- 18:00-19:30 ThPOS-30.2  
**Security Defense Strategy for Intelligent Medical Diagnosis Systems (IMDS)** ..... 3454-3457  
 Luo, Cunjin\* (Key Lab of Medical Electrophysiology, Ministry of Education, Ins); Soygazi, Hasan (De Montfort University); Janicke, Helge (De Montfort University); He, Ying (De Montfort University)
- 18:00-19:30 ThPOS-30.3  
**QRStream: A Secure and Convenient Method for Text Healthcare Data Transferring** ..... 3458-3462  
 Mao, Huajian (Academy of Military Medical Sciences of Chinese PLA); Chi, Chenyang (Academy of Military Medical Sciences of Chinese PLA); Yu, Jinghui (Academy of Military Medical Sciences); Yang, Peixiang (Academy of Military Medical Sciences of Chinese PLA); Qian, Cheng (Academy of Military Medical Sciences of Chinese PLA); Zhao, Dongsheng\* (Institute of Health Service & Medical Information, Academy of)
- 18:00-19:30 ThPOS-30.4  
**A Client/Server based Online Environment for the Calculation of Medical Segmentation Scores** ..... 3463-3467  
 Weber, Maximilian\* (TU Graz); Wild, Daniel (TU Graz); Wallner, Jürgen (Medical University of Graz); Egger, Jan (Graz University of Technology)
- 18:00-19:30 ThPOS-30.5  
**Real-Time Integration of Emotion Analysis into Homecare Platforms** ..... 3468-3471  
 Andreas, Menychtas (Greece & University of Piraeus); Galliakis, Michael (University of Piraeus); Tsanakas, Panayiotis (National Technical University of Athens); Maglogiannis, Ilias\* (University of Piraeus)
- 18:00-19:30 ThPOS-30.6  
**Adaptive API for Real-Time Streaming Analytics as a Service** ..... 3472-3477  
 Inibhunu, Catherine\* (University of Ontario Institute of Technology); Jalali, Roozbeh (University of Ontario Institute of Technology); Doyle, Ian (University of Ontario Institute of Technology); Gates, Aaron (University of Ontario Institute of Technology); Madill, John (University of Ontario Institute of Technology); McGregor, Carolyn (Univ. of Ontario Inst of Technology)
- 18:00-19:30 ThPOS-30.7  
**CHDC: Common Hospital Data Connector for Exchanging Medical Information** ..... 3478-3481  
 Kim, Min Gyu (Kyungpook National University); Lee, Ah Ra (KyungPook National University); Kim, Il Kon\* (Kyungpook National University)

**Sensor Informatics and Physiological Monitoring – Poster (Poster Session)**

- 18:00-19:30 ThPOS-31.1  
**Skin Conductance Response to Gradual-Increasing Experimental Pain** ..... 3482-3485  
 Syrjälä, Elise\* (University of Turku); Jiang, Mingzhe (University of Turku); Pahikkala, Tapio (University of Turku, Dept. of Future Technologies); Salanterä, Sanna (Dept. of Nursing Science, University of Turku & Turku Uni); Liljeberg, Pasi (Dept. of Information Technology, University of Turku)
- 18:00-19:30 ThPOS-31.2  
**A New Fracture Liaison Service using the Mobile Application and IoT Sensor** ..... 3486-3489  
 Kim, Sung Woo\* (Yonsei University College of Medicine); Won, Young-Jun (Division of Endocrinology & Metabolism, Dept. of Internal); Chae, Dong-Sik (Dept. of Orthopedic surgery, Catholic Kwandong University C); Chang, Hyuk-Jae (Yonsei University College of Medicine)

- 18:00-19:30 ThPOS-31.3  
**Photoplethysmographic Waveform in Hyperbaric Environment** ..... 3490-3493  
 Peláez Coca, María Dolores\* (*Centro Universitario de la Defensa*); Hernando, Alberto (*BSICoS Group, CIBER-BBN*); Sanchez, Carlos (*Defense University Centre, University of Zaragoza*); Lozano Albalate, María Teresa (*Centro Universitario de la Defensa*); Izquierdo, David (*Centro Universitario de la Defensa*); Gil, Eduardo (*Zaragoza University & CIBER-BBN*)
- 18:00-19:30 ThPOS-31.4  
**The Feasibility of Arrhythmias Detection from a Capacitive ECG Measurement using Convolutional Neural Network** ..... 3494-3497  
 Kido, Koshiro (*Nara Institute of Science & Technology*); Ono, Naoaki (*Nara Institute of Science & Technology*); Altaf-Ul-Amin, MD. (*Nara Institute of Science & Technology*); Kanaya, Shigehiko (*Nara Institute of Science & Technology*); Huang, Ming\* (*Nara Institute of Science & Technology*)
- 18:00-19:30 ThPOS-31.5  
**Smart Sound Sensor to Detect the Number of People in a Room** ..... 3498-3501  
 Boutamine, Sami\* (*UTC*); Istrate, Dan (*UTC*); Boudy, Jerome (*it-sudparis*); Tannous, Halim (*Université de Technologie de Compiègne*)
- 18:00-19:30 ThPOS-31.6  
**Ictal Autonomic Activity Recorded via Wearable-Sensors Plus Machine Learning can Discriminate Epileptic and Psychogenic Nonepileptic Seizures** ..... 3502-3506  
 Zsom, Andras\* (*Data Science Practice, CIS, Brown University*); LaFrance Jr, W Curt (*Rhode Island Hospital / Brown Univer*); Blum, Andrew (*Brown Medical School*); Li, Paula (*Brown University*); Abdel-Wahed, Lama (*Rhode Island Hospital (RIH)*); Shaikh, Muhammad Ateeb (*Rhode Island Hospital (RIH)*); Sharma, Gaurav (*Rhode Island Hospital (RIH)*); Ranieri, Rebecca (*Rhode Island Hospital (RIH)*); Zhang, Lynn (*Rhode Island Hospital (RIH) Neurology*); Tsekhan, Shawn (*Rhode Island Hospital (RIH) Neurology*); Hamid, Tariq (*Rhode Island Hospital (RIH) Neurology*); Levin, Jay (*Rhode Island Hospital (RIH) Neurology*); Truccolo, Wilson (*Brown University*)
- 18:00-19:30 ThPOS-31.7  
**Impact of Exercise Intervention in Parkinson's Disease can be Quantified using Inertial Sensor Data and Clinical Tests** ..... 3507-3510  
 McManus, Kilian\* (*Kinesis Health Technologies*); McGrath, Denise (*University College Dublin*); Greene, Barry R. (*Kinesis Health Technologies*); Lennon, Olive (*University College Dublin*); McMahon, Laura (*University College Dublin*); Caulfield, Brian (*UCD*)

## Friday, 26 July 2019

FrA01: 08:30-10:00	Hall A6+A7 – Level 1
<b>Neurological Disorders (I)</b> (Oral Session)	
<b>Chair:</b> Jones, Richard D. ( <i>New Zealand Brain Research Institute</i> )	

- 08:30-08:45 FrA01.1  
**Classification of Major Depressive Disorder from Resting-State fMRI** ..... 3511-3514  
 Sen, Bhaskar (*University of Minnesota*); Mueller, Bryon (*University of Minnesota*); Klimes-Dougan, Bonnie (*University of Minnesota*); Cullen, Kathryn R. (*University of Minnesota*); Parhi, Keshab\* (*University of Minnesota*)
- 08:45-09:00 FrA01.2  
**A Practical Method for Creating Targeted Focal Ischemic Stroke in the Cortex of Nonhuman Primates** .. 3515-3518  
 Khateeb, Karam (*University of Washington*); Yao, Zhaojie (*University of Washington, Seattle*); Kharazia, Viktor (*UCSF*); Burunova, Evelena (*University of Washington*); Song, Shaozhen (*University of Washington*); Wang, Ruikang (*Oregon Health & Science University*); Yazdan-Shahmorad, Azadeh\* (*University of Washington*)
- 09:00-09:15 FrA01.3  
**A Study of the Midbrain Network for Covert Attentional Orienting in Cervical Dystonia Patients using Dynamic Causal Modelling** ..... 3519-3522  
 Duggan, Oisin\* (*Trinity College Dublin*); Narasimham, Shruti (*Trinity College Dublin*); McGovern, Eavan (*St. Vincent's University Hospital*); Killian, Owen (*Trinity College Dublin*); O'Riordan, Sean (*St. Vincent's University Hospital Dublin*); Hutchinson, Michael (*St. Vincent's University Hospital Dublin*); Reilly, Richard (*Trinity College Dublin*)

09:15-09:30 FrA01.4  
**Normalized Mutual Information of Phonetic Sound to Distinguish the Speech of Parkinson's Disease** ... 3523-3526  
Puzhavakkathu Madom Viswanathan, Rekha (MIT); Bingham, Adrian (MIT University Melbourne); Raghav, Sanjay (MIT University); Poosapadi Arjunan, Sridhar\* (SRM Institute of Science & Technology); Jelfs, Beth (MIT University); Kempster, Peter (Monash Health); Kant Kumar, Dinesh (MIT University)

09:30-09:45 FrA01.5  
**Complexity Measures of Postural Control in Type-2 Diabetic Subjects** ..... 3527-3530  
Mengarelli, Alessandro\* (Università Politecnica delle Marche); Verdini, Federica (Università Politecnica delle Marche); Cardarelli, Stefano (Università Politecnica delle Marche); Tigrini, Andrea (Università Politecnica delle Marche); Strazza, Annachiara (Università Politecnica delle Marche); Di Nardo, Francesco (Polytechnic University of Marche); Rabini, Rosa Anna (Diabetology Dept., INRCA Geriatric Hospital); Mercante, Oriano (Posture & Movement Analysis Laboratory, INRCA Geriatric Hospit); Fioretti, Sandro (Università Politecnica delle Marche)

09:45-10:00 FrA01.6  
**A 3D Deep Residual Convolutional Neural Network for Differential Diagnosis of Parkinsonian Syndromes on 18F-FDG PET Images** ..... 3531-3534  
Zhao, Yu\* (Technische Universität München); Menze, Bjoern (TU Munich); Shi, Kuangyu (University of Bern)

FrA02: 08:30-10:00 Hall A8 – Level 1  
**Neural Networks and Support Vector Machines for Biosignal Processing (Oral Session)**  
**Chair:** Wang, Yiwen (Hong Kong University of Science and Technology)  
**Co-Chair:** Klosterman, Samantha (Ball Aerospace Technologies Corp.)

08:30-08:45 FrA02.1  
**Early Parkinson's Disease Detection via Touchscreen Typing Analysis using Convolutional Neural Networks** ..... 3535-3538  
Iakovakis, Dimitrios\* (Aristotle University of Thessaloniki); Hadjidimitriou, Stelios (AUTH); Charisis, Vasileios (Aristotle University of Thessaloniki); Bostanjopoulou, Sevasti (Dept. of Neurology, Hippokration Hospital, Thessalonik); Katsarou, Zoe (Dept. of Neurology, Hippokration Hospital Thessaloniki, Gre); Klingelhoefer, Lisa (Dept. of Neurology Technical University Dresden, Dresden, G); Simone, Mayer (Dept. of Neurology Technical University Dresden, Dresden, G); Reichmann, Heinz (Dept. of Neurology Technical University Dresden, Dresden, G); Dias, Sofia Balula (Faculdade de Motricidade Humana Universidade de Lisboa); Diniz, José Alves (Faculdade de Motricidade Humana Universidade de Lisboa); Trivredi, Dhaval, (International Parkinson Excellence Research Centre, King's Colle); Chaudhuri, Ray (International Parkinson Excellence Research Centre, King's Colle); Hadjileontiadis, Leontios (Aristotle University of Thessaloniki)

08:45-09:00 FrA02.2  
**Classification of TMS Evoked Potentials using ERP Time Signatures and SVM versus Deep Learning** ... 3539-3542  
Naze, Sebastien\* (IBM Research); Caggiano, Vittorio (IBM Research); Sun, Yinming (Stanford School of Medicine); Lucas, Molly (Stanford School of Medicine); Etkin, Amit (Stanford University); Kozloski, James (IBM Research)

09:00-09:15 FrA02.3  
**Investigating Ensemble Learning and Classifier Generalization in a Hybrid, Passive Brain-Computer Interface for Assessing Cognitive Workload** ..... 3543-3546  
Klosterman, Samantha\* (Ball Aerospace Technologies Corp.); Estep, Justin Ronald (Air Force Research Laboratory)

09:15-09:30 FrA02.4  
**A Weight Transfer Mechanism for Kernel Reinforcement Learning Decoding in Brain-Machine Interfaces** ..... 3547-3550  
Zhang, Xiang\* (The Hong Kong University of Science & Technology); Wang, Yiwen (Hong Kong University of Science & Technology)

09:30-09:45 FrA02.5  
**Optimal ELM-RBF Model and SERS Analysis of Saliva for Classification of NS1** ..... 3551-3554  
Othman, N. H. (Universiti Teknologi MARA); Lee, Yoot\* (Universiti Teknologi MARA); Mohd Radzol, Afaf Rozan (Universiti Teknologi MARA); Mansor, Wahidah (Universiti Teknologi MARA)



09:45-10:00 FrA02.6  
**Convolutional Neural Networks to Detect Pediatric Apnea-Hypopnea Events from Oximetry** ..... 3555-3558  
 Vaquerizo-Villar, Fernando\* (*Biomedical Engineering Group, University of Valladolid, CIF Q471*); Álvarez González, Daniel (*Río Hortega University Hospital*); Kheirandish-Gozal, Leila (*Section of Sleep Medicine, Dept. of Pediatrics, Pritzker Sc*); Gutierrez, Gonzalo Cesar (*University of Valladolid*); Barroso-García, Verónica (*University of Valladolid*); del Campo, Félix (*Hospital del Río Hortega. Universidad De Valladolid*); Gozal, David (*Section of Sleep Medicine, Dept. of Pediatrics, Pritzker Sc*); Hornero, Roberto (*University of Valladolid*)

FrA04: 08:30-10:00 Hall A1 – Level 1  
**Advances in Physiological Monitoring (Oral Session)**  
 Chair: Sazonov, Edward (*University of Alabama*)

08:30-08:45 FrA04.1  
**Tidal Volume via Circumferences of the Upper Body: A Pilot Study** ..... 3559-3562  
 Laufer, Bernhard\* (*Furtwangen University*); Krueger-Ziolek, Sabine (*Furtwangen University*); Docherty, Paul David (*University of Canterbury*); Hoeflinger, Fabian (*Albert-Ludwigs-Universität Freiburg*); Reindl, Leonhard (*Albert-Ludwigs-Universität Freiburg*); Moeller, Knut (*Furtwangen University*)

08:45-09:00 FrA04.2  
**Objective Detection of Cigarette Smoking from Physiological Sensor Signals** ..... 3563-3566  
 Imtiaz, Masudul Haider (*University of Alabama*); Senyürek, Volkan (*The University of Alabama*); Belsare, Prajakta (*The University of Alabama*); Tiffany, Stephen (*State University of New York at Buffalo*); Sazonov, Edward\* (*University of Alabama*)

09:00-09:15 FrA04.3  
**Respiratory Rate on Exercise Measured by Nanoparticle-Based Humidity Sensor** ..... 3567-3570  
 Kano, Shinya\* (*National Institute of Advanced Industrial Science & Technology*); Yamamoto, Akio (*Kobe University*); Ishikawa, Akira (*Kobe University*); Fujii, Minoru (*Kobe University*)

09:15-09:30 FrA04.4  
**Ejection Wave Segmentation for Contact-Free Heart Rate Estimation from Ballistocardiographic Signals** ..... 3571-3576  
 Pröll, Samuel Martin\* (*UMIT*); Hofbauer, Stefan (*Dept. of Anesthesiology & Critical Care Medicine, Univers*); Kolbitsch, Christian (*Dept. of Anaesthesia & Intensive Care Medicine, Medical Un*); Schubert, Rainer (*UMIT*); Fritscher, Karl (*UMIT*)

09:30-09:45 FrA04.5  
**Biosignal-Based Multimodal Emotion Recognition in a Valence-ArousalAffective Framework Applied to Immersive Video Visualization** ..... 3577-3583  
 Pinto, Joana (*Instituto Superior Tecnico, Universidade de Lisboa*); Fred, Ana (*IT – Instituto de Telecomunicações*); Plácido da Silva, Hugo\* (*IT – Instituto de Telecomunicações*)

09:45-10:00 FrA04.6  
**A Wearable System Developed to Monitor People Suffering from Vasovagal Syncope** ..... 3584-3587  
 Pietrewicz, Michal (*Gdansk University of Technology*); Polinski, Artur (*Gdansk University of Technology*); Kocejko, Tomasz\* (*Gdansk University of Technology*); Wtorek, Jerzy (*Gdansk University of Technology*)

FrA08: 08:30-10:00 M8 – Level 3  
**Health Informatics – Behavioral Health Informatics (Oral Session)**

08:30-08:45 FrA08.1  
**Agitation Detection in People Living with Dementia using Multimodal Sensors** ..... 3588-3591  
 Khan, Shehroz\* (*Toronto Rehabilitation Institute*); Spasojevic, Sofija (*Toronto Rehabilitation Institute*); Mihailidis, Alex (*University of Toronto*); Ye, Bing (*University of Toronto*); Iaboni, Andrea (*University Health Network*); Newman, Kristine (*Ryerson University*); Wang, Angel He (*Ryerson University*); Martin, Lori Schindel (*Ryerson University*); Nogas, Jacob (*University of Toronto*)

08:45-09:00	FrA08.2
<b>Teaching Machines to Know Your Depressive State: On Physical Activity in Health and Major Depressive Disorder</b> .....	3592-3595
Qian, Kun* ( <i>The University of Tokyo</i> ); Kuromiya, Hiroyuki ( <i>The University of Tokyo</i> ); Zhang, Zixing ( <i>Imperial College London</i> ); Kim, Jinhyuk ( <i>Shizuoka University</i> ); Nakamura, Toru ( <i>Osaka University</i> ); Yoshiuchi, Kazuhiro ( <i>Dept. of Stress Sciences &amp; Psychosomatic Medicine, Gradua</i> ); Schuller, Bjoern ( <i>Imperial College London</i> ); Yamamoto, Yoshiharu ( <i>The University of Tokyo</i> )	
09:00-09:15	FrA08.3
<b>Behaviour Profiles for Evidence-Based Policies against Obesity</b> .....	3596-3599
Sarafis, Ioannis* ( <i>Aristotle University of Thessaloniki</i> ); Diou, Christos ( <i>Aristotle University of Thessaloniki</i> ); Delopoulos, Anastasios ( <i>Aristotle University of Thessaloniki</i> )	
09:15-09:30	FrA08.4
<b>Evaluation of the Impact of Extrinsic Rewards on User Engagement in a Health Promotion Context</b> .....	3600-3604
Nuijten, Raoul Ceasar Yannic ( <i>Eindhoven University of Technology</i> ); Van Gorp, Pieter* ( <i>Eindhoven University of Technology</i> ); Kaymak, Uzay ( <i>Eindhoven Technische University</i> ); Simons, Monique ( <i>Wageningen University</i> ); Astrid Kemperman, Astrid D.A.M. ( <i>Eindhoven University of Technology</i> ); Van den Berg, Pauline E.W. ( <i>Eindhoven University of Technology</i> )	
09:30-09:45	FrA08.5
<b>Detecting Emotional Valence using Time-Domain Analysis of Speech Signals</b> .....	3605-3608
Deshpande, Gauri* ( <i>Tata Research Development &amp; Design Center, Tata Consultancy Se</i> ); Viraraghavan, Venkata Subramanian ( <i>Tata Consultancy Services Limited</i> ); Duggirala, Mayuri ( <i>Tata Research Development &amp; Design Center, Tata Consultancy Se</i> ); Patel, Sachin ( <i>Tata Research Development &amp; Design Center, Tata Consultancy Se</i> )	
09:45-10:00	FrA08.6
<b>Reinforcement Learning-Based Adaptive Insulin Advisor for Individuals with Type 1 Diabetes Patients under Multiple Daily Injections Therapy</b> .....	3609-3612
Sun, Qingnan* ( <i>University of Bern</i> ); Jankovic, Marko ( <i>Bern University Hospital "Inselspital"</i> ); Mouggiakakou, Stavroula ( <i>University of Bern</i> )	

FrA13: 08:30-10:00	R2 – Level 3
<b>Deep Learning Methods in Sensors and Wearable Systems</b> (Oral Session)	
<b>Co-Chair:</b> Potluri, Sasanka ( <i>Institute III/Dept. Sport Science, Otto-von-Guericke University Magdeburg</i> )	

08:30-08:45	FrA13.1
<b>Deep Learning based Gait Abnormality Detection using Wearable Sensor System</b> .....	3613-3619
Potluri, Sasanka* ( <i>Otto-von-Guericke University Magdeburg, Institute for Automation</i> ); Ravuri, Srinivas ( <i>Otto-von-Guericke University Magdeburg, Institute for Automation</i> ); Diedrich, Christian ( <i>Otto-von-Guericke University Magdeburg, Institute for Automation</i> ); Schega, Lutz ( <i>Otto-von-Guericke University Magdeburg, Institute for Sport Scie</i> )	
08:45-09:00	FrA13.2
<b>Recurrent Neural Network as Estimator for a Virtual sEMG Channel</b> .....	3620-3623
Machado, Juliano* ( <i>Instituto Federal Sul-Riograndense (IFSul)</i> ); Cene, Vinicius H. ( <i>Universidade Federal do Rio Grande do Sul</i> ); Balbinot, Alexandre ( <i>Federal University of Rio Grande do Sul (UFRGS)</i> )	
09:00-09:15	FrA13.3
<b>Deep Neural Network-Based Gait Classification using Wearable Inertial Sensor Data</b> .....	3624-3628
Jung, Dawoon ( <i>Korea Institute of Science &amp; Technology</i> ); Nguyen, Mau Dung ( <i>Korean Institute of Science &amp; Technology</i> ); Han, Jooin ( <i>Korean Institute of Science &amp; Technology</i> ); Park, Mina ( <i>Korean Institute of Science &amp; Technology</i> ); Lee, Kwanhoon ( <i>Korean Institute of Science &amp; Technology</i> ); Yoo, Seonggeun ( <i>Seoul National University of Science &amp; Technology</i> ); Kim, Jinwook ( <i>Korean Institute of Science &amp; Technology</i> ); Mun, Kyung-Ryoul* ( <i>Korean Institute of Science &amp; Technology</i> )	

09:15-09:30 FrA13.4  
**Prediction of the Plantar Force during Gait using Wearable Sensors and Deep Neural Networks** ..... 3629-3632  
 Nagashima, Mikihisu\* (*Nara Institute of Science & Technology*); Cho, Sung-Gwi (*Nara Institute of Science & Technology*); Ding, Ming (*Nara Institute of Science & Technology*); Garcia Ricardez, Gustavo Alfonso (*Nara Institute of Science & Technology*); Takamatsu, Jun (*Nara Institute of Science & Technology*); Ogasawara, Tsukasa (*Nara Institute of Science & Technology*)

09:30-09:45 FrA13.5  
**Feasibility Study of Deep Neural Network for Heart Rate Estimation from Wearable Photoplethysmography and Acceleration Signals** ..... 3633-3636  
 Chung, Heewon (*Wonkwang University School of Medicine*); Ko, Hoon (*Wonkwang University School of Medicine*); Lee, Hooseok (*Wonkwang University School of Medicine*); Lee, Jinseok\* (*Wonkwang University School of Medicine*)

09:45-10:00 FrA13.6  
**Eyelid Movement Command Classification using Machine Learning** ..... 3637-3640  
 Graybill, Philip (*Penn State University*); Kiani, Mehdi\* (*Pennsylvania State University*)

FrA14: 08:30-10:00	R3 – Level 3
<b>Signal Processing and Classification in Sleep Studies (I)</b> (Oral Session)	
Chair: Penzel, Thomas ( <i>Charité Universitätsmedizin Berlin</i> )	
Co-Chair: Bianchi, Anna Maria ( <i>Politecnico di Milano</i> )	

08:30-08:45 FrA14.1  
**A Transition Probability based Classification Model for Enhanced N1 Sleep Stage Identification during Automatic Sleep Stage Scoring** ..... 3641-3644  
 Davies, Harry\* (*Imperial College London*); Nakamura, Takashi (*Imperial College London*); Mandic, Danilo (*Imperial College*)

08:45-09:00 FrA14.2  
**A Point Process Framework for the Characterization of Sleep States in Early Infancy** ..... 3645-3648  
 Pini, Nicolò\* (*Politecnico di Milano*); Lucchini, Maristella (*Politecnico di Milano*); Fifer, William P. (*Dept. of Psychiatry & Pediatrics, Columbia University Col*); Signorini, Maria G. (*Politecnico di Milano*); Barbieri, Riccardo (*Politecnico di Milano*)

09:00-09:15 FrA14.3  
**A Clinically Applicable Interactive Micro and Macro-Sleep Staging Algorithm for Elderly and Patients with Neurodegeneration** ..... 3649-3652  
 Cesari, Matteo\* (*Technical University of Denmark*); Christensen, Julie Anja Engelhard (*Technical University of Denmark*); Sixel-Döring, Friederike (*Paracelsus-Elena Klinik, Kassel*); Muntean, Maria-Lucia (*Paracelsus-Elena Klinik, Kassel*); Mollenhauer, Brit (*Paracelsus-Elena Klinik, Kassel*); Trenkwalder, Claudia (*Paracelsus-Elena Klinik, Kassel*); Jennum, Poul (*University of Copenhagen, Denmark*); Sorensen, Helge B D (*Technical University of Denmark*)

09:15-09:30 FrA14.4  
**Snoring – An Acoustic Definition** ..... 3653-3657  
 Janott, Christoph\* (*Technical University of Munich*); Rohrmeier, Christian (*Faculty of Medicine, University of Regensburg, Regensburg*); Schmitt, Maximilian (*University of Augsburg*); Hemmert, Werner (*Technical University of Munich*); Schuller, Bjoern (*University of Augsburg / Imperial College London*)

09:30-09:45 FrA14.5  
**Sleep Arousal and Sudden Changes in Cardiac QT Interval** ..... 3658-3661  
 Salari Shahrabaki, Sobhan\* (*University of Adelaide*); Baumert, Mathias (*The University of Adelaide*)

09:45-10:00 FrA14.6  
**Classification Algorithm for Nocturnal Hypoxemia using Nocturnal Pulse Oximetry** ..... 3662-3665  
 Izumi, Shintaro\* (*Kobe University*); Nagano, Tatsuya (*Kobe University*); Yoshizaki, Asuka (*Kobe University*); Nishimura, Yoshihiro (*Kobe University*)

FrA15: 08:30-10:00 M3 – Level 3  
**Image Analysis and Classification – Machine Learning Approaches (IV)** (Oral Session)  
**Chair:** Antani, Sameer (*National Library of Medicine*)

08:30-08:45 FrA15.1  
**CLPNet: Cleft Lip and Palate Surgery Support with Deep Learning** ..... 3666-3672  
 Li, Yizhou (*Sichuan University*); Cheng, Junhao (*Sichuan University*); Mei, Hongxiang (*Sichuan University*); Ma, Huangshui (*Sichuan University*); Chen, Zhuojun (*Baidu Inc*); Li, Yang\* (*Sichuan University*)

08:45-09:00 FrA15.2  
**Assessment of Laboratory Mouse Activity in Video Recordings using Deep Learning Methods** ..... 3673-3676  
 Kopaczka, Marcin\* (*RWTH Aachen University*); Tillmann, Daniel (*RWTH Aachen University*); Ernst, Lisa (*RWTH Aachen University*); Justus, Schock (*RWTH Aachen University*); Tolba, Rene (*RWTH Aachen University*); Merhof, Dorit (*RWTH Aachen University*)

09:00-09:15 FrA15.3  
**Automatic PAP Mask Sizing with a Error Correcting Autoencoder** ..... 3677-3680  
 Johnston, Benjamin\* (*University of Sydney*); de Chazal, Philip (*University of Sydney*)

09:15-09:30 FrA15.4  
**Endoscopic Image Clustering with Temporal Ordering Information based on Dynamic Programming** .... 3681-3684  
 Harada, Shota\* (*Kyushu University*); Hayashi, Hideaki (*Kyushu University*); Bise, Ryoma (*Kyushu University*); Tanaka, Kiyohito (*Kyoto Second Red Cross Hospital*); Meng, Qier (*Research Center for Medical Big data, National Institute of Info*); Uchida, Seiichi (*Kyushu University*)

09:30-09:45 FrA15.5  
**Deep Multi-Modality Collaborative Learning for Distant Metastases Predication in PET-CT Soft-Tissue Sarcoma Studies** ..... 3685-3688  
 Peng, Yige (*The University of Sydney*); Bi, Lei (*University of Sydney*); Guo, Yuyu (*School of Biomedical Engineering, Shanghai Jiao Tong University*); Feng, Dagan (*The University of Sydney*); Fulham, Michael (*Royal Prince Alfred Hospital*); Kim, Jinman\* (*University of Sydney*)

09:45-10:00 FrA15.6  
**Assessment of an Ensemble of Machine Learning Models Toward Abnormality Detection in Chest Radiographs** ..... 3689-3692  
 Rajaraman, Sivaramakrishnan\* (*National Library of Medicine*); Sornapudi, Sudhir (*Missouri University of Science & Technology*); Kohli, Marc (*Dept. of Radiology & Biomedical Imaging, University of Ca*); Antani, Sameer (*National Library of Medicine*)

FrA16: 08:30-10:00 M5 – Level 3  
**Micro- and Nano-Biorobotics** (Oral Session)  
**Chair:** Piovesan, Davide (*Gannon University*)  
**Co-Chair:** Schostek, Sebastian (*Ovesco Endoscopy AG*)

08:30-08:45 FrA16.1  
**Conducting Polymer Microtubes for Bioactuators** ..... 3693-3696  
 Eslamian, Mohammadjavad (*University of Houston*); Mirab, Fereshtehsadat (*University of Houston*); Majd, Sheereen (*University of Houston*); Abidian, Mohammad Reza\* (*University of Houston*)

08:45-09:00 FrA16.2  
**Predictive Tilt Compensation for Robot Assisted Magnetic Capsule Endoscope** ..... 3697-3702  
 Mahmood, Salman\* (*Ovesco Endoscopy AG*); Schurr, Marc O. (*Ovesco Endoscopy AG*); Schostek, Sebastian (*Ovesco Endoscopy AG*)

09:00-09:15 FrA16.3  
**Taxonomy of Two Dimensional Bio-Inspired Locomotion Systems** ..... 3703-3706  
 Kehoe, Matthew (*Gannon University*); Piovesan, Davide\* (*Gannon University*)

09:15-09:30 FrA16.4  
**Investigation of Current Control for a New Bi-Directional Linear Capsule Robot** ..... 3707-3711  
 Wu, Linlin\* (*Aalborg University*); Lu, Kaiyuan (*Aalborg University*); Xia, Yongming (*Aalborg University*)

09:30-09:45 FrA16.5  
**A Miniaturized Capsule Endoscope Equipped a Marking Module for Intestinal Tumor Localization** ..... 3712-3715  
Hoang, Manh Cuong\* (*Chonnam National University*); Choi, Eunpyo (*Chonnam National University*); Kang, Byungjeon (*Robot Research Initiative, Chonnam National University*); Kim, Chang-Sei (*Chonnam National University*); Park, Jongoh (*Chonnam National University*)

09:45-10:00 FrA16.6  
**Soft Phantom for the Training of Renal Calculi Diagnostics and Lithotripsy** ..... 3716-3719  
Li, Dandan (*Max Planck Institute for Intelligent Systems*); Suarez-Ibarrola, Rodrigo (*University Medical Centre Freiburg*); Choi, Eunjin (*Max Planck Institute for Intelligent Systems*); Jeong, Moonkwang (*Max Planck Institute for Intelligent Systems*); Gratzke, Christian (*University Medical Centre Freiburg*); Miernik, Arkadiusz (*University Medical Centre Freiburg*); Fischer, Peer (*Max Planck Institute for Intelligent Systems*); Qiu, Tian\* (*Max Planck Institute for Intelligent Systems*)

FrA17: 08:30-10:00 R12 – Level 3  
**Point of Care – Global Health Challenges** (Oral Session)  
**Co-Chair:** Bhatti, Pamela (*Georgia Institute of Technology*)

08:30-08:45 FrA17.1  
**Contactless Respiration and Heartbeat Monitoring of Multiple People using a 2-D Imaging Radar** ..... 3720-3725  
Walterscheid, Ingo (*Fraunhofer FHR*); Biallawons, Oliver\* (*Fraunhofer FHR*); Berens, Patrick (*Fraunhofer FHR*)

08:45-09:00 FrA17.2  
**Assessment of Feeding Teats: An Experimental Study** ..... 3726-3729  
Chericoni, Assia\* (*Università Campus Biomedico di Roma*); Tosi, Jacopo (*Università Campus Bio-Medico di Roma*); Anna Maria, Visco (*Neonatal Care Unit of Santa Maria Goretti Hospital*); Lubrano, Riccardo (*Università degli Studi di Roma La Sapienza*); Taffoni, Fabrizio (*Campus Bio-Medico University*)

09:00-09:15 FrA17.3  
**Co-Design Open-Source Medical Devices: How to Minimize the Human Error using UBORA E-Infrastructure** ..... 3730-3733  
Di Pietro, Licia\* (*University of Pisa*); De Maria, Carmelo (*Research Center E. Piaggio – University of Pisa*); Ravizza, Alice (*PGG Scientific*); Ahluwalia, Arti (*Pisa University*)

09:15-09:30 FrA17.4  
**A Novel, Efficient 3D-Printing based Manufacturing Process for Custom Ocular Prostheses** ..... 3734-3737  
Beiruti, Sally (*Massachusetts Institute of Technology*); Chandar, Arjun (*Massachusetts Institute of Technology*); Gee, Kaitlyn (*Massachusetts Institute of Technology*); Jones, Alexis (*Massachusetts Institute of Technology*); Le Henaff, Anne Claire\* (*Massachusetts Institute of Technology*); Zhang, Zhengyang (*Massachusetts Institute of Technology*); Narain, Jaya (*Massachusetts Institute of Technology*); Winter, Amos (*MIT*)

09:30-09:45 FrA17.5  
**Reliability of the Balance Quality Tester (BQT) for Balance Quality Measurement** ..... 3738-3741  
Rahal, Mohamad (*University of Technology of Troyes (UTT), Troyes, France*); Chkeir, Aly (*University of Technology of Troyes*); Nassereddine, Mohamad (*Lebanese University – Faculty of Sciences, Beirut Lebanon*); Atieh, Mirna (*Lebanese University – Faculty of Economic Sciences & administr*); Soubra, Racha\* (*Université de Technologie de Troyes*)

09:45-10:00 FrA17.6  
**Design Considerations for Artefact-Free Optoelectronic Systems** ..... 3742-3745  
Firfilionis, Dimitris\* (*Newcastle University*); Luo, Jun-Wen (*Newcastle University*); Ramezani, Reza (*Newcastle University*); Escobedo Cousin, Enrique (*Newcastle University*); Bailey, Richard Geoffrey (*Newcastle University*); O'Neill, Anthony (*Newcastle University*); Degenaar, Patrick (*Newcastle University*)

FrA18: 08:30-10:00 R13 – Level 3  
**Neural Interfaces** (Oral Session)

08:30-08:45 FrA18.1  
**Enhanced ICMR Amplifier for High CMRR Biopotential Recordings** ..... 3746-3749  
Oreggioni, Julian\* (*IIE, Facultad de Ingenieria, Universidad de la Republica*); Castro-Lisboa, Pablo (*Universidad de la República*); Silveira, Fernando (*Universidad de la Republica*)

08:45-09:00	FrA18.2
<b>Fabrication of a Self-Curling Cuff with a Soft, Ionically Conducting Neural Interface</b> .....	3750-3753
Thakur, Raviraj ( <i>John's Hopkins University</i> ); Nair, Ankitha Rajagopalan ( <i>John's Hopkins University</i> ); Jin, Andrew ( <i>John's Hopkins University</i> ); Fridman, Gene* ( <i>Johns Hopkins University</i> )	
09:00-09:15	FrA18.3
<b>A Feasibility Study on Optically Transparent Encapsulation for Implantable Neural Prostheses</b> .....	3754-3757
Shim, Shinyong* ( <i>Seoul National University</i> ); Kim, Sung June ( <i>Seoul National University</i> )	
09:15-09:30	FrA18.4
<b>A System for Combined Laser Doppler Flowmetry and Microelectrode Recording during Deep Brain Stimulation Implantation</b> .....	3758-3761
Wardell, Karin* ( <i>Linköping University</i> ); Zsigmond, Peter ( <i>Linköping University</i> ); Hemm, Simone ( <i>University of Applied Sciences &amp; Arts Northwestern Switzerland</i> )	
09:30-09:45	FrA18.5
<b>Electrochemical Stability of Thin-Film Platinum as Suitable Material for Neural Stimulation Electrodes</b> .	3762-3765
Pfau, Jennifer* ( <i>University of Freiburg, Dept. of Microsystems Engineering I</i> ); Ganatra, Dev ( <i>University of Freiburg</i> ); Weltin, Andreas ( <i>University of Freiburg</i> ); Urban, Gerald A. ( <i>University of Freiburg</i> ); Kieninger, Jochen ( <i>University of Freiburg</i> ); Stieglitz, Thomas ( <i>University of Freiburg</i> )	
09:45-10:00	FrA18.6
<b>In Vitro Reactive-Accelerated-Aging Assessment of Anisotropic Conductive Adhesive and Back-End Packaging for Electronic Neural Interfaces</b> .....	3766-3769
Kuliasha, Cary ( <i>University of Florida</i> ); Judy, Jack* ( <i>University of Florida</i> )	

FrA19: 08:30-10:00	R4 – Level 3
<b>Sensor Informatics – Physiological Monitoring</b> (Oral Session)	
Chair: Chen, Ying ( <i>University of Aizu</i> )	

08:30-08:45	FrA19.1
<b>Evaluation of Pulse Arrival Times during Lower Body Negative Pressure Test for the Non-Invasive Detection of Hypovolemia</b> .....	3770-3774
Tigges, Timo* ( <i>Technical University Berlin</i> ); Feldheiser, Arne ( <i>Charité – Universitätsmedizin Berlin, Campus Virchow-Klinikum</i> ); Pielmus, Alexandru Gabriel ( <i>Technische Universität Berlin</i> ); Klum, Michael ( <i>Technische Universität Berlin</i> ); Wiegank, Ludwig ( <i>Charité – Universitätsmedizin Berlin</i> ); Orglmeister, Reinhold ( <i>Technische Universität Berlin</i> )	
08:45-09:00	FrA19.2
<b>Cuff-Less Blood Pressure Measurement based on Deep Convolutional Neural Network</b> .....	3775-3778
Liu, Zengding ( <i>Shenzhen Institutes of Advanced Technology, Chinese Academy of Sc</i> ); Miao, Fen ( <i>Shenzhen Institutes of Advanced Technology, Chinese Academy of S</i> ); Wang, Ruxin ( <i>Shenzhen Institutes of Advanced Technology, Chinese Academy of Sc</i> ); Liu, Jikui ( <i>Shenzhen Institutes of Advanced Technology Chinese Academy of Sc</i> ); Wen, Bo ( <i>SIAT, CAS</i> ); Li, Ye* ( <i>Shenzhen Institutes of Advanced Technology, Chinese Academy of S</i> )	
09:00-09:15	FrA19.3
<b>Real-Time Cognitive Workload Monitoring based on Machine Learning using Physiological Signals in Rescue Missions</b> .....	3779-3785
Momeni, Niloofar* ( <i>Swiss Federal Institute of Technology Lausanne</i> ); Dell'Agnola, Fabio ( <i>Ecole Polytechnique Fédérale de Lausanne (EPFL)</i> ); Arza Valdés, Adriana ( <i>Ecole Polytechnique Fédérale de Lausanne EPFL</i> ); Atienza, David ( <i>EPFL</i> )	
09:15-09:30	FrA19.4
<b>Effect of Different ECG Leads on Estimated R-R Intervals and Heart Rate Variability Parameters</b> .....	3786-3790
Jeyhani, Vala* ( <i>GE Healthcare</i> ); Mäntysalo, Matti ( <i>Tampere University</i> ); Noponen, Kai ( <i>University of Oulu</i> ); Seppänen, Tapio ( <i>University of Oulu</i> ); Vehkaoja, Antti ( <i>Tampere University</i> )	
09:45-10:00	FrA19.6
<b>Real-Time Respiration Measurement during Sleep using a Microwave Sensor</b> .....	3791-3794
Chen, Ying* ( <i>University of Aizu</i> ); Kaneko, Masahiko ( <i>Simplex Quantum Inc.</i> ); Hirose, Shinichi ( <i>Simplex Quantum Inc.</i> ); Chen, Wenxi ( <i>University of Aizu</i> )	

FrA20: 08:30-10:00

R5 – Level 3

**Motor Neuroprostheses** (Oral Session)

- 08:30-08:45 FrA20.1  
**Comparative Study of Intraspinal Microstimulation and Epidural Spinal Cord Stimulation** ..... 3795-3798  
Tao, Chunling (*Nantong University*); Shen, Xiaoyan\* (*Nantong University*); Ma, Lei (*Nantong University*); Shen, Jiahuan (*Nantong University*); Li, Zhiling (*Nantong University*); Wang, Zhigong (*Southeast University*); Lü, Xiaoying (*Southeast University*)
- 08:45-09:00 FrA20.2  
**A Tool to Select FES Parameters for Chronic SCI** ..... 3799-3802  
Meneghel, Maykon Christian (*Pontifical Catholic University of Paraná, Graduate Program on He*); Manfra, Elisangela F.\* (*Pontificia Universidade Católica do Paraná*); Nogueira-Neto, Guilherme (*Pontificia Universidade Catolica do Parana*)
- 09:00-09:15 FrA20.3  
**A Performance Comparison of Neuromuscular Electrical Stimulation Protocols for Isolated Quadriceps Contraction versus Co-Contraction of Quadriceps and Hamstrings** ..... 3803-3806  
Duignan, Ciara (*University College Dublin*); Minogue, Conor M (*Biomedical Research Ltd*); Caulfield, Brian\* (*UCD*)
- 09:15-09:30 FrA20.4  
**A Physics-Based Virtual Reality Environment to Quantify Functional Performance of Upper-Limb Prostheses** ..... 3807-3810  
Katy, Odette (*University of Central Florida*); Fu, Qiushi\* (*University of Central Florida*)
- 09:30-09:45 FrA20.5  
**Simulation of the Assistance of Passive Knee Orthoses in FES Cycling** ..... 3811-3814  
Cardoso de Sousa, Ana Carolina\* (*University of Brasília*); Shimabuko Cascás Sousa, Felipe (*Universidade de Brasília*); Padilha Lanari Bó, Antônio (*Universidade de Brasília*)
- 09:45-10:00 FrA20.6  
**Design of a Wireless, Modular and Programmable Neuromuscular Electrical Stimulator** ..... 3815-3818  
Cerone, Giacinto Luigi\* (*Politecnico di Torino*); Vieira, Taian (*Politecnico di Torino*); Botter, Alberto (*Politecnico di Torino*); Gazzoni, Marco (*Politecnico di Torino*)

FrA21: 08:30-10:00

R8 – level 3

**Smart Implants** (Oral Session)

**Co-Chair:** Hoffmann, Klaus-Peter (*Fraunhofer Institut für Biomedizinische Technik*)

- 08:30-08:45 FrA21.1  
**Integrated Force Sensor in a Cochlear Implant for Hearing Preservation Surgery** ..... 3819-3822  
N Vadivelu, Arvind Kumar\* (*The University of Melbourne*); Liu, Zhengyong (*Hong Kong Polytechnic University*); Gunawardena, Dinusha Serandi (*Hong Kong Polytechnic University*); Chen, Bernard (*The University of Melbourne*); Tam, Hwa-Yaw (*Hong Kong Polytechnic University*); O'Leary, Stephen (*The University of Melbourne*); Oetomo, Denny (*The University of Melbourne*)
- 08:45-09:00 FrA21.2  
**Miniaturized Multi Sensor Implant for Monitoring of Hemodynamic Parameters** ..... 3823-3826  
Dogan, Özgü\* (*Fraunhofer Institute for Microelectronic Circuits & Systems IM*); Schierbaum, Nicolas (*Fraunhofer Institute for Microelectronic Circuits & Systems IM*); Weidenmueller, Jens (*Fraunhofer IMS*); Baum, Mario (*Fraunhofer ENAS*); Schroeder, Tim (*Fraunhofer ENAS*); Wuensch, Dirk (*Fraunhofer ENAS*); Goertz, Michael (*Fraunhofer Institute of Microelectronic Systems & Circuits*); Seidl, Karsten (*University of Duisburg-Essen*)
- 09:00-09:15 FrA21.3  
**Multi-Ring Ultrasonic Transducer on a Single Piezoelectric Disk for Powering Biomedical Implants** ..... 3827-3830  
Hosseini, Seyedsina\* (*Aarhus University*); Laursen, Kjeld (*Aarhus University*); Rashidi, Amin (*Aarhus University*); Moradi, Farshad (*Integrated Circuits & Electronics Laboratory, Dept. of En*)

09:15-09:30 FrA21.4  
**Frequency and Phase Synchronization in Distributed (Implantable-Transcutaneous) Neural Interfaces** . 3831-3834  
Toth, Robert\* (*University of Oxford*); Holt, Abbey (*University of Oxford*); Benjaber, Moaad (*University of Oxford*);  
Sharott, Andrew (*University of Oxford*); Denison, Timothy (*Medtronic*)

09:30-09:45 FrA21.5  
**An Energy-Efficient Implantable-Neural-Stimulator System with Wireless Charging and Dynamic Voltage Output** ..... 3835-3839  
Fu, Xingyu (*Institute of Microelectronics, Tsinghua University*); Mai, Songping\* (*Graduate School at Shenzhen, Tsinghua University*); Wang, Zhihua (*Dept. of Electronic Engineering, Tsinghua Univ. Beijing, P.*)

09:45-10:00 FrA21.6  
**Effect of Signals on the Encapsulation Performance of Parylene Coated Platinum Tracks for Active Medical Implants** ..... 3840-3844  
Nanbakhsh, Kambiz\* (*Delft University of Technology*); Kluba, Marta Maria (*Delft University of Technology*);  
Pahl, Barbara (*Fraunhofer Institute for Reliability & Micro-integration IZM*); Bourgeois, Florian (*Comelec*);  
Dekker, Ronald (*TU Delft*); Serdijn, Wouter A. (*Delft University of Technology*); Giagka, Vasiliki (*Bioelectronics, TU Delft*)

FrB01: 10:30-12:00 Hall A6+A7 – Level 1  
**Neurological Disorders (II)** (Oral Session)

10:30-10:45 FrB01.1  
**EMG-Based Indicators of Muscular Co-Activation during Gait in Children with Duchenne Muscular Dystrophy** ..... 3845-3848  
Rinaldi, Martina (*Roma Tre University*); Petrarca, Maurizio (*Pediatric Hospital Bambino Gesù*); Romano, Alberto (*Ospedale Pediatrico Bambino Gesù*); Vasco, Gessica (*Bambino Gesù Children's Hospital*); D'Anna, Carmen (*Roma TRE University – Engineering Dept.*); Schmid, Maurizio\* (*Roma Tre University*); Castelli, Enrico (*Pediatric Hospital Bambino Gesù*); Conforto, Silvia (*University Roma TRE*)

10:45-11:00 FrB01.2  
**Effect of Temporal Lobe Epilepsy on Auditory-Motor Integration for Vocal Pitch Regulation: Evidence from Brain Functional Network Analysis** ..... 3849-3853  
Wang, Tianqi (*Shenzhen Institute of Advanced Technology*); Liu, Hanjun (*The First Affiliated Hospital, Sun Yat-Sen University*); Wang, Lan (*Shenzhen Institutes of Advanced Technology, Chinese Academy of S*); Ng, Manwa, L. (*Speech Science Laboratory, Division of Speech & Hearing Scienc*); Li, Hua (*The Second People's Hospital of Shenzhen, The First Affiliated H*); Yan, Nan\* (*Shenzhen Institute of Advanced Integration Technology, Chinese A*)

11:00-11:15 FrB01.3  
**Optimization of the Cortical Traveling Wave Analysis Framework for Feasibility in Stereo-Electroencephalography** ..... 3854-3857  
Coelli, Stefania\* (*Dept. of Electronics, Information & Bioengineering, Polit*); Nobili, Lino (*Center for Sleep Medicine at Niguarda Ca' Granda Hospital, Milan*); Boly, Melanie (*University of Wisconsin*); Riedner, Brady (*University of Wisconsin*); Bianchi, Anna Maria (*Politecnico di Milano*)

11:15-11:30 FrB01.4  
**Estimating Intracranial EEG Signals at Missing Electrodes in Epileptic Networks** ..... 3858-3861  
Gunnarsdottir, Kristin\* (*Johns Hopkins University*); Bulacio, Juan (*Cleveland Clinic*); Gonzalez-Martinez, Jorge (*Cleveland Clinic*); Sarma, Sridevi V. (*Johns Hopkins University*)

11:30-11:45 FrB01.5  
**A Characterization of Epileptogenesis Presented in Hippocampal Neural Activity in a Rat Tetanus Toxin Model** ..... 3862-3865  
Park, Sang-Eon (*Georgia Institute of Technology*); Connolly, Mark\* (*Emory University*); Gross, Robert (*Emory University*)



11:45-12:00 FrB01.6  
**Evaluating Invasive EEG Implantations in Medically Refractory Epilepsy with Functional Scalp EEG Recordings and Structural Imaging Data** ..... 3866-3869  
 Palepu, Anil (*Johns Hopkins University*); Li, Adam\* (*Neuromedical Control Systems Laboratory*); Fitzgerald, Zachary (*Cleveland Clinic*); Hu, Katherine (*Johns Hopkins University*); Costacurta, Julia (*Johns Hopkins University*); Bulacio, Juan (*Cleveland Clinic*); Martinez-Gonzalez, Jorge (*Cleveland Clinic*); Sarma, Sridevi V. (*Johns Hopkins University*)

FrB02: 10:30-12:00	Hall A8 – Level 1
<b>Independent and Principal Component Analysis</b> (Oral Session)	
Chair: Van Huffel, Sabine ( <i>KU Leuven</i> )	
Co-Chair: de Chazal, Philip ( <i>University of Sydney</i> )	

10:30-10:45 FrB02.1  
**Comparing Different Methods of Hand-Crafted HRV, EDR and CPC Features for Sleep Apnoea Detection** ..... 3870-3873  
 Sadr, Nadi\* (*University of Sydney*); de Chazal, Philip (*University of Sydney*)

10:45-11:00 FrB02.2  
**Properties of Motor Units of Elbow and Ankle Muscles Decomposed using High-Density Surface EMG** . 3874-3878  
 Hassan, Altamash\* (*Northwestern University*); Kim, Edward (*Northwestern University*); Khurram, Obaid (*Northwestern University*); Cummings, Mark (*Northwestern University*); Thompson, Christopher (*Temple University*); McPherson, Laura Miller (*Florida International University*); Heckman, CJ (*Feinberg School of Medicine, Northwestern University*); Dewald, Julius P. A. (*Northwestern University*); Negro, Francesco (*University Medical Center Göttingen, Bernstein Center for Comput*)

11:00-11:15 FrB02.3  
**Tensor based Blind Source Separation in Longitudinal Magnetic Resonance Imaging Analysis** ..... 3879-3883  
 Stamile, Claudio (*CREATIS, Université Lyon 1*); Cotton, François (*Hospices Civils de Lyon – CREATIS*); Sappey-Marinié, Dominique (*Université Claude Bernard – Lyon1*); Van Huffel, Sabine\* (*KU Leuven*)

11:15-11:30 FrB02.4  
**Preliminary Fusion of EEG and MRI with Phenotypic Scores in Children with Epilepsy based on the Canonical Polyadic Decomposition** ..... 3884-3887  
 Dron, Noramon\* (*University of Edinburgh*); Kinney-Lang, Eli (*University of Edinburgh*); Chin, Richard (*The University of Edinburgh*); Escudero, Javier (*University of Edinburgh*)

11:30-11:45 FrB02.5  
**Mining EEG Scalp Maps of Independent Components Related to HCT Tasks** ..... 3888-3891  
 Teixeira, Ana Rita (*Universidade de Aveiro*); Santos, Isabel (*Universidade de Aveiro*); Lang, Elmar W. (*University of Regensburg*); Tome, Ana Maria\* (*Universidade de Aveiro*)

11:45-12:00 FrB02.6  
**PCA-Driven Detection and Enhancement of Microchanges in Video Data Associated with Heart Rate** .... 3892-3895  
 Gauci, Lucianne\* (*University of Malta*); Falzon, Owen (*University of Malta*); Camilleri, Kenneth Patrick (*University of Malta*)

FrB03: 10:30-12:00	Hall A3 – Level 1
<b>Optical Imaging</b> (Oral Session)	

10:30-10:45 FrB03.1  
**Illumination Robust Heart-Rate Extraction from Single-Wavelength Infrared Camera using Spatial-Channel Expansion** ..... 3896-3899  
 Hu, Jingjing (*Hunan University*); He, Yunze (*Hunan University*); Liu, Jie (*Hunan University*); He, Min (*Hunan University*); Wang, Wenjin\* (*Eindhoven University of Technology*)

10:45-11:00	FrB03.2
<b>3D Reconstruction of Whole Stomach from Endoscope Video using Structure-From-Motion</b> .....	3900-3904
Widya, Aji Resindra* ( <i>Tokyo Institute of Technology</i> ); Monno, Yusuke ( <i>Tokyo Institute of Technology</i> ); Imahori, Kosuke ( <i>Tokyo Institute of Technology</i> ); Okutomi, Masatoshi ( <i>Tokyo Institute of Technology</i> ); Suzuki, Sho ( <i>Nihon University School of Medicine</i> ); Gotoda, Takuji ( <i>Nihon University School of Medicine</i> ); Miki, Kenji ( <i>Tsujinaka Hospital Kashiwanoha</i> )	
11:00-11:15	FrB03.3
<b>Light Field Image Dataset of Skin Lesions</b> .....	3905-3908
Faria, Sergio* ( <i>Instituto de Telecomunicações</i> ); Filipe, Jose ( <i>Instituto de Telecomunicações</i> ); Assuncao, Pedro ( <i>Instituto de Telecomunicações</i> ); Santos, Miguel ( <i>Instituto de Telecomunicações</i> ); Fonseca-Pinto, Rui ( <i>Instituto de Telecomunicações</i> ); Pereira, Pedro ( <i>Instituto de Telecomunicações</i> ); Tavora, Luis ( <i>ESTG, Polytechnic Institute of Leiria, Portugal</i> ); Santiago, Felicidade ( <i>Centro Hospitalar de Leiria</i> ); Dominguez, Victoria ( <i>Centro Hospitalar de Leiria</i> ); Henrique, Martinha ( <i>Centro Hospitalar de Leiria</i> )	
11:15-11:30	FrB03.4
<b>Towards Non-Invasive Patient Tracking: Optical Image Analysis for Spine Tracking during Spinal Surgery Procedures</b> .....	3909-3914
Manni, Francesca* ( <i>Eindhoven University of Technology</i> ); Liu, Xin ( <i>Eindhoven University of Technology</i> ); Holthuisen, Ronaldus Frederik Johannes ( <i>Philips Healthcare</i> ); Zinger, Svitlana ( <i>Eindhoven University of Technology</i> ); van der Sommen, Fons ( <i>Eindhoven University of Technology</i> ); Shan, Caifeng ( <i>Philips Research</i> ); Mamprin, Marco ( <i>Eindhoven University of Technology</i> ); Burström, Gustav ( <i>Karolinska Institutet, Dept of Clinical Neuroscience</i> ); Elmi Terander, Adrian ( <i>Karolinska University Hospital</i> ); Edstrom, Erik ( <i>Karolinska University Hospital</i> ); de With, Peter ( <i>Eindhoven University of Technology</i> )	
11:30-11:45	FrB03.5
<b>Using a Motion Capture System as Reference for Motion Tracking in Photoplethysmography Imaging</b> ..	3915-3918
Yu, Xinchu* ( <i>RWTH Aachen University</i> ); Cruz, Sónia ( <i>RWTH Aachen University</i> ); Batista, Joao ( <i>RWTH Aachen University Hospital</i> ); Bollheimer, Cornelius ( <i>RWTH Aachen University Hospital</i> ); Leonhardt, Steffen ( <i>RWTH Aachen University</i> ); Hoog Antink, Christoph ( <i>RWTH Aachen University, Aachen, Germany</i> )	
11:45-12:00	FrB03.6
<b>A Portable Laser Speckle Imager based on Embedded Graphics Processing Unit Platform</b> .....	3919-3922
Chen, Heping ( <i>Shanghai Jiao Tong University</i> ); Miao, Peng ( <i>Shanghai University</i> ); Bo, Bin ( <i>Shanghai Jiao Tong University</i> ); Li, Yuanqi ( <i>Shanghai Jiao Tong University</i> ); Tong, Shanbao* ( <i>Shanghai Jiao Tong University</i> )	

FrB07: 10:30-12:00	Hall A4 – Level 1
<b>Biomaterials</b> (Oral Session)	
<b>Chair:</b> Bucher, Volker ( <i>Furtwangen University</i> )	
<b>Co-Chair:</b> Doll, Patrick W. ( <i>Karlsruhe Institute of Technology (KIT), Institute of Microstructure Technology (IMT)</i> )	

10:30-10:45	FrB07.1
<b>Electrochemical Characterization and Surface Analysis of Activated Glassy Carbon Neural Electrodes</b> ..	3923-3926
Vomero, Maria* ( <i>University of Freiburg</i> ); Mondragon, Norma Carolina ( <i>Institute of Microsystem Technology (IMTEK), Laboratory for Biome</i> ); Stieglitz, Thomas ( <i>University of Freiburg</i> )	
10:45-11:00	FrB07.2
<b>Characterization of Biostable Atomic Layer Deposited (ALD) Multilayer Passivation Coatings for Active Implants</b> .....	3927-3930
Westerhausen, Markus ( <i>Hochschule Furtwangen</i> ); Metzger, Michael ( <i>Hochschule Furtwangen University</i> ); Blendinger, Felix ( <i>Furtwangen University</i> ); Levermann, Anja ( <i>Furtwangen University</i> ); Fleischer, Monika ( <i>Eberhard Karls University of Tübingen</i> ); Hofmann, Boris ( <i>Aesculap AG</i> ); Bucher, Volker* ( <i>Furtwangen University</i> )	
11:00-11:15	FrB07.3
<b>Integration of Micro-Patterned Carbon Fiber Mats into Polyimide for the Development of Flexible Implantable Neural Devices</b> .....	3931-3934
Gueli, Calogero* ( <i>University of Freiburg</i> ); Vomero, Maria ( <i>University of Freiburg</i> ); Sharma, Swati ( <i>Karlsruhe Institute of Technology</i> ); Stieglitz, Thomas ( <i>University of Freiburg</i> )	

11:15-11:30 FrB07.4  
**Preparation of Gel-Liposome Nanoparticles for Drug Delivery Applications** ..... 3935-3938  
Mirab, Fereshtehsadat (*University of Houston*); Wang, Yifei (*University of Houston*); Farhadi, Hanieh (*University of Houston*); Majd, Sheereen\* (*University of Houston*)

11:30-11:45 FrB07.5  
**Reactive Nitrogen Species Releasing Hydrogel for Enhanced Wound Healing** ..... 3939-3942  
Zahid, Alap Ali (*Qatar University*); Ahmed, Rashid (*Qatar University*); Raza ur Rehman, Syed (*Qatar University*); Augustine, Robin (*Qatar University, Doha*); Anwarul, Hasan\* (*Qatar University, Doha*)

11:45-12:00 FrB07.6  
**Graphene Oxide Loaded Gelatin Methacrylate Hydrogel for Enhanced Wound Healing in Diabetic Patients** ..... 3943-3946  
Raza ur Rehman, Syed (*Qatar University*); Augustine, Robin (*Qatar University, Doha*); Zahid, Alap Ali (*Qatar University*); Ahmed, Rashid (*Qatar University*); Anwarul, Hasan\* (*Qatar University, Doha*)

FrB08: 10:30-12:00 M8 – Level 3  
**Health Informatics – Computer-Aided Decision Making (Oral Session)**  
**Chair:** Picard, Rosalind (*Massachusetts Institute of Technology*)  
**Co-Chair:** Seepold, Ralf (*HTWG Konstanz*)

10:30-10:45 FrB08.1  
**Latent States Extraction through Kalman Filter for the Prediction of Heart Failure Decompensation Events** ..... 3947-3950  
Nunes, Diogo (*University of Coimbra*); Rocha, Teresa (*Inst Superior de Eng de Coimbra*); Traver, Vicente (*ITACA – Universitat Politècnica de València*); Teixeira, César (*University of Coimbra*); Ruano, M. Graça (*FCT, University of Algarve & CISUC-University of Coimbra*); Paredes, Simao (*Instituto Politécnico de Coimbra*); de Carvalho, Paulo\* (*University of Coimbra*); Henriques, Jorge (*University of Coimbra*)

10:45-11:00 FrB08.2  
**Ecological Momentary Assessment based Differences between Android and iOS Users of the TrackYourHearing mHealth Crowdsensing Platform** ..... 3951-3955  
Pryss, Rüdiger\* (*Ulm University*); Schlee, Winfried (*University Hospital Regensburg*); Reichert, Manfred (*Ulm University, Institute of Databases & Information Systems*); Kurthen, Ira (*Developmental Psychology: Infancy & Childhood, Dept. of P*); Giroud, Nathalie (*Cognition, Aging, & Psychophysiology Laboratory, Dept. of*); Jagoda, Laura (*Division of Neuropsychology, Dept. of Psychology, Universit*); Neuschwander, Pia (*Division of Neuropsychology, Dept. of Psychology, Universit*); Meyer, Martin (*Division of Neuropsychology, Dept. of Psychology, Universit*); Neff, Patrick (*University Hospital Regensburg*); Schobel, Johannes (*Ulm University*); Hoppenstedt, Burkhard (*Ulm University*); Spiliopoulou, Myra (*University of Magdeburg*); Langguth, Berthold (*University Hospital Regensburg*); Probst, Thomas (*Donau Universität Krems*)

11:00-11:15 FrB08.3  
**Homogeneous and Heterogeneous Ensemble Classification Methods in Diabetes Disease: A Review** .... 3956-3959  
Fernandez Aleman, Jose Luis (*University of Murcia*); Carrillo de Gea, Juan Manuel\* (*University of Murcia*); Hosni, Mohamed (*ENSIAS, Mohammed V University*); Idri, Ali (*Mohammed V University Rabat*); García-Mateos, Ginés (*University of Murcia*)

11:15-11:30 FrB08.4  
**Deep Reinforcement Learning for Optimal Critical Care Pain Management with Morphine using Dueling Double-Deep Q Networks** ..... 3960-3963  
Lopez-Martinez, Daniel\* (*Massachusetts Institute of Technology*); Eschenfeldt, Patrick (*Massachusetts General Hospital*); Ostvar, Sassan (*Columbia University*); Ingram, Myles (*Columbia University*); Hur, Chin (*Columbia University*); Picard, Rosalind (*Massachusetts Institute of Technology*)

11:30-11:45 FrB08.5  
**Development of a Sleep Apnea Detection Algorithm using Long Short-Term Memory and Heart Rate Variability** ..... 3964-3967  
Iwasaki, Ayako\* (*Kyoto University*); Nakayama, Chikao (*Kyoto University*); Fujiwara, Koichi (*Kyoto University*); Sumi, Yukiyoshi (*Shiga University of Medical Science*); Matsuo, Masahiro (*Shiga University of Medical Science*); Kano, Manabu (*Kyoto University*); Kadotani, Hiroshi (*Shiga University of Medical Science*)

11:45-12:00 FrB08.6  
**Automatic Classification and Monitoring of Denovo Parkinson's Disease by Learning Demographic and Clinical Features** ..... 3968-3971  
 Soltaninejad, Sara\* (*University of Alberta*); Basu, Anup (*University of Alberta*); Cheng, Irene (*University of Alberta*)

FrB09: 10:30-12:00 M1 – Level 3  
**Models of Organs and Medical Devices** (Oral Session)  
**Co-Chair:** Zhang, Henggui (*Harbin Institute of Technology, School of Computer Science and Technology*)

10:30-10:45 FrB09.1  
**Surface Potential Simulation for Robust Electrode Placement by MRI based Human Phantom with FEM based Quasi-Static Solver for Bioimpedance Measurement** ..... 3972-3977  
 Urban, Mike\* (*Technische Universität Berlin*); Orglmeister, Reinhold (*Technische Universität Berlin*)

10:45-11:00 FrB09.2  
**Evaluation of Electrode Setups by MRI based Human Phantom with FEM based Quasi-Static Solver for Bioimpedance Measurement** ..... 3978-3982  
 Urban, Mike\* (*Technische Universität Berlin*); Orglmeister, Reinhold (*Technische Universität Berlin*)

11:00-11:15 FrB09.3  
**Estimating Local Therapeutic Hypothermia in Case of Ischemic Stroke using a 1D Hemodynamics Model and an Energetic Temperature Model** ..... 3983-3986  
 Lutz, Yannick\* (*Karlsruhe Institute of Technology (KIT)*); Daschner, Rosa (*Karlsruhe Institute of Technology (KIT)*); Krames, Lorena (*Karlsruhe Institute of Technology (KIT)*); Loewe, Axel (*Karlsruhe Institute of Technology (KIT)*); Doessel, Olaf (*Karlsruhe Institute of Technology (KIT)*); Cattaneo, Giorgio (*Adceris GmbH & Co KG, Pforzheim*)

11:15-11:30 FrB09.4  
**Ultra-Focal Magnetic Stimulation using a  $\mu$ TMS Coil: A Computational Study** ..... 3987-3990  
 Colella, Micol\* (*University of Rome "Sapienza"*); Laher, Rebecca (*Berenson-Allen Center for Noninvasive Brain Stimulation, Divisio*); Press, Daniel (*Berenson-Allen Center for Noninvasive Brain Stimulation, Divisio*); McIllduff, Courtney (*Berenson-Allen Center for Noninvasive Brain Stimulation, Divisio*); Rutkove, Seward (*Harvard Medical School*); Pascual-Leone, Alvaro (*Harvard Medical School*); Apollonio, Francesca (*ICEmB@La Sapienza Univ. Rome*); Liberti, Micaela (*ICEmB at Sapienza University of Rome*); Bonmassar, Giorgio (*A. A. Martinos Ctr. for Biomedical Imaging*)

11:30-11:45 FrB09.5  
**An in-Vivo Coil Setup for AC Magnetic Field-Mediated Magnetic Nanoparticle Heating Experiments** ..... 3991-3994  
 Miaskowski, Arkadiusz (*University of Life Sciences, Lublin*); Balakrishnan, Preethiya (*Faraday-Fleming Laboratory*); Subramanian, Mahendran\* (*Imperial College London*); Hovorka, Ondrej (*University of Southampton*)

11:45-12:00 FrB09.6  
**Role of If Density on Electrical Action Potential of Bio-Engineered Cardiac Pacemaker: A Simulation Study** ..... 3995-3998  
 Li, Yacong (*Harbin Institute of Technology*); Wang, Kuanquan (*Harbin Institute of Technology*); Li, Qince (*Harbin Institute of Technology*); Luo, Cunjin\* (*Key Lab of Medical Electrophysiology, Ministry of Education, Ins*); Zhang, Henggui (*Harbin Institute of Technology, School of Computer Science & T*)

FrB12: 10:30-12:00 M6 – Level 3  
**MRI – Cardiac Imaging** (Oral Session)

10:30-10:45 FrB12.1  
**Functional LGE Imaging: Cardiac Phase-Resolved Assessment of Focal Fibrosis** ..... 3999-4003  
 Weingärtner, Sebastian\* (*Stanford University*); Demirel, Omer Burak (*University of Minnesota*); Shenoy, Chetan (*University of Minnesota*); Schad, Lothar R. (*Heidelberg University*); Schulz-Menger, Jeanette (*Charité-Medical University Berlin*); Akcakaya, Mehmet (*University of Minnesota*)

10:45-11:00	FrB12.2
<b>Temporal Resolution Enhancement of Dynamic MRI Sequences within a Motion-Based Framework</b> .....	4004-4007
Makki, Karim* ( <i>IMT Atlantique</i> ); Borotikar, Bhushan ( <i>University of Western Brittany</i> ); Garetier, Marc ( <i>Latim</i> ); Brochard, Sylvain ( <i>CHRU Brest</i> ); Ben Salem, Douraied ( <i>CHRU Brest</i> ); Rousseau, François ( <i>Telecom Bretagne</i> )	
11:00-11:15	FrB12.3
<b>Free-Breathing Three-Dimensional T1 Mapping of the Heart using Subspace-Based Data Acquisition and Image Reconstruction</b> .....	4008-4011
Han, Paul ( <i>Massachusetts General Hospital</i> ); Horng, Debra ( <i>Massachusetts General Hospital, Harvard Medical School</i> ); Marin, Thibault ( <i>Illinois Institute of Technology</i> ); Petibon, Yoann ( <i>Massachusetts General Hospital</i> ); Ouyang, Jinsong ( <i>Massachusetts General Hospital, Harvard Medical School</i> ); El Fakhri, Georges ( <i>Harvard Medical School, Massachusetts General Hospital</i> ); Ma, Chao* ( <i>Harvard Medical School</i> )	
11:15-11:30	FrB12.4
<b>Feasibility of in-Vivo Estimation of the Brachial Artery Area-Pressure Relation from CINE and Real-Time MRI during Upper Arm Cuff Inflation</b> .....	4012-4015
Bresch, Erik* ( <i>Philips</i> ); Bogatu, Laura ( <i>Philips Research, Eindhoven University of Technology</i> ); Smink, Jouke ( <i>Philips</i> ); Muehlsteff, Jens ( <i>Philips</i> )	
11:30-11:45	FrB12.5
<b>A Multi-Channel Deep Learning Approach for Segmentation of the Left Ventricular Endocardium from Cardiac Images</b> .....	4016-4019
Yang, Xulei ( <i>Institute for Infocomm Research, A*STAR</i> ); Tjio, Gabriel ( <i>A*STAR</i> ); Yang, Feng ( <i>Institute of High Performance Computing, A*Star, Singapore</i> ); Ding, Jie ( <i>Agency for Science, Technology &amp; Research (A*STAR)</i> ); Selvaraj, Senthil Kumar ( <i>Institute of High Performance Computing</i> ); Leng, Shuang ( <i>National Heart Centre Singapore</i> ); Zhao, Xiaodan ( <i>National Heart Centre Singapore</i> ); Tan, Ru-San ( <i>National Heart Centre Singapore</i> ); Zhong, Liang* ( <i>National Heart Centre Singapore, Duke-NUS Medical School, Nation</i> ); Su, Yi ( <i>Institute of High Performance Computing</i> )	
11:45-12:00	FrB12.6
<b>Right Ventricular Segmentation from MRI using Deep Convolutional Neural Networks</b> .....	4020-4023
Purmehdi, Hakimeh ( <i>University of Alberta</i> ); Rakkunedeth Hareendranathan, Abhilash ( <i>University of Alberta</i> ); Noga, Michelle ( <i>University of Alberta</i> ); Punithakumar, Kumaradevan* ( <i>University of Alberta</i> )	

FrB13: 10:30-12:00	R2 – Level 3
<b>Human Body Communication (Oral Session)</b>	

10:30-10:45	FrB13.1
<b>Wireless Ultrasonic Communication for Biomedical Injectable Implantable Device</b> .....	4024-4027
Rasool, Banafsaj* ( <i>Newcastle University</i> ); Soltan, Ahmed ( <i>Newcastle University, School of Engineering</i> ); Neasham, Jeff ( <i>Newcastle University</i> ); Degenaar, Patrick ( <i>Newcastle University</i> )	
10:45-11:00	FrB13.2
<b>Development of a High-Hydrous Gel Phantom for Human Body Communication based on Electrical Anisotropy</b> .....	4028-4031
Yamamoto, Takahiko* ( <i>Tokyo University of Science</i> ); Ikeda, Ryutaro ( <i>Tokyo University of Science</i> ); Yamada, Daisuke ( <i>Tokyo University of Science</i> ); Saitoh, Akiyoshi ( <i>Tokyo University of Science</i> ); Koshiji, Kohji ( <i>Tokyo University of Science</i> )	
11:00-11:15	FrB13.3
<b>A Stochastic Channel Model for Ultra Wideband In-Body Communication</b> .....	4032-4035
Brumm, Jan-Christoph* ( <i>Hamburg University of Technology</i> ); Strohm, Hannah ( <i>Hamburg University of Technology</i> ); Bauch, Gerhard ( <i>Hamburg University of Technology</i> )	
11:15-11:30	FrB13.4
<b>A Self-Synchronizing, Low-Power, Low-Complexity Transceiver for Body-Coupled Communication</b> .....	4036-4039
Muzaffar, Shahzad ( <i>Khalifa University</i> ); Elfadel, Ibrahim (Abe)* ( <i>Masdar Institute of Science &amp; Technology</i> )	
11:30-11:45	FrB13.5
<b>A Simulation Platform to Study the Human Body Communication Channel</b> .....	4040-4043
Krhac, Katjana ( <i>University of Zagreb, Faculty of Electrical Engineering &amp; Comp</i> ); Sayrafian, Kamran* ( <i>NIST</i> ); Noetscher, Gregory ( <i>Worcester Polytechnic Institute</i> ); Simunic, Dina ( <i>University of Zagreb</i> )	

11:45-12:00 FrB13.6  
**Investigating on the Interferences on Human Body Communication System Induced by Other Wearable Devices** ..... 4044-4047  
 Mao, Jingna\* (*Chinese Academy of Sciences*)

FrB14: 10:30-12:00 R3 – Level 3  
**Signal Processing and Classification in Sleep Studies (II)** (Oral Session)  
 Chair: Sassi, Roberto (*Università degli Studi di Milano*)

10:30-10:45 FrB14.1  
**Cross-Channel Phase-Amplitude Transfer Entropy Conceptualize Long-Range Transmission in Sleep: A Case Study** ..... 4048-4051  
 Shi, Wenbin\* (*Beijing Institute of Technology*); Yeh, Chien-Hung (*University of Oxford*); An, Jianping (*Beijing Institute of Technology*)

10:45-11:00 FrB14.2  
**Hybrid In-Phase and Continuous Auditory Stimulation Significantly Enhances Slow Wave Activity during Sleep** ..... 4052-4055  
 Garcia-Molina, Gary Nelson\* (*Philips Research North America*); Tsoneva, Tsvetomira (*Philips Research*); Bresch, Erik (*Philips*); Pastoor, Sander (*Philips Research*)

11:00-11:15 FrB14.3  
**Effectiveness of Sleep Apnea Detection based on One vs. Two Symmetrical EEG Channels** ..... 4056-4059  
 Prucnal, Monika A.\* (*Wroclaw University of Science & Technology*); Polak, Adam G. (*Wroclaw University of Science & Technology*)

11:15-11:30 FrB14.4  
**EEG-Based Classification of Microsleep by Means of Feature Selection: An Application in Aviation** ..... 4060-4063  
 Guragain, Bijay (*University of North Dakota*); Rad, Ali Bahrami (*Aalto University*); Wang, Chunwu (*Jilin Normal University*); Verma, Ajay Kumar (*University of North Dakota*); Archer, Lewis (*University of North Dakota*); Wilson, Nicholas (*University of North Dakota*); Tavakolian, Kouhyar\* (*University of North Dakota*)

11:30-11:45 FrB14.5  
**Advanced Network Neuroscience Approaches in Sleep Neurobiology on Extreme Environments** ..... 4064-4067  
 Frantidis, Christos\* (*Aristotle University of Thessaloniki*); Christiane, Nday (*University*); Chriskos, Panteleimon (*Aristotle University of Thessaloniki*); Gkivogkli, Polyxeni (*Aristotle University of Thessaloniki*); Bamidis, Panagiotis (*Aristotle University of Thessaloniki*); Kourtidou-Papadeli, Chrysoula (*Greek Aerospace Medical Association*)

FrB15: 10:30-12:00 M3 – Level 3  
**Image Classification** (Oral Session)  
 Chair: Jiang, Xiaoyi (*University of Münster*)

10:30-10:45 FrB15.1  
**New Methods for Morphological Erythrocytes Classification** ..... 4068-4071  
 Herold-Garcia, Silena (*Universidad de Oriente*); Fernandes, Leandro A. F.\* (*Universidade Federal Fluminense*)

10:45-11:00 FrB15.2  
**A Novel Real-Time Automatic Angioectasia Detection Method in Wireless Capsule Endoscopy Video Feed** ..... 4072-4075  
 Vezakis, Ioannis\* (*National Technical University of Athens*); Toumpaniaris, Petros (*National Technical University of Athens*); Polydorou, Andreas (*National & Kapodistrian University of Athens, Medical School*); Koutsouris, Dimitrios (*Biomedical Engineering Laboratory, School of Electrical & Comp*)

11:00-11:15 FrB15.3  
**Deep Feature Learning from a Hospital-Scale Chest X-Ray Dataset with Application to TB Detection on a Small-Scale Dataset** ..... 4076-4079  
 Gozes, Ophir (*Tel Aviv University*); Greenspan, Hayit K.\* (*Tel Aviv University*)

11:15-11:30	FrB15.4
<b>Classification and Assessment of Hand Arthritis Stage using Support Vector Machine</b> .....	4080-4083
Akhbardeh, Farhad* ( <i>University</i> ); Vasefi, Fartash ( <i>Simon Fraser University</i> ); Mackinnon, Nick ( <i>etreatMD</i> ); Amini, Mohammad ( <i>eTreat</i> ); Akhbardeh, Alireza ( <i>Johns Hopkins University</i> ); Tavakolian, Kouhyar ( <i>Educational</i> )	
11:30-11:45	FrB15.5
<b>Diagnostic and Prognostic Classification of Brain Disorders using Residual Learning on Structural MRI Data</b> .....	4084-4088
Abrol, Anees* ( <i>Georgia State University, The Mind Research Network</i> ); Rokham, Hooman ( <i>University of New Mexico</i> ); Calhoun, Vince ( <i>The Mind Research Network/University of New Mexico</i> )	
11:45-12:00	FrB15.6
<b>Predicting Male vs. Female from Task-fMRI Brain Connectivity</b> .....	4089-4092
Sen, Bhaskar ( <i>University of Minnesota</i> ); Parhi, Keshab* ( <i>University of Minnesota</i> )	

FrB16: 10:30-12:00	M5 – Level 3
<b>Modeling and Simulation in Musculoskeletal Biomechanics (Oral Session)</b>	
<b>Co-Chair:</b> Fey, Nicholas ( <i>The University of Texas at Dallas</i> )	

10:30-10:45	FrB16.1
<b>Simulation of Exoskeleton Alignment and Its Effect on the Knee Extensor and Flexor Muscles</b> .....	4093-4096
MajidiRad, AmirHossein ( <i>Wichita State University</i> ); Yihun, Yimesker ( <i>Wichita State University</i> ); Desai, Jaydip* ( <i>Wichita State University</i> ); Hakansson, Nils A. ( <i>Wichita State University</i> )	
10:45-11:00	FrB16.2
<b>Simple Spline Representation for Identifying Sit-to-Stand Strategies</b> .....	4097-4103
Matthew, Robert Peter* ( <i>UC Berkeley</i> ); Seko, Sarah ( <i>UC Berkeley</i> ); Bailey, Jeannie ( <i>University of California at San Francisco</i> ); Bajcsy, Ruzena ( <i>UC Berkeley, CITRIS</i> ); Lotz, Jeffrey ( <i>Orthopaedic Surgery, University of California at Berkeley</i> )	
11:00-11:15	FrB16.3
<b>Model-Based Estimation of Ankle Joint Stiffness during Dynamic Tasks: A Validation-Based Approach</b> .....	4104-4107
Cop, Christopher P.* ( <i>University of Twente</i> ); Durandau, Guillaume ( <i>University of Twente</i> ); Moya Esteban, Alejandro ( <i>University of Twente</i> ); van 't Veld, Ronald C. ( <i>University of Twente</i> ); Schouten, Alfred C. ( <i>Delft University of Technology</i> ); Sartori, Massimo ( <i>University of Twente</i> )	
11:15-11:30	FrB16.4
<b>Musculoskeletal Modeling to Predict and Reduce Anterior Cruciate Ligament Injury during Single Leg Drop Jump Activity: Synergistic Muscle Co-Activation Approach</b> .....	4108-4112
Mazumder, Oishee* ( <i>Tata Consultancy Services</i> ); Chakravarty, Kingshuk ( <i>Tata Consultancy Services Ltd.</i> ); Chatterjee, Debatri ( <i>TCS Innovation Lab</i> ); Sinha, Aniruddha ( <i>Tata Consultancy Services Ltd.</i> ); Poduval, Murali ( <i>Tata Consultancy Services</i> )	
11:30-11:45	FrB16.5
<b>Description of Postural Strategies through a Variable Structure Control</b> .....	4113-4116
Tigrini, Andrea* ( <i>Università Politecnica delle Marche</i> ); Mengarelli, Alessandro ( <i>Università Politecnica delle Marche</i> ); Cardarelli, Stefano ( <i>Università Politecnica delle Marche</i> ); Strazza, Annachiara ( <i>Università Politecnica delle Marche</i> ); Di Nardo, Francesco ( <i>Polytechnic University of Marche</i> ); Fioretti, Sandro ( <i>Università Politecnica delle Marche</i> ); Verdini, Federica ( <i>Università Politecnica delle Marche</i> )	
11:45-12:00	FrB16.6
<b>Experimental Estimation of a Second Order, Double Inverted Pendulum Parameters for the Study of Human Balancing</b> .....	4117-4120
Cerdeña-Lugo, Angel ( <i>Universidad Autónoma de San Luis Potosí</i> ); Gonzalez, Alejandro* ( <i>CONACYT-Universidad Autónoma de San Luis Potosí</i> ); Cárdenas, Antonio ( <i>Universidad Autónoma de San Luis Potosí</i> ); Piovesan, Davide ( <i>Gannon University</i> )	

FrB17: 10:30-12:00	R12 – Level 3
<b>Empowering Individual Healthcare Decisions through Technology</b> (Oral Session)	
<b>Chair:</b> Tridandapani, Srini ( <i>Emory University</i> )	
<b>Co-Chair:</b> Pino, Esteban J. ( <i>Universidad de Concepcion</i> )	

10:30-10:45 FrB17.1  
**New Wearable Heart Rate Monitor for Contact Sports and Its Potential to Change Training Load Management** ..... 4121-4124

Higuchi, Yuichi\* (*NTT Device Innovation Center, NTT Corporation*); Saijo, Naoki (*NTT Communication Science Laboratories*); Ishihara, Takako (*NTT Device Innovation Center, NTT Corporation*); Usui, Tomohiro (*Waseda University Rugby Football club*); Murakami, Takahiro (*Waseda University Rugby Football club*); Miyata, Makoto (*EUPHORIA*); Ono, Kazuyoshi (*Nippon Telegraph & Telephone Corporation*); Usui, Souichiro (*Nippon Telegraph & Telephone Corporation*); Togo, Hiroyoshi (*NTT Device Innovation Center*)

10:45-11:00 FrB17.2  
**Suitability of an Inter-Burst Detection Method for Grading Hypoxic-Ischemic Encephalopathy in Newborn EEG** ..... 4125-4128

Raurale, Sumit Arun\* (*University College Cork*); Nalband, Saif (*University College Cork*); Boylan, Geraldine (*University College Cork*); Lightbody, Gordon (*University College Cork*); O'Toole, John M. (*University College Cork*)

11:00-11:15 FrB17.3  
**The Effect of Landmark Variability on Automated PAP Mask Sizing** ..... 4129-4132

Johnston, Benjamin\* (*University of Sydney*); de Chazal, Philip (*University of Sydney*)

11:15-11:30 FrB17.4  
**In-Silico Study to Develop Continuous Glucose Monitoring based Algorithm to Trigger Effective Preventive Hypotreatments in the Daily Management of Type 1 Diabetes** ..... 4133-4136

Camerlingo, Nunzio\* (*Dept. of Information Engineering – University of Padova*); Vettoretti, Martina (*University of Padova*); Del Favero, Simone (*University of Padova, Padova, Italy*); Cappon, Giacomo (*University of Padova*); Sparacino, Giovanni (*University of Padova*); Facchinetti, Andrea (*University of Padova*)

11:30-11:45 FrB17.5  
**Three-Dimensional Hollow Elastic Models for Intracranial Aneurysm Clipping Election – A Case Study** . 4137-4140

Leal, André Giacomelli (*Graduate Program on Health Technology (PPGTS), Pontifical Cathol*); Mori, Ivy Tiemi (*Federal University of Technology Parana*); Nohama, Percy (*Pontificia Universidade Católica do Paraná*); Abreu de Souza, Mauren\* (*Pontifical Catholic University of Paraná – PUCPR*)

11:45-12:00 FrB17.6  
**How Long after Compliance Do You Benefit from Regulation? An Empirical Study on Diagnostic Imaging Equipment Requirements** ..... 4141-4147

Duarte, Carlos Henrique\* (*Brazilian Development Bank (BNDES)*)

FrB18: 10:30-12:00	R13 – Level 3
<b>Neural Signal Processing</b> (Oral Session)	
<b>Chair:</b> James, Christopher ( <i>University of Warwick</i> )	
<b>Co-Chair:</b> Al-Jumaily, Adel ( <i>University of Technology Sydney</i> )	

10:30-10:45 FrB18.1  
**Real-Time Tracking of Magnetoencephalographic Neuromarkers during a Dynamic Attention-Switching Task** ..... 4148-4151

Presacco, Alessandro\* (*University of Maryland, College Park*); Miran, Sina (*University of Maryland, College Park*); Babadi, Behtash (*University of Maryland*); Simon, Jonathan Z. (*University of Maryland, College Park*)

10:45-11:00 FrB18.2  
**Deep Learning with Convolutional Neural Network for Detecting Microsleep States from EEG: A Comparison between the Oversampling Technique and Cost-Based Learning** ..... 4152-4155

Krishnamoorthy, Venkatasubramanian\* (*University of Otago*); Shoorangiz, Reza (*University of Canterbury*); Weddell, Stephen J. (*University of Canterbury*); Beckert, Lutz (*University of Otago*); Jones, Richard D. (*New Zealand Brain Research Institute*)



11:00-11:15	FrB18.3
<b>Analysis of the Inter-Joints Synergistic Patterns of Limbs in Infant Crawling</b> .....	4156-4159
Zhang, Li ( <i>Chongqing University</i> ); Deng, Chunfeng ( <i>Chongqing University</i> ); Hou, Wensheng* ( <i>Bioengineering Inst of Chongqing Univ</i> )	
11:15-11:30	FrB18.4
<b>3D Convolutional Neural Networks for Event-Related Potential Detection</b> .....	4160-4163
Cecotti, Hubert* ( <i>California State University Fresno</i> ); Jha, Ganesh ( <i>Fresno State</i> )	
11:30-11:45	FrB18.5
<b>Detection of Subthalamic Nucleus using Time-Frequency Features of Microelectrode Recordings and Random Forest Classifier</b> .....	4164-4167
Periyamolapalayam Allimuthu, Karthick* ( <i>National Institute of Technology Trichirappalli</i> ); Wan, Kai Rui ( <i>National Neuroscience Institute</i> ); Rajamanickam, Yuvaraj ( <i>Nanyang Technological University</i> ); See, Angela An Qi ( <i>National Neuroscience Institute Singapore</i> ); King, Nicolas Kon Kam ( <i>National Neuroscience Institute Singapore</i> ); Dauwels, Justin ( <i>NTU</i> )	
11:45-12:00	FrB18.6
<b>Coding of Electrical Stimulation Patterns for Binaural Sound Coding Strategies for Cochlear Implants</b> .	4168-4172
Hinrichs, Reemt* ( <i>Universität Hannover</i> ); Gajecki, Tom ( <i>Medical University Hannover</i> ); Ostermann, Jörn ( <i>Universität Hannover</i> ); Nogueira, Waldo ( <i>Medical University Hannover</i> )	

FrB20: 10:30-12:00	R5 – Level 3
<b>Education and Simulation</b> (Oral Session)	
<b>Chair:</b> Kant Kumar, Dinesh ( <i>RMIT University</i> )	
<b>Co-Chair:</b> Ricci, Serena ( <i>University of Genova</i> )	

10:30-10:45	FrB20.1
<b>Evaluation of a Developed Multichannel R-R Interval Telemeter and Garment-Type Electrode</b> .....	4173-4176
Chihara, Yuma* ( <i>Kumamoto University</i> ); Yamakawa, Toshitaka ( <i>Kumamoto University</i> )	
10:45-11:00	FrB20.2
<b>Construction of Automatic Scoring System to Support Objective Evaluation of Clinical Skills in Medical Education</b> .....	4177-4181
Sugamiya, Yurina* ( <i>Waseda University</i> ); Otani, Takuya ( <i>Waseda University</i> ); Nakadate, Ryu ( <i>Kyushu University</i> ); Takanishi, Atsuo ( <i>Waseda University</i> )	
11:00-11:15	FrB20.3
<b>Design and Implementation of a Low-Cost Birth Simulator</b> .....	4182-4185
Ricci, Serena* ( <i>University of Genova</i> ); Marcutti, Simone ( <i>DIBRIS University of Genova</i> ); Pani, Andrea ( <i>DIBRIS University of Genova</i> ); Cordone, Massimo ( <i>SIMAV, University of Genova</i> ); Torre, Giancarlo ( <i>SIMAV, University of Genova</i> ); Vercelli, Gianni ( <i>DIBRIS University of Genova</i> ); Casadio, Maura ( <i>University of Genova</i> )	
11:15-11:30	FrB20.4
<b>Conceptualization of an ICU Infrastructure for Simulation based Education in Medical Engineering and EHealth</b> .....	4186-4189
Forjan, Mathias* ( <i>University of Applied Sciences Technikum Wien</i> ); David, Veronika ( <i>University of Applied Sciences Technikum Wien</i> ); Wagner, Michael ( <i>Pediatric Intensive Care &amp; Neuropediatrics, Dept. of Pedi</i> ); Dolesch, Lukas ( <i>gsm Gesellschaft für Sicherheit in der Medizintechnik GmbH</i> ); Lechner, Manuel ( <i>gsm Gesellschaft für Sicherheit in der Medizintechnik GmbH</i> ); Saueremann, Stefan ( <i>University of Applied Sciences Technikum Wien</i> )	
11:30-11:45	FrB20.5
<b>Comparison of Instructor and Student-Based Assessment in Biomedical Engineering Project based Learning using ANOVA</b> .....	4190-4193
Setiawan, Agung Wahyu* ( <i>School of Electrical Engineering &amp; Informatics, Institut Tekno</i> )	
11:45-12:00	FrB20.6
<b>Teaching While Surrounded by Smartphones</b> .....	4194-4197
Kant Kumar, Dinesh* ( <i>RMIT University</i> ); Radcliffe, Pj ( <i>RMIT University</i> )	

FrC01: 14:00-15:30 Hall A6+A7 – Level 1  
**Neurological Disorders (III) (Oral Session)**  
**Chair:** Bianchi, Anna Maria (*Politecnico di Milano*)

14:00-14:15 FrC01.1

**A Functional Analysis-Based Approach to Quantify Upper Limb Impairment Level in Chronic Stroke Patients: A Pilot Study** ..... 4198-4204  
Schwarz, Anne\* (*University of Zurich*); Averta, Giuseppe (*University of Pisa*); Veerbeek, Janne M. (*University of Zurich*); Luft, Andreas (*University of Zurich*); Held, Jeremia P.O. (*University of Zurich*); Valenza, Gaetano (*University of Pisa*); Bicchi, Antonio (*University of Pisa*); Bianchi, Matteo (*University of Pisa*)

14:15-14:30 FrC01.2

**Measurement of Interhemispheric Correlation Coefficient in Rodent Model of Middle Cerebral Artery Occlusion using Near Infrared Spectroscopy** ..... 4205-4208  
Wu, Chun-Wei (*National Cheng Kung University*); Yuen, Chun-Man (*Division of Neurosurgery, Dept. of Surgery, Kaohsiung Chang*); Shao, Wen-Chen (*Dept. of Biomedical Engineering, National Cheng Kung Univer*); Lee, Hsiao-Yu (*Dept. of Digital Media Design, Far East University*); Chung, Yueh-Jen (*Dept. of Medicine, China Medical University*); Chen, Jia-Jin Jason\* (*Dept. of Biomedical Engineering, National Cheng Kung Univer*)

14:30-14:45 FrC01.3

**Neuroprotection of Glibenclamide against Brain Injury after Cardiac Arrest via Modulation of NLRP3 Inflammasome** ..... 4209-4212  
Yang, Xiuli (*University of Maryland School of Medicine*); Wang, Zhuoran (*University of Maryland School of Medicine*); Jia, Xiaofeng\* (*University of Maryland School of Medicine, Johns Hopkins Univer*)

14:45-15:00 FrC01.4

**Intracerebroventricular Administration of Neural Stem Cells after Cardiac Arrest** ..... 4213-4216  
Wang, Zhuoran (*University of Maryland School of Medicine*); Yang, Xiuli (*University of Maryland School of Medicine*); He, Junyun (*University of Maryland*); Du, Jian (*University of Maryland School of Medicine*); Liu, Shaolin (*Howard University*); Jia, Xiaofeng\* (*University of Maryland School of Medicine, Johns Hopkins Univer*)

15:00-15:15 FrC01.5

**Exploring Characteristic Features in Gait Patterns for Predicting Multiple Sclerosis** ..... 4217-4220  
Kaur, Rachneet (*University of Illinois at Urbana Champaign*); Menon, Sanjana (*University of Illinois at Urbana Champaign*); Zhang, Xiaomiao (*University of Illinois at Urbana Champaign*); Sowers, Richard (*University of Illinois at Urbana-Champaign*); Hernandez, Manuel\* (*University of Illinois*)

15:15-15:30 FrC01.6

**Grouping Neuronal Spiking Patterns in the Subthalamic Nucleus of Parkinsonian Patients** ..... 4221-4224  
Kaku, Heet\* (*University of Houston*); Ozturk, Musa (*University of Houston*); Viswanathan, Ashwin (*Dept. of Neurology, Baylor College of Medicine*); Shahed, Joohee (*Dept. of Neurology, Baylor College of Medicine*); Sheth, Sameer (*Columbia University Medical Center*); Ince, Nuri Firat (*University of Houston*)

FrC02: 14:00-15:30 Hall A8 – Level 1  
**Signal Processing and Classification for Wearable Systems and Smartphones (Oral Session)**  
**Chair:** Mainardi, Luca (*Politecnico di Milano*)  
**Co-Chair:** Kyritsis, Konstantinos (*Aristotle University of Thessaloniki*)

14:00-14:15 FrC02.1

**Automatic Stroke Screening on Mobile Application: Features of Gyroscope and Accelerometer for Arm Factor in FAST** ..... 4225-4228  
Phienphanich, Phongphan (*Thammasat University*); Tankongchamruskul, Nattakit (*Ruamrudee International School*); Akarathanawat, Wasan (*Chulalongkorn University*); Chutinet, Aurauma (*Chulalongkorn University*); Nimnual, Rossukon (*Chulalongkorn University*); Tantibundhit, Charturong\* (*Thammasat University*); Charnnarong Suwanwela, Nijasri (*Chulalongkorn University*)

14:15-14:30 FrC02.2

**Detecting Meals in the Wild using the Inertial Data of a Typical Smartwatch** ..... 4229-4232  
Kyritsis, Konstantinos\* (*Aristotle University of Thessaloniki*); Diou, Christos (*Aristotle University of Thessaloniki*); Delopoulos, Anastasios (*Aristotle University of Thessaloniki*)

14:30-14:45	FrC02.3
<b>Smart Phone based Snoring Sound Analysis to Identify Upper Airway Obstructions</b> .....	4233-4236
Markandeya, Mrunal* ( <i>University of Queensland</i> ); Abeyratne, Udantha R ( <i>University of Queensland</i> )	
14:45-15:00	FrC02.4
<b>Smartphone PPG: Signal Processing, Quality Assessment, and Impact on HRV Parameters</b> .....	4237-4240
Tyapochkin, Konstantin* ( <i>Welltory</i> ); Smorodnikova, Evgeniya ( <i>Welltory</i> ); Pravdin, Pavel ( <i>Welltory</i> )	
15:00-15:15	FrC02.5
<b>BioTranslator: Inferring R-Peaks from Ambulatory Wrist-Worn PPG Signal</b> .....	4241-4245
Everson, Luke ( <i>University of Minnesota</i> ); Biswas, Dwaipayan* ( <i>imec</i> ); Verhoef, Bram-Ernst ( <i>imec</i> ); Kim, Chris H. ( <i>University of Minnesota</i> ); Van Hoof, Chris ( <i>imec</i> ); Konijnenburg, Mario ( <i>imec</i> ); Van Helleputte, Nick ( <i>imec</i> )	
15:15-15:30	FrC02.6
<b>Freezing-of-Gait Detection using Wearable Sensor Technology and Possibilistic K-Nearest-Neighbor Algorithm</b> .....	4246-4249
Tahafchi, Parisa ( <i>University of Florida</i> ); Judy, Jack* ( <i>University of Florida</i> )	

FrC05: 14:00-15:30	Hall A2 – Level 1
<b>Signal Processing and Classification of Cardiovascular Signals</b> (Oral Session)	
<b>Chair:</b> Hernández, Alfredo I. ( <i>Univ. of Rennes 1 and INSERM U199</i> )	
<b>Co-Chair:</b> Magenes, Giovanni ( <i>University of Pavia</i> )	

14:00-14:15	FrC05.1
<b>Quantification of Spatial Heterogeneity of Ventricular Repolarization during Early-Stage Cardiac Ischemia Induced by Coronary Angioplasty</b> .....	4250-4253
Rivolta, Massimo Walter* ( <i>Università degli Studi di Milano</i> ); Rocchetta, Filippo ( <i>Università degli Studi di Milano</i> ); Mainardi, Luca ( <i>Politecnico di Milano</i> ); Lombardi, Federico ( <i>Università degli Studi di Milano &amp; Fondazione IRCCS Ca' Granda</i> ); Sassi, Roberto ( <i>Università degli Studi di Milano</i> )	
14:15-14:30	FrC05.2
<b>Beamforming-Inspired Spatial Filtering Technique for Intracardiac Electrograms</b> .....	4254-4257
Saha, Simanto* ( <i>The University of Adelaide</i> ); Linz, Dominik ( <i>The Centre for Heart Rhythm Disorders, The University of Adelaide</i> ); Sanders, Prashanthan ( <i>Centre for Heart Rhythm Disorders, South Australian Health &amp; M</i> ); Baumert, Mathias ( <i>The University of Adelaide</i> )	
14:30-14:45	FrC05.3
<b>A New Frequency Domain Measure of Causality based on Partial Spectral Decomposition of Autoregressive Processes and Its Application to Cardiovascular Interactions</b> .....	4258-4261
Faes, Luca* ( <i>University of Palermo</i> ); Krohova, Jana ( <i>Comenius University in Bratislava</i> ); Pernice, Riccardo ( <i>University of Palermo</i> ); Busacca, Alessandro ( <i>Università degli Studi di Palermo</i> ); Javorka, Michal ( <i>Comenius University, Jessenius Faculty of Medicine</i> )	
14:45-15:00	FrC05.4
<b>Cardiovascular Disease Diagnosis using Cross-Domain Transfer Learning</b> .....	4262-4265
Tadesse, Girmaw Abebe* ( <i>University of Oxford</i> ); Zhu, Tingting ( <i>University of Oxford</i> ); Liu, Yong ( <i>Guangdong Academy of Medical Sciences</i> ); Zhou, Yingling ( <i>Guangdong Provincial People's Hospital</i> ); Chen, Jiyan ( <i>Guangdong provincial Key Laboratory of Coronary Heart Disease Pr</i> ); Tian, Maoyi ( <i>The George Institute for Global Health</i> ); Clifton, David ( <i>University of Oxford</i> )	
15:00-15:15	FrC05.5
<b>A Novel Method for Calibration-Based Cuff-Less Blood Pressure Estimation</b> .....	4266-4269
Li, Zhenqi* ( <i>Guangzhou Shiyuan Electronics Co., Ltd</i> ); Yan, Cong ( <i>Guangzhou Shiyuan Electronics Co., Ltd</i> ); Zhao, Wei ( <i>Guangzhou Shiyuan Electronics Co., Ltd</i> ); Hu, Jing ( <i>Guangzhou Shiyuan Electronic Technology Co., Ltd.</i> ); Jia, Dongya ( <i>CVTE, Guangdong Province, China</i> ); Wang, Hongmei ( <i>Guangzhou Shiyuan Electronics Co., Ltd</i> ); You, Tianyuan ( <i>Guangzhou Shiyuan Electronics Co., Ltd.</i> )	

15:15-15:30 FrC05.6  
**Pulse Wave Curve Fitting to Heterogeneous Noninvasive Plethysmographic Signals for Blood Pressure Tracking** ..... 4270-4273  
 Pielmus, Alexandru Gabriel\* (*Technische Universität Berlin*); Klum, Michael (*Technische Universität Berlin*); Tigges, Timo (*Technical University Berlin*); Osterland, Dennis (*Technische Universität Berlin*); Orglmeister, Reinhold (*Technische Universität Berlin*)

FrC08: 14:00-15:30 M8 – Level 3  
**Health Informatics – eHealth (Oral Session)**  
**Chair:** Vanrumste, Bart (*Katholieke Universiteit Leuven*)

14:00-14:15 FrC08.1  
**PREgDICT: Early Prediction of Gestational Weight Gain for Pregnancy Care** ..... 4274-4278  
 Puri, Chetanya\* (*Marie Curie Fellow, Dept. of Electrical Engineering, KU Leu*); Kooijman, Gerben (*Philips Research*); Masculo, Felipe (*Philips Research*); Van Sambeek, Shannon (*Philips Research*); Den Boer, Sebastiaan (*Philips Research*); Luca, Stijn (*KU Leuven Technology Campus Geel, AdvlSe*); Vanrumste, Bart (*Katholieke Universiteit Leuven*)

14:15-14:30 FrC08.2  
**Mobile Apps for Post Traumatic Stress Disorder** ..... 4279-4282  
 Drissi, Nidal (*ENSIAS, Mohammed V University*); Ouhbi, Sofia\* (*UAE University*); Janati Idrissi, Mohammed Abdou (*ENSIAS, Mohammed V University*); Ghogho, Mounir (*Université internationale de Rabat (UIR)*)

14:30-14:45 FrC08.3  
**Recent Trends in Diabetes-Related Consumer Health Information Technology Research** ..... 4283-4288  
 Claiborne, John\* (*VCU School of Medicine*); Wellbeloved-Stone, Claire (*University of Virginia*); Valdez, Rupa Sheth (*University of Virginia*)

14:45-15:00 FrC08.4  
**MHealth4Afrika – Co-Designing a Standards based Solution for use in Resource Constrained Primary Healthcare Facilities** ..... 4289-4292  
 Cunningham, Paul M.\* (*IST-Africa Institute*); Cunningham, Miriam (*IST-Africa Institute*)

15:00-15:15 FrC08.5  
**Detecting Undiagnosed Diabetes: Proof-of-Concept based on the Health-Information Exchange System of the Veneto Region (North-East Italy)** ..... 4293-4296  
 Longato, Enrico\* (*University of Padova*); Di Camillo, Barbara (*University of Padova*); Sparacino, Giovanni (*University of Padova*); Saccavini, Claudio (*Arsenà.IT, Veneto's Research Centre for eHealth Innovation*); Cocchiglia, Arianna (*Arsenà.IT, Veneto's Research Centre for eHealth Innovation*); Tramontan, Lara (*Arsenà.IT*); Fadini, Gian Paolo (*University of Padova*)

15:15-15:30 FrC08.6  
**A Portable Sensor Sheet for Measuring the Eating Pace in Meal Assistance Care** ..... 4297-4300  
 Watanabe, Takeharu\* (*University of Tsukuba*); Shimokakimoto, Tomoya (*University of Tsukuba*); Jayatilake, Dushyantha (*PLIMES Inc*); Inoue, Makoto (*Niigata University*); Suzuki, Kenji (*University of Tsukuba*)

FrC10: 14:00-15:30 M2 – Level 3  
**Sensor Informatics – Sensors and Sensor Systems (Oral Session)**  
**Chair:** Chon, Ki (*University of Connecticut*)

14:00-14:15 FrC10.1  
**System for Monitoring User Engagement with Personalized Medical Devices to Improve use and Health Outcomes** ..... 4301-4305  
 Clements, Eileen\* (*University of Texas at Arlington*); Roane, Brandy (*University of North Texas Health Science Center*); Alshabrawy, Hesham (*University of Texas at Arlington*); Gopalakrishnan, Aishwarya (*University of Texas at Arlington*); Balaji, Sripathy (*University of Texas at Arlington*)

14:15-14:30	FrC10.2
<b>Smartwatch based Atrial Fibrillation Detection from Photoplethysmography Signals</b> .....	4306-4309
Bashar, Syed Khairul* ( <i>University of Connecticut</i> ); Han, Dong ( <i>University of Connecticut</i> ); Ding, Eric ( <i>University of Massachusetts Medical School</i> ); Whitcomb, Cody ( <i>University of Massachusetts Medical School</i> ); McManus, David ( <i>University of Massachusetts Medical Center</i> ); Chon, Ki ( <i>University of Connecticut</i> )	
14:30-14:45	FrC10.3
<b>Smartwatch PPG Peak Detection Method for Sinus Rhythm and Cardiac Arrhythmia</b> .....	4310-4313
Han, Dong* ( <i>University of Connecticut</i> ); Bashar, Syed Khairul ( <i>University of Connecticut</i> ); Lázaro, Jesús ( <i>University of Zaragoza</i> ); Ding, Eric ( <i>University of Massachusetts Medical School</i> ); Whitcomb, Cody ( <i>University of Massachusetts Medical School</i> ); McManus, David ( <i>University of Massachusetts Medical Center</i> ); Chon, Ki ( <i>University of Connecticut</i> )	
14:45-15:00	FrC10.4
<b>Feasibility of Long-Term Daily Life Electrocardiogram Monitoring based on a Wearable Armband Device</b> .....	4314-4317
Lázaro, Jesús* ( <i>University of Zaragoza</i> ); Reljin, Natasa ( <i>University of Connecticut</i> ); Noh, Yeon Sik ( <i>University of Massachusetts Amherst</i> ); Laguna, Pablo ( <i>Zaragoza University &amp; CIBER-BBN</i> ); Chon, Ki ( <i>University of Connecticut</i> )	
15:00-15:15	FrC10.5
<b>Wearable Sensors for Prodromal Motor Assessment of Parkinson's Disease using Supervised Learning</b> .....	4318-4321
Rovini, Erika* ( <i>Scuola Superiore Sant'Anna</i> ); Moschetti, Alessandra ( <i>Scuola Superiore Sant'Anna</i> ); Fiorini, Laura ( <i>Scuola Superiore Sant'Anna</i> ); Esposito, Dario ( <i>Scuola Superiore Sant'Anna</i> ); Maremmani, Carlo ( <i>Azienda USL Toscana Nord-Ovest</i> ); Cavallo, Filippo ( <i>Scuola Superiore Sant'Anna</i> )	
15:15-15:30	FrC10.6
<b>Automatic Detection of Atrial Fibrillation in Ballistocardiogram (BCG) using Wavelet Features and Machine Learning</b> .....	4322-4325
Yu, Bin* ( <i>Eindhoven University of Technology</i> ); Zhang, Biyong ( <i>BOBO Technology Ltd.</i> ); Xu, Lisheng ( <i>Northeastern University</i> ); Fang, Peng ( <i>Shenzhen Institutes of Advanced Technology, Chinese Academy of S</i> ); Hu, Jun ( <i>Eindhoven University of Technology</i> )	

FrC12: 14:00-15:30	M6 – Level 3
<b>MRI – Neuroimaging</b> (Oral Session)	
<b>Chair:</b> Chan, Kevin C. ( <i>New York University</i> )	
<b>Co-Chair:</b> Barbieri, Riccardo ( <i>Politecnico di Milano</i> )	

14:00-14:15	FrC12.1
<b>Perfusion Quantification using Arterial Spin Labeling Magnetic Resonance Imaging after Revascularization for Moyamoya Disease</b> .....	4326-4329
Li, Liang ( <i>Dept. of Electronic &amp; Information Engineering, Harbin Ins</i> ); Lei, Yu ( <i>Dept. of Neurosurgery, Shanghai HuaShan Hospital, Shanghai,</i> ); Su, JiaBin ( <i>Dept. of Neurosurgery, Shanghai HuaShan Hospital, Shanghai,</i> ); PengZheng, Zhou ( <i>Dept. of Electronic &amp; Information Engineering, Harbin Ins</i> ); Lv, Haiyan ( <i>Mindsgo Life Science Shenzhen Ltd.</i> ); Wang, Tong ( <i>Harbin Institute of Technology, Shenzhen</i> ); Ma, Ting* ( <i>Harbin Institute of Technology at Shenzhen</i> )	
14:15-14:30	FrC12.2
<b>Resting State Neural Correlates of Cardiac Sympathetic Dynamics in Healthy Subjects</b> .....	4330-4333
Valenza, Gaetano* ( <i>University of Pisa</i> ); Duggento, Andrea ( <i>University of Rome "Tor Vergata"</i> ); Passamonti, Luca ( <i>University of Cambridge</i> ); Toschi, Nicola ( <i>University of Rome "Tor Vergata", Faculty of Medicine</i> ); Barbieri, Riccardo ( <i>Politecnico di Milano</i> )	
14:30-14:45	FrC12.3
<b>Resting-State Functional Connectivity in Popular Targets for Deep Brain Stimulation in the Treatment of Major Depression: An Application of a Graph Theory</b> .....	4334-4337
Amiri, Saba ( <i>Tehran University of Medical Sciences</i> ); Arbabi, Mohammad ( <i>TUMS</i> ); Kazemi, Kamran ( <i>University of Picardie Jules Verne</i> ); Parvaresh-Rizi, Mansor ( <i>Iran University of Medical Sciences</i> ); Mirbagheri, Mehdi* ( <i>Northwestern University/TUMS</i> )	

14:45-15:00 FrC12.4  
**Disruption of Brain Network Organization in Primary Open Angle Glaucoma** ..... 4338-4341  
Minosse, Silvia\* (*University of Rome "Tor Vergata", Faculty of Medicine*); Garaci, Francesco (*University of Rome Tor Vergata*); Martucci, Alessio (*University of Rome "Tor Vergata"*); Lanzafame, Simona (*University of Rome "Tor Vergata"*); Di Giuliano, Francesca (*University of Rome Tor Vergata*); Picchi, Eliseo (*University of Rome Tor Vergata*); Cesareo, Massimo (*University of Rome "Tor Vergata"*); Mancino, Raffaele (*University of Rome "Tor Vergata"*); Guerrisi, Maria (*University of Rome "Tor Vergata"*); Floris, Roberto (*University of Rome Tor Vergata*); Nucci, Carlo (*University of Rome "Tor Vergata"*); Toschi, Nicola (*University of Rome "Tor Vergata", Faculty of Medicine*)

15:00-15:15 FrC12.5  
**Reduced Betweenness Centrality of a Sensory-Motor Vestibular Network in Subclinical Agoraphobia** ... 4342-4345  
Indovina, Iole (*Laboratory of Neuromotor Physiology, IRCCS Santa Lucia Foundatio*); Conti, Allegra\* (*IRCCS Santa Lucia Foundation*); Lacquaniti, Francesco (*Dept. of Neuromotor Physiology Fondazione Santa Lucia IRCCS*); Staab, Jeffrey P. (*Dept.s of Psychiatry & Psychology & Otorhinolaryngology*); Passamonti, Luca (*University of Cambridge*); Toschi, Nicola (*University of Rome "Tor Vergata", Faculty of Medicine*)

15:15-15:30 FrC12.6  
**Abnormal Interhemispheric Functional Interactions in Drug-Naïve Adult-Onset First Episode Psychosis Patients** ..... 4346-4349  
Wang, Danni (*Shanghai Jiao Tong University*); Zhuo, Kaiming (*Shanghai Mental Health Center, School of Medicine, Shanghai Jiao*); Zhu, Yongjun (*Shanghai Mental Health Center, School of Medicine, Shanghai Jiao*); Liu, Dengtang (*Shanghai Mental Health Center, School of Medicine, Shanghai Jiao*); Li, Yao\* (*Shanghai Jiao Tong University*)

FrC13: 14:00-15:30 R2 – Level 3  
**Implantable Sensors** (Oral Session)  
**Chair:** Hoffmann, Klaus-Peter (*Fraunhofer Institut für Biomedizinische Technik*)

14:00-14:15 FrC13.1  
**Micro Electrode Arrays Fabrication using Flexible Perfluoroalkoxy Alkane Films** ..... 4350-4353  
Kim, Ji Sung\* (*Seoul National University*); Jang, Ki-Hwan (*Seoul National University*); Ahn, Sung Hoon (*Seoul National University*); Seo, Jong Mo (*Seoul National University, School of Engineering*)

14:15-14:30 FrC13.2  
**Overvoltage Protection Circuits for Ultrasonically Powered Implantable Microsystems** ..... 4354-4358  
Rashidi, Amin\* (*Aarhus University*); Laursen, Kjeld (*Aarhus University*); Hosseini, Seyedsina (*Aarhus University*); Moradi, Farshad (*Integrated Circuits & Electronics Laboratory, Dept. of En*)

14:30-14:45 FrC13.3  
**NFC Powered Implantable Temperature Sensor** ..... 4359-4362  
Kifle, Yonatan\* (*Linköping University*); Wikner, Jacob (*Linköping University*); Zötterman, Johan (*Linköpings Universitet*); Farnebo, Simon (*Linköping University Hospital*); Ryden, Louise (*Linköping University*)

14:45-15:00 FrC13.4  
**Development of a Nanofabricated Sensor for Monitoring Intraocular Pressure via Ocular Tissue Strain** . 4363-4367  
Lazkani, Naim (*California Baptist University*); Truitt, Seth (*California Baptist University*); Kawaguchi, Nathan (*California Baptist University*); DeWolf, Aaron (*California Baptist University*); Van Zant, Cody (*California Baptist University*); Villegas, James (*California Baptist University*); Hassel, Abbygail (*California Baptist University*); Park, Joshua (*California Baptist University*); Jones, Creed (*California Baptist University*); Butler, John (*California Baptist University*); Rickard, Matthew\* (*California Baptist University*)

15:00-15:15 FrC13.5  
**An Implantable, Low-Power Instrumentation for the Long Term Monitoring of the Sleep of Animals under Natural Conditions** ..... 4368-4371  
Massot, Bertrand\* (*INL, CNRS UMR 5270, INSA Lyon, University of Lyon*); Rattenborg, Niels C. (*Max Planck Institute for Ornithology, Avian Sleep Group*); Hedenstrom, Anders (*Dept. of Biology, Center for Animal Movement research, Lun*); Susanne, Akesson (*Dept. of Biology, Center for Animal Movement research, Lun*); Libourel, Paul-Antoine (*CRNL*)

15:15-15:30 FrC13.6  
**Intraoperative Cerebral Measurements using Implantable Cortical Multimodality Probe** ..... 4372-4375  
 Ishihara, Yuya\* (*Kumamoto University*); Sakai, Shun (*Kumamoto University*); Yamakawa, Toshitaka (*Kumamoto University*); Inoue, Takao (*Yamaguchi University*); Suzuki, Michiyasu (*Yamaguchi University*)

FrC14: 14:00-15:30 R3 – Level 3  
**Signal Processing and Classification of Neural Signals** (Oral Session)  
**Chair:** Wang, Yiwen (*Hong Kong University of Science and Technology*)  
**Co-Chair:** Bertrand, Alexander (*KU Leuven, University of Leuven*)

14:00-14:15 FrC14.1  
**A Data-Driven Regularization Approach for Template Matching in Spike Sorting with High-Density Neural Probes** ..... 4376-4379  
 Wouters, Jasper\* (*KU Leuven*); Kloosterman, Fabian (*imec*); Bertrand, Alexander (*KU Leuven, University of Leuven*)

14:15-14:30 FrC14.2  
**Stability of Stochastic Finite-Size Spiking-Neuron Networks: Comparing Mean-Field, 1-Loop Correction and Quasi-Renewal Approximations** ..... 4380-4386  
 Todorov, Dmitrii (*Brown University*); Truccolo, Wilson\* (*Brown University*)

14:30-14:45 FrC14.3  
**A K-Medoids based Point-Process Modeling on Neural Spike Transformation using Binless Kernel** ..... 4387-4390  
 Qian, Cunle (*Zhejiang University*); Sun, Xuyun (*Zhejiang University*); Yang, Zaiyue (*Southern University of Science & Technology*); Pan, Gang (*ZheJiang University*); Wang, Yiwen\* (*Hong Kong University of Science & Technology*)

14:45-15:00 FrC14.4  
**Laminar Origin of Evoked ECoG High-Gamma Activity** ..... 4391-4394  
 Dougherty, Maximilian\* (*LBNL*); Nguyen, Anh (*The University of Iowa*); Baratham, Vyassa (*UC Berkeley*); Bouchard, Kristofer E. (*LBNL*)

15:00-15:15 FrC14.5  
**Stochastic Point Process Models for Multi-Compartment Dendritic-Tree Input-Output Transformations in Spiking Neurons** ..... 4395-4399  
 Saha, Dipta (*Brown University*); Truccolo, Wilson\* (*Brown University*)

15:15-15:30 FrC14.6  
**Effects of Gastrin-Releasing Peptide on Hippocampal Neural Networks in Vascular Dementia Rats** ..... 4400-4403  
 Wang, Faqi\* (*Tianjin University*); Yang, Jiajia (*Tianjin University*); Yang, Xuening (*Tianjin University*); Wang, Ling (*Tianjin University*); Zheng, Chenguang (*Tianjin University*); Ming, Dong (*Tianjin University*)

FrC15: 14:00-15:30 M3 – Level 3  
**Image and Data Fusion** (Oral Session)  
**Co-Chair:** Chmelik, Jiri (*Brno University of Technology, Faculty of Electrical Engineering and Telecommunication*)

14:00-14:15 FrC15.1  
**Iterative Machine Learning based Rotational Alignment of Brain 3D CT Data** ..... 4404-4408  
 Chmelik, Jiri\* (*Brno University of Technology, Faculty of Electrical Engineering*); Jakubicek, Roman (*Brno University of Technology*); Vicar, Tomas (*Brno University of Technology, Faculty of Electrical Engineering*); Walek, Petr (*Brno University of Technology, Faculty of Electrical Engineering*); Ourednicek, Petr (*Philips Nederland*); Jan, Jiri (*Brno University of Technology*)

14:15-14:30 FrC15.2  
**Multimodal Data Fusion of Deep Learning and Dynamic Functional Connectivity Features to Predict Alzheimer's Disease Progression** ..... 4409-4413  
 Abrol, Anees\* (*Georgia State University, The Mind Research Network*); Fu, Zening (*University of Hong Kong*); Du, Yuhui (*The Mind Research Network*); Calhoun, Vince (*The Mind Research Network/University of New Mexico*)

14:30-14:45	FrC15.3
<b>Digital Reconstruction of Teeth using Near-Infrared Light</b> .....	4414-4418
Angelino, Keith ( <i>Massachusetts Institute of Technology</i> ); Yaune, Gregory ( <i>Massachusetts Institute of Technology</i> ); Rana, Aman ( <i>Massachusetts Institute of Technology</i> ); Edlund, David ( <i>MIT</i> ); Shah, Pratik* ( <i>Massachusetts Institute of Technology (MIT)</i> )	
14:45-15:00	FrC15.4
<b>Markerless Tracking of Micro-Endoscope for Optical Biopsy in Stomach</b> .....	4419-4422
Zenteno, Omar* ( <i>Universite d'Orleans</i> ); Vantrung, Pham ( <i>Universite d'Orleans</i> ); Treuillet, Sylvie ( <i>Ecole Polytechnique de l'Université d'Orléans</i> ); Lucas, Yves ( <i>Orleans University</i> )	
15:00-15:15	FrC15.5
<b>Design of Microscope Optics for the Acquisition of Multiple Wavelength Band Image</b> .....	4423-4426
Lee, Youngro* ( <i>Seoul National University</i> ); Kim, Jeffrey ( <i>Seoul National University</i> ); Bae, So Hyun ( <i>Hallym University</i> ); Seo, Jong Mo ( <i>Seoul National University, School of Engineering</i> )	
15:15-15:30	FrC15.6
<b>Multimodal T2w and DWI Prostate Gland Automated Registration</b> .....	4427-4430
De Santi, Bruno* ( <i>Politecnico di Torino</i> ); Salvi, Massimo ( <i>Politecnico di Torino</i> ); Giannini, Valentina ( <i>University of Turin</i> ); Meiburger, Kristen M. ( <i>Politecnico di Torino</i> ); Michielli, Nicola ( <i>Politecnico di Torino</i> ); Seoni, Silvia ( <i>Politecnico di Torino</i> ); Regge, Daniele ( <i>Istitute for Cancer research &amp; Treatment</i> ); Molinari, Filippo ( <i>Politecnico di Torino</i> )	
<b>FrC16: 14:00-15:30</b> <span style="float: right;"><b>M5 – Level 3</b></span>	
<b>Rehabilitation Robotics – Exoskeletons (Oral Session)</b>	
<b>Chair:</b> Dhaher, Yasin ( <i>Northwestern University</i> )	
14:00-14:15	FrC16.1
<b>Upper-Limb Actuated Exoskeleton for Muscular Dystrophy Patients: Preliminary Results</b> .....	4431-4435
Dalla Gasperina, Stefano ( <i>Politecnico di Milano</i> ); Gandolla, Marta* ( <i>Politecnico di Milano, NearLab, Dept. of Electronics, Infor</i> ); Manti, Alessandro ( <i>Politecnico di Milano</i> ); Aquilante, Lorenzo ( <i>Politecnico di Milano</i> ); Longatelli, Valeria ( <i>Politecnico di Milano</i> ); D'Angelo, Maria Grazia ( <i>Scientific Institute Eugenio Medea, Bosisio Parini</i> ); Molteni, F ( <i>Hospital Valduce 'Villa Beretta'</i> ); Biffi, Emilia ( <i>Scientific Institute Eugenio Medea, Bosisio Parini</i> ); Rossini, Mauro ( <i>Valduce Hospital, Villa Beretta, Rehabilitation Centre</i> ); Gfoehler, Margit ( <i>TU Wien</i> ); Puchinger, Markus ( <i>TU Wien</i> ); Braghin, Francesco ( <i>Politecnico di Milano</i> ); Pedrocchi, Alessandra ( <i>Politecnico di Milano</i> )	
14:15-14:30	FrC16.2
<b>Design of the Clutched Variable Parallel Elastic Actuator (CVPEA) for Lower Limb Exoskeletons</b> .....	4436-4439
Li, Yinbo ( <i>Tsinghua University</i> ); Li, Zhibin ( <i>Tsinghua University</i> ); Penzlin, Bernhard ( <i>Chair for Medical Information Technology, RWTH Aachen University</i> ); Tang, Zihan ( <i>Tsinghua University</i> ); Liu, Yali ( <i>Tsinghua University</i> ); Guan, Xinyu ( <i>Tsinghua University</i> ); Ji, Linhong* ( <i>Tsinghua University</i> ); Leonhardt, Steffen ( <i>RWTH Aachen University</i> )	
14:30-14:45	FrC16.3
<b>Passive Knee Assistance Affects Whole-Body Biomechanics during Sit-to-Stand</b> .....	4440-4444
Seko, Sarah* ( <i>UC Berkeley</i> ); Matthew, Robert, P ( <i>UC Berkeley</i> ); Riemer, Raziel ( <i>Dept. of Industrial Engineering &amp; Management Ben-Gurion Unive</i> ); Bajcsy, Ruzena ( <i>UC Berkeley, CITRIS</i> )	
14:45-15:00	FrC16.4
<b>Effects of Robotic Exoskeleton Gait Training on an Adolescent with Brain Injury</b> .....	4445-4448
Karunakaran, Kiran* ( <i>NJIT, Kessler Foundation</i> ); Ehrenberg, Naphtaly ( <i>NJIT</i> ); Cheng, JenFu ( <i>Children's Specialized Hospital</i> ); Nolan, Karen J. ( <i>Kessler Foundation</i> )	
15:00-15:15	FrC16.5
<b>How Height and Weight of Patients with Spinal Cord Injury Affect the Spring Locations of Unpowered Energy-Stored Exoskeleton</b> .....	4449-4453
Guan, Xinyu ( <i>Tsinghua University</i> ); Kuai, Shengzheng ( <i>Shenzhen Second People's Hospital</i> ); Song, Liang ( <i>National Research Center for Rehabilitation Technical Aids</i> ); Li, Chong ( <i>Tsinghua University</i> ); Liu, Weifeng ( <i>Tsinghua University</i> ); Liu, Yali* ( <i>Beijing Institute of Technology</i> ); Ji, Linhong ( <i>Tsinghua University</i> ); Wang, Rencheng ( <i>Tsinghua University</i> ); Zhang, Zhiqiang ( <i>National Research Center for Rehabilitation Technical Aids</i> )	



15:15-15:30 FrC16.6  
**Mobility and Cognitive Improvements Resulted from Overground Robotic Exoskeleton Gait-Training in Persons with MS** ..... 4454-4457  
 Androwis, Ghaith\* (*Kessler Foundation, & New Jersey Institute of Technology*); Kwasnica, Marek (*Kessler Foundation*); Niewrzol, Peter (*Montclair State University*); Popok, Paula (*Montclair State University*); Fakhoury, Farris N (*Kessler Institute for Rehabilitation*); Sandroff, Brian (*University of Alabama*); Yue, Guang (*Kessler Foundation*); DeLuca, John (*Kessler Foundation*)

FrC17: 14:00-15:30 R12 – Level 3  
**Imaging Informatics – Image Analysis, Processing and Classification** (Oral Session)  
 Chair: Mahmoudi, Babak (*Emory University*)

14:00-14:15 FrC17.1  
**Estimation of Absolute Blood Pressure using Video Images Captured at Different Heights from the Heart** ..... 4458-4461  
 Sugita, Norihiro\* (*Tohoku University*); Noro, Taihei (*Tohoku University*); Yoshizawa, Makoto (*Tohoku University*); Ichiji, Kei (*Tohoku University Graduate School of Medicine*); Yamaki, Shunsuke (*Tohoku University*); Homma, Noriyasu (*Tohoku University Graduate School of Medicine*)

14:15-14:30 FrC17.2  
**Cancer Image Quantification With and Without, Expensive Whole Slide Imaging Scanners** ..... 4462-4465  
 Tanveer, M. Asjid\* (*National University of Sciences & Technology*); Nawaz, Wajahat (*National University of Sciences & Technology*); Rashid, Haroon (*National University of Sciences & Technology*); Kiyani, Amber (*Riphah International University, Islamabad, Pakistan*); Khurram, Syed Ali (*University of Sheffield*); Khan, Hassan Aqeel (*National University of Sciences & Technology*)

14:30-14:45 FrC17.3  
**A Cloud-Based Framework for Implementing Portable Machine Learning Pipelines for Neural Data Analysis** ..... 4466-4469  
 Ellis, Charles (*Georgia Institute of Technology*); Gu, Ping (*Emory University*); Eslampanah Sendi, Mohammad Sadegh (*Georgia Institute of Technology*); Huddleston, Daniel (*Emory University*); Sharma, Ashish (*Emory University*); Mahmoudi, Babak\* (*Emory University*)

14:45-15:00 FrC17.4  
**Hemodynamics Analysis of Patients with Mild Cognitive Impairment during Working Memory Tasks** ..... 4470-4473  
 Yoo, So-Hyeon (*Pusan National University*); Hong, Keum-Shik\* (*Pusan National University*)

15:00-15:15 FrC17.5  
**Automated Classification of Airborne Pollen using Neural Networks** ..... 4474-4478  
 Schiele, Julian\* (*University of Augsburg*); Rabe, Fabian (*University of Augsburg*); Schmitt, Maximilian (*University of Augsburg*); Glaser, Manuel (*University of Augsburg, UNIKA-T*); Haering, Franziska (*Technical University of Munich, UNIKA-T, Chair of Environmental*); Brunner, Jens O. (*University of Augsburg*); Bauer, Bernhard (*University of Augsburg*); Schuller, Bjoern (*University of Augsburg / Imperial College London*); Traidl-Hoffmann, Claudia (*Technical University of Munich, UNIKA-T, Chair of Environmental*); Damialis, Athanasios (*Technical University of Munich*)

15:15-15:30 FrC17.6  
**Deep Learning for Automating the Organization of Institutional Dermatology Image Stores** ..... 4479-4482  
 Wang, Michael\* (*Mayo Clinic*); Comfere, Nneka (*Mayo Clinic*); Murphree, Dennis (*Mayo Clinic*)

FrC18: 14:00-15:30 R13 – Level 3  
**Image Reconstruction and Enhancement** (Oral Session)  
 Co-Chair: Antani, Sameer (*National Library of Medicine*)

14:00-14:15 FrC18.1  
**A Network-Driven Prior Induced Bregman Model for Parallel MR Imaging** ..... 4483-4486  
 Li, Guanyu (*Nanchang University*); Liu, Yiling (*Nanchang University*); Zhang, Minghui (*Nanchang University*); Wang, Shanshan (*Shenzhen Institutes of Advanced Technology*); Zhu, Yanjie (*Shenzhen Institutes of Advanced Technology, Chinese Academy of S*); Liu, Qiegen (*Dept. of Electronic Information Engineering, Nanchang Unive*); Liang, Dong\* (*Shenzhen Institutes of Advanced Technology*)

14:15-14:30	FrC18.2
<b>Performance Evaluation of a Generative Adversarial Network for Deblurring Mobile-Phone Cervical Images</b> .....	4487-4490
Ganesan, Prasanth ( <i>Florida Atlantic University</i> ); Xue, Zhiyun ( <i>National Library of Medicine</i> ); Singh, Sanjana ( <i>National Library of Medicine</i> ); Long, L. Rodney ( <i>National Library of Medicine</i> ); Ghoraani, Behnaz ( <i>Florida Atlantic University</i> ); Antani, Sameer* ( <i>National Library of Medicine</i> )	
14:30-14:45	FrC18.3
<b>Diffeomorphic Upsampling of Serially Acquired Sparse 2D Cross-Sections in Cardiac MRI</b> .....	4491-4495
Lee, Brian C* ( <i>Johns Hopkins University</i> ); Tward, Daniel ( <i>Johns Hopkins University</i> ); Wei, Jinchi ( <i>Johns Hopkins University</i> ); Tipre, Dnyanesh ( <i>Johns Hopkins University</i> ); Weiss, Robert G. ( <i>Johns Hopkins Medical Institutions</i> ); Miller, Michael ( <i>Johns Hopkins University</i> ); Ardekani, Siamak ( <i>Johns Hopkins University</i> )	
14:45-15:00	FrC18.4
<b>T1rho Fractional-Order Relaxation of Human Articular Cartilage</b> .....	4496-4499
Zou, Lixian ( <i>Shenzhen Institutes of Advanced Technology, Chinese Academy of S</i> ); Wang, Haifeng ( <i>Shenzhen Institutes of Advanced Technology, Chinese Academy of S</i> ); Zhu, Yanjie ( <i>Shenzhen Institutes of Advanced Technology, Chinese Academy of S</i> ); Liu, Yuanyuan ( <i>Shenzhen Institutes of Advanced Technology, Chinese Academy of S</i> ); Cheng, Jing ( <i>Shenzhen Institutes of Advanced Technology, Chinese Academy of S</i> ); Jia, Sen ( <i>Shenzhen Institutes of Advanced Technology, Chinese Academy of S</i> ); Shi, Caiyun ( <i>Shenzhen Institutes of Advanced Technology, Lauterbur Research C</i> ); Su, Shi ( <i>Shenzhen Institutes of Advanced Technology, Chinese Academy of S</i> ); Liu, Xin ( <i>Shenzhen Institutes of Advanced Technology, Chinese Academy of Sc</i> ); Zheng, Hairong ( <i>Shenzhen Inst of Advanced Tech</i> ); Liang, Dong* ( <i>Shenzhen Institutes of Advanced Technology</i> )	
15:00-15:15	FrC18.5
<b>Fundus Image Enhancement Method based on CycleGAN</b> .....	4500-4503
You, QiJing* ( <i>Nanjing University of Aeronautics &amp; Astronautics</i> ); Wan, Cheng ( <i>Nanjing University of Aeronautics &amp; Astronautics</i> ); Sun, Jing ( <i>Nanjing University of Aeronautics &amp; Astronautics</i> ); Shen, Jianxin ( <i>Nanjing University of Aeronautics &amp; Astronautics</i> ); Ye, Hui ( <i>Jiangsu province hospital</i> ); Yu, Qiuli ( <i>BenQ Hospital of Nanjing Medical University</i> )	
15:15-15:30	FrC18.6
<b>Examining the Effect of Noise on Biosignal Estimates Extracted through Spatio-Temporal Video Processing</b> .....	4504-4508
Bennett, Stephanie Louise* ( <i>Carleton University</i> ); Goubran, Rafik A. ( <i>Carleton University</i> ); Knoefel, Frank-Dietrich ( <i>Bruyere Continuing Care, University of Ottawa, Carleton Universi</i> )	
FrPOS-01: 18:00-19:30	Hall B
<b>Signal Processing and Classification of Electrophysiological Signals – Poster (Poster Session)</b>	
18:00-19:30	FrPOS-01.1
<b>Assessing tDCS Placebo Effects on EEG and Cognitive Tasks</b> .....	4509-4512
Holmbæk Petersen, Tine* ( <i>Technical University of Denmark</i> ); Puthusserypady, Sadasivan ( <i>Technical University of Denmark</i> )	
18:00-19:30	FrPOS-01.2
<b>Comparison of Extreme Learning Machine and K-Nearest Neighbour Performance in Classifying EEG Signal of Normal, Poor and Capable Dyslexic Children</b> .....	4513-4516
Ahmad Zainuddin, Ahmad Zuber ( <i>Universiti Kuala Lumpur</i> ); Mansor, Wahidah* ( <i>Universiti Teknologi MARA</i> ); Lee, Yoot ( <i>Universiti Teknologi MARA</i> ); Mahmoodin, Zulkifli ( <i>Universiti Kuala Lumpur British Malaysian Institute</i> )	
18:00-19:30	FrPOS-01.3
<b>Spectral Analysis versus Signal Complexity Methods for Assessing Attention Related Activity in Human EEG</b> .....	4517-4520
Malinowska, Urszula* ( <i>Nencki Institute of Experimental Biology</i> ); Wojciechowski, Jakub ( <i>Bioimaging Research Center, World Hearing Center of Institute of</i> ); Waligóra, Marek ( <i>Nencki Institute of Experimental Biology</i> ); Wrobel, Andrzej ( <i>Institute of Philosophy, University of Warsaw</i> ); Niedbalski, Paweł ( <i>Elmiko Biosignals Sp. z o.o.</i> ); Rogala, Jacek ( <i>Nencki Institute of Experimental Biology</i> )	

18:00-19:30	FrPOS-01.4
<b>EEG Signals Classification using Machine Learning for the Identification and Diagnosis of Schizophrenia</b> .....	4521-4524
Zhang, Lei* ( <i>University of Regina</i> )	
18:00-19:30	FrPOS-01.5
<b>EEG Feature Analysis for Detecting the Fluctuation of Consciousness Level during Propofol Anesthesia</b> .....	4525-4528
Zhang, Yun ( <i>Xidian University</i> ); Wang, Yubo ( <i>Xidian University</i> ); Cai, Suping ( <i>Xidian University</i> ); Li, Jun ( <i>Xidian University</i> ); Ren, Junchan ( <i>Xidian University</i> ); Wang, Qiang ( <i>The First Affiliated Hospital of Xi'an Jiao Tong University</i> ); Huang, Liyu* ( <i>Xidian University</i> )	
18:00-19:30	FrPOS-01.6
<b>Investigating the Optimal Baseline Positioning to Maximize Cognitive Experimental Outcome</b> .....	4529-4532
Reali, Pierluigi* ( <i>Politecnico di Milano</i> ); Lolatto, Riccardo ( <i>Politecnico di Milano</i> ); De Stefano, Paola ( <i>Politecnico di Milano</i> ); Cerutti, Sergio ( <i>Politecnico di Milano</i> ); Bianchi, Anna Maria ( <i>Politecnico di Milano</i> )	
18:00-19:30	FrPOS-01.7
<b>Temporally Adaptive Common Spatial Patterns with Deep Convolutional Neural Networks</b> .....	4533-4536
Mousavi, Mahta* ( <i>University of California, San Diego</i> ); de Sa, Virginia ( <i>University of California, San Diego</i> )	
18:00-19:30	FrPOS-01.8
<b>Time Warping Solutions for Classifying Artifacts in EEG</b> .....	4537-4540
Maruthachalam, Srihari* ( <i>Indian Institute of Technology, Madras</i> ); Kumar, Mari Ganesh ( <i>Indian Institute of Technology Madras</i> ); Murthy, Hema ( <i>Indian Institute of Technology Madras</i> )	
18:00-19:30	FrPOS-01.9
<b>Analysis and Classification for Single-Trial EEG Induced by Sequential Finger Movements</b> .....	4541-4544
Zhang, Shanshan* ( <i>Tianjin University</i> ); Wang, Kun ( <i>Tianjin University</i> ); Xu, Minpeng ( <i>Tianjin University</i> ); Wang, Zhongpeng ( <i>Tianjin University</i> ); Chen, Long ( <i>Tianjin University</i> ); Wang, Faqi ( <i>Tianjin University</i> ); Zhang, Lixin ( <i>Tianjin University</i> ); Ming, Dong ( <i>Tianjin University</i> )	
18:00-19:30	FrPOS-01.10
<b>Subspace Techniques for Task-Independent EEG Person Identification</b> .....	4545-4548
Kumar, Mari Ganesh* ( <i>Indian Institute of Technology Madras</i> ); M S, Saranya ( <i>Indian Institute of Technology Madras</i> ); Narayanan, Shrikanth ( <i>University of Southern California</i> ); Sur, Mriganka ( <i>MIT</i> ); Murthy, Hema ( <i>Indian Institute of Technology Madras</i> )	
18:00-19:30	FrPOS-01.11
<b>A Graph Signal Processing Approach to Study High Density EEG Signals in Patients with Disorders of Consciousness</b> .....	4549-4553
Mortaheb, Sepehr* ( <i>University of Liege</i> ); Annen, Jitka ( <i>University of Liege</i> ); Chatelle, Camille ( <i>University of Liege</i> ); Cassol, Helena ( <i>University of Liege</i> ); Martens, Geraldine ( <i>University of Liege</i> ); Thibaut, Aurore ( <i>University of Liege</i> ); Gosseries, Olivia ( <i>University &amp; University Hospital of Liege</i> ); Laureys, Steven ( <i>Cyclotron Research Center, University of Liege in Belgium</i> )	
18:00-19:30	FrPOS-01.12
<b>Toward a Cooperation Index based on EEG-Workload Causality: Preliminary Findings on Aerospace-Like Tasks</b> .....	4554-4557
Sciaraffa, Nicolina* ( <i>University of Rome Sapienza</i> ); Borghini, Gianluca ( <i>Sapienza University of Rome</i> ); Arico, Pietro ( <i>Fondazione Santa Lucia</i> ); Di Flumeri, Gianluca ( <i>University of Rome Sapienza</i> ); Bonelli, Stefano ( <i>deep blue</i> ); Drogoul, Fabrice ( <i>Eurocontrol</i> ); Vozzi, Alessia ( <i>BrainSigns srl</i> ); Ronca, Vincenzo ( <i>BrainSigns srl</i> ); Bezerianos, Anastasios ( <i>National University of Singapore</i> ); Thakor, Nitish ( <i>National University of Singapore</i> ); Babiloni, Fabio ( <i>University of Rome</i> )	
18:00-19:30	FrPOS-01.13
<b>Bag of Patterns for Nearest Neighbour Neonatal EEG Recall</b> .....	4558-4561
Murphy, Brian Michael ( <i>University College Cork</i> ); Boylan, Geraldine ( <i>University College Cork</i> ); Lightbody, Gordon ( <i>University College Cork</i> ); Marnane, William* ( <i>University College Cork</i> )	

18:00-19:30	FrPOS-01.14
<b>Power Spectrum and Cross Power Spectral Density based EEG Correlates of Intensive Care Delirium</b> .. 4562-4565	
Mikola, Annika ( <i>North Estonia Medical Centre</i> ); Särkelä, Mika ( <i>GE</i> ); Lipping, Tarmo* ( <i>Tampere University</i> )	
18:00-19:30	FrPOS-01.15
<b>Comparison between a Passive and Active Response Task and their Effect on the Amplitude and Latency of the P300 Component for Visual Stimuli While using Low Fidelity Equipment</b> .. 4566-4571	
Schembri, Patrick* ( <i>University of Greenwich</i> ); Pelc, Mariusz ( <i>University of Greenwich</i> ); Ma, Jixin ( <i>University of Greenwich</i> )	
18:00-19:30	FrPOS-01.16
<b>Neurophysiological Changes Associated with Training in Laparoscopic Surgery using EEG: A Pilot Study</b> .. 4572-4575	
Suárez-Revelo, Jazmín Ximena* ( <i>Universidad de Antioquia</i> ); Ochoa, John Fredy ( <i>University of Antioquia</i> ); Hernandez, Alher Mauricio ( <i>University of Antioquia</i> )	
18:00-19:30	FrPOS-01.17
<b>EEG Movement Artifact Suppression in Interactive Virtual Reality</b> .. 4576-4579	
Tremmel, Christoph ( <i>Old Dominion University</i> ); Herff, Christian ( <i>Maastricht University</i> ); Krusienski, Dean* ( <i>Virginia Commonwealth University</i> )	

FrPOS-02: 18:00-19:30	Hall B
<b>Signal Processing and Classification of Heart Rate Variability – Poster</b> (Poster Session)	

18:00-19:30	FrPOS-02.1
<b>Usefulness of Spectral Analysis of Respiratory Rate Variability to Help in Pediatric Sleep Apnea-Hypopnea Syndrome Diagnosis</b> .. 4580-4583	
Barroso-García, Verónica* ( <i>University of Valladolid</i> ); Gutierrez, Gonzalo Cesar ( <i>University of Valladolid</i> ); Kheirandish-Gozal, Leila ( <i>Section of Sleep Medicine, Dept. of Pediatrics, Pritzker Sc</i> ); Álvarez González, Daniel ( <i>Río Hortega University Hospital</i> ); Vaquerizo-Villar, Fernando ( <i>Biomedical Engineering Group, University of Valladolid, CIF Q471</i> ); del Campo, Félix ( <i>Hospital del Río Hortega. Universidad De Valladolid</i> ); Gozal, David ( <i>Section of Sleep Medicine, Dept. of Pediatrics, Pritzker Sc</i> ); Hornero, Roberto ( <i>University of Valladolid</i> )	
18:00-19:30	FrPOS-02.2
<b>Clustering Continuous Wavelet Transform Characteristics of Heart Rate Variability through Unsupervised Learning</b> .. 4584-4587	
Wachowiak, Mark Paul* ( <i>Nipissing University</i> ); Moggridge, Jason ( <i>Nipissing University</i> ); Smolikova-Wachowiak, Renata ( <i>Nipissing University</i> )	
18:00-19:30	FrPOS-02.3
<b>Entropy Profiling to Detect ST Change in Heart Rate Variability Signals</b> .. 4588-4591	
Udhayakumar, Radhagayathri* ( <i>University of Melbourne</i> ); Karmakar, Chandan ( <i>Deakin University</i> ); Palaniswami, Marimuthu ( <i>The University of Melbourne</i> )	
18:00-19:30	FrPOS-02.4
<b>Pre-Surgery Stress Monitoring using Heart Rate Variability Measures</b> .. 4592-4595	
Sebastin, Amalan* ( <i>Healthcare Technology Innovation Centre</i> ); Balakarthikeyan, Vaishali ( <i>Healthcare Technology Innovation Centre</i> ); SP, Preejith ( <i>Healthcare Technology Innovation Center – IITMadras</i> ); Joseph, Jayaraj ( <i>HTIC, Indian Institute of Technology Madras</i> ); Sivaprakasam, Mohanasankar ( <i>Indian Institute of Technology Madras</i> )	

FrPOS-03: 18:00-19:30	Hall B
<b>Signal Processing and Classification of Movement-Related Signals – Poster</b> (Poster Session)	

18:00-19:30	FrPOS-03.1
<b>Application of the Teagar-Kaiser Energy Operator and Wavelet Transform for Detection of Finger Tapping Contact and Release Times using Accelerometry</b> .. 4596-4599	
O'Callaghan, Ben* ( <i>University College Dublin</i> ); Flood, Matthew W. ( <i>University College Dublin</i> ); Lowery, Madeleine ( <i>University College Dublin</i> )	

- 18:00-19:30 FrPOS-03.2  
**Quantitative Assessment of Ataxic Gait using Inertial Sensing at Different Walking Speeds** ..... 4600-4603  
 Phan, Dung\* (*Deakin University*); Nguyen, Nhan (*Deakin University*); Pathirana, Pubudu N (*Deakin University*);  
 Horne, Malcolm (*Florey Institute of Neuroscience & Mental Health*); Power, Laura (*Royal Victorian Eye & Ear  
 Hospital*); Szmulewicz, David (*Victorian Eye & Ear Hospital*)
- 18:00-19:30 FrPOS-03.3  
**Emotional Stimulation during Motor Exercise: An Integration to the Holistic Rehabilitation Framework** . 4604-4610  
 Kritikos, Jacob\* (*National Technical University of Athens*); Koutsouris, Dimitrios (*Biomedical Engineering  
 Laboratory, School of Electrical & Comp*); Caravas, Pamela (*Harvard Medical School Affiliate*); Douloudi,  
 Marilina (*National & Kapodistrian University of Athens*); Tzannetos, Ioannis (*National Technical University of  
 Athens*)
- 18:00-19:30 FrPOS-03.4  
**Fall Detection for the Elderly based on 3-Axis Accelerometer and Depth Sensor Fusion with Random  
 Forest Classifier** ..... 4611-4614  
 Kim, Kijung (*Korea Institute of Science & Technology*); Yun, Guhnoo (*Korea Institute of Science & Technology*);  
 Park, Sungkee (*Korea Institute of Science & Technology*); Kim, Dong Hwan\* (*Korea Institute of Science &  
 Technology*)
- 18:00-19:30 FrPOS-03.5  
**Automatic Inference of Rat's Hindlimb Trajectory to Synchronize with Forelimb Gait Through Phase** ..... 4615-4618  
 Anopas, Dollaporn (*Nanyang Technological University*); Jatesiktat, Prayook (*NTU*); Lim, Guan Ming\* (*Nanyang  
 Technological University*); Lin, Junquan (*Nanyang Technological University*); Wee, 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*)

FrPOS-04: 18:00-19:30	Hall B
<b>Signal Processing and Classification of Multivariate and Multimodal Biosignals – Poster (Poster Session)</b>	

- 18:00-19:30 FrPOS-04.1  
**A Framework for Spatiotemporal Analysis of Gastrointestinal Spike Burst Propagation** ..... 4619-4622  
 Kuruppu, Sachira\* (*University of Auckland*); Cheng, Leo K (*The University of Auckland*); Angeli, Timothy Robert  
 (*Auckland Bioengineering Institute, University of Auckland*); Avci, Recep (*University of Auckland*);  
 Paskaranandavadivel, Niranchan (*The University of Auckland*)
- 18:00-19:30 FrPOS-04.2  
**Estimation of Sparse VAR Models with Artificial Neural Networks for the Analysis of Biosignals** ..... 4623-4627  
 Schubert, Marvin\* (*Technische Hochschule Mittelhessen (THM) – University of Applied*); Schanze, Thomas  
 (*Technische Hochschule Mittelhessen (THM), FB LSE, IBMT*)
- 18:00-19:30 FrPOS-04.3  
**Cuff-Less Blood Pressure Measurement using Supplementary ECG and PPG Features Extracted  
 through Wavelet Transformation** ..... 4628-4631  
 Singla, Muskan (*International Institute of Information & Technology, Hyderabad*); Sistla, Prasad (*Care  
 Foundation*); Syed, Azeemuddin\* (*International Institute of Information & Technology, Hyderabad*)
- 18:00-19:30 FrPOS-04.4  
**Analysis of Physiological and Activity Data Specific to Locations Obtained through Geographical  
 Clustering** ..... 4632-4635  
 Wolschewski, Anastasia (*Institute for Applied Informatics at University of Leipzig*); Schreiber, Max  
 (*Interdisciplinary Competence Center Biomedical Data Science, Ins*); Handel, Till (*Institute for Applied  
 Informatics (InfAI)*); Ivanova, Galina\* (*Interdisciplinary Competence Center Biomedical Data Science, Ins*)
- 18:00-19:30 FrPOS-04.5  
**Liquid Gastroesophageal Reflux Characterization by Investigating Multichannel Intraluminal  
 Impedance-pH Monitoring Data** ..... 4636-4639  
 Rabbani, Hossein\* (*Isfahan Univ. of Medical Sciences*)
- 18:00-19:30 FrPOS-04.6  
**CHAMPS: Cardiac Health Hypergraph Analysis using Multimodal Physiological Signals** ..... 4640-4645  
 Dutta Choudhury, Anirban\* (*Tata Consultancy Services Ltd.*); Chowdhury, Ananda (*Jadavpur University*)

**Signal Processing and Classification of Respiratory Signals – Poster (Poster Session)**

- 18:00-19:30 FrPOS-05.1  
**Automatic Estimation of Respiratory Effort using Esophageal Pressure** ..... 4646-4649  
 Graßhoff, Jan\* (*University of Luebeck*); Petersen, Eike (*University of Lübeck*); Becher, Tobias (*University Medical Center Schleswig-Holstein*); Rostalski, Philipp (*Institute for Electrical Engineering in Medicine, University of*)
- 18:00-19:30 FrPOS-05.2  
**Noise Removal of Tracheal Sound Recorded during CPET to Determine Respiratory Rate** ..... 4650-4653  
 Zhang, Qi (*University of Toronto*); de Oliveira Francisco, Cristina (*KITE, Toronto Rehabilitation Institute, University Health Networ*); Kabir, Muammar Muhammad (*Toronto Rehabilitation Institute, University Health Network*); Zhang, Jing (*University of Toronto*); Montazeri Ghahjaverestan, Nasim (*Institute of Biomaterial & Biomedical Engineering, University of*); Taati, Babak\* (*Toronto Rehabilitation Institute & University of Toronto*); Yadollahi, Azadeh (*University of Toronto*)
- 18:00-19:30 FrPOS-05.3  
**Reckoning Respiratory Signals to Effectively Decipher Mental State** ..... 4654-4659  
 Banerjee, Tanushree (*TCS Innovation Lab*); Khasnobish, Anwasha\* (*TCS*); Chowdhury, Arijit (*TCS Innovation Lab*); Chatterjee, Debatri (*TCS Innovation Lab*)
- 18:00-19:30 FrPOS-05.4  
**A Novel Stuttering Disfluency Classification System based on Respiratory Biosignals** ..... 4660-4663  
 Villegas, Bruno (*Pontificia Universidad Católica del Perú*); Flores, Kevin M. (*Pontificia Universidad Católica del Perú*); Acuña, Kevin José (*Pontifical Catholic University of Peru*); Pacheco-Barrios, Kevin (*Universidad San Ignacio de Loyola, Lima, Peru.*); Elias, Dante\* (*Pontifical Catholic University of Peru*)
- 18:00-19:30 FrPOS-05.5  
**Photoplethysmography Response to Laryngeal Mask Airway Insertion during Propofol-Remifentanil Anesthesia** ..... 4664-4668  
 Chen, Wanlin (*Zhejiang University*); Jiang, Feng (*Zhejiang University*); Chen, Xinzhong (*Zhejiang University*); Feng, Ying (*Zhejiang University*); Miao, Jiajun (*Zhejiang University*); Jiao, Cuicui (*Zhejiang University*); Chen, Shali (*Zhejiang University*); Chen, Hang\* (*Zhejiang University*)

**Time-Frequency Analysis of Biosignals – Poster (Poster Session)**

- 18:00-19:30 FrPOS-06.1  
**A New Efficient Algorithm for Prediction of Preterm Labor** ..... 4669-4672  
 Shahbakhti, Mohammad\* (*Kaunas University of Technology*); Beiramvand, Matin (*Islamic Azad University*); Bavi, Mohammad Reza (*Mehr Private Hospital*); Mohammadi Far, Somayeh (*Vytautas Magnus University*)
- 18:00-19:30 FrPOS-06.2  
**Spectral Parametrization of PPG, IPG and pAT Pulse Waves for Continuous Noninvasive Blood Pressure Estimation** ..... 4673-4676  
 Pielmus, Alexandru Gabriel\* (*Technische Universität Berlin*); Klum, Michael (*Technische Universität Berlin*); Tigges, Timo (*Technical University Berlin*); Orglmeister, Reinhold (*Technische Universität Berlin*)
- 18:00-19:30 FrPOS-06.3  
**Fetal Cardiac Timing Events Estimation from Doppler Ultrasound Signal Cepstrum Analysis** ..... 4677-4681  
 Al Nuaimi, Saeed\* (*Khalifa University*); Jimaa, Shihab (*Khalifa University of Science & Technology*); Kimura, Yoshitaka (*Tohoku University*); Hadjileontiadis, Leontios (*Aristotle University of Thessaloniki*); Khandoker, Ahsan H (*Khalifa University of Science, Technology & Research*)
- 18:00-19:30 FrPOS-06.4  
**Cortical Pitch Response Components Correlate with the Pitch Saliency of Resolved and Unresolved Components of Mandarin Tones** ..... 4682-4685  
 Peng, Fei (*Chongqing University*); Hou, Wensheng\* (*Bioengineering Inst of Chongqing Univ*); Zhang, Li (*Chongqing University*)

18:00-19:30	FrPOS-06.5
<b>Evaluation of Mel-Frequency Cepstrum for Wheeze Analysis</b> .....	4686-4689
Pramono, Renard Xaviero Adhi* ( <i>Imperial College London</i> ); Imtiaz, Syed Anas ( <i>Imperial College London</i> ); Rodriguez-Villegas, Esther ( <i>Imperial College London</i> )	
18:00-19:30	FrPOS-06.6
<b>A Dataset for Systematic Testing of Crackle Separation Techniques</b> .....	4690-4693
Pal, Ravi* ( <i>University of Southampton</i> ); Barney, Anna ( <i>University of Southampton</i> )	
18:00-19:30	FrPOS-06.7
<b>Modulation of Mu Suppression during Visual Perspective Taking by Social Rejection</b> .....	4694-4697
Peng, Suhao ( <i>Southeast University</i> ); Leng, Yue* ( <i>Southeast University</i> ); Ge, Sheng ( <i>Southeast University</i> ); Deng, Huihua ( <i>Southeast University</i> )	
18:00-19:30	FrPOS-06.8
<b>Analysis of EEG Frequency Components and an Examination of Electrodes Localization during Speech Imagery</b> .....	4698-4702
Tsukahara, Akihiko* ( <i>Tokyo Denki University</i> ); Yamada, Masayuki ( <i>Tokyo Denki University</i> ); Tanaka, Keita ( <i>Tokyo Denki University</i> ); Uchikawa, Yoshinori ( <i>Tokyo Denki University</i> )	
18:00-19:30	FrPOS-06.9
<b>Effective EEG Channels for Emotion Identification Over the Brain Regions using Differential Evolution Algorithm</b> .....	4703-4706
Al-Qazzaz, Noor* ( <i>UKM</i> ); Sabir, Mohannad K. ( <i>Baghdad University/Al-Khwarizmi Engineering College</i> ); Md Ali, Sawal Hamid ( <i>National University of Malaysia</i> ); Siti Anom, Ahmad ( <i>Universiti Putra Malaysia</i> ); Grammer, Karl ( <i>University of vienna</i> )	
18:00-19:30	FrPOS-06.10
<b>The EEG Analysis of Actual Left/Right Lateral Bending Movements in Patient of Lumbar Disc Herniation</b> .....	4707-4711
Li, Huihui* ( <i>Shenzhen Institutes of Advanced Technology, Chinese Academy of S</i> ); Du, Wenjing ( <i>Shenzhen Institutes of Advanced Technology, Chinese Academy of S</i> ); Ivanov, Kamen ( <i>Shenzhen Institutes of Advanced Technology, Chinese Academy of S</i> ); Yang, Yuchao ( <i>Shenzhen Institutes of Advanced Technology, Chinese Academ</i> ); Zhan, Yang ( <i>Shenzhen Institutes of Advanced Technology, Chinese Academ</i> ); Wang, Lei ( <i>Shenzhen Institutes of Advanced Technology</i> )	
FrPOS-07: 18:00-19:30	Hall B
<b>Ophthalmic Imaging and Analysis – Poster (Poster Session)</b>	
18:00-19:30	FrPOS-07.1
<b>Automatic Parallel Detection of Neovascularization in Retinal Images using Ensemble of Extreme Learning Machine</b> .....	4712-4716
Huang, He ( <i>Northeastern University, China</i> ); Ma, He* ( <i>Northeastern University</i> ); Qian, Wei ( <i>University of Texas at El Paso</i> )	
18:00-19:30	FrPOS-07.2
<b>3D Reconstruction of the Optic Nerve Head of a Phantom Eye from Images Obtained using a Slit Lamp Fitted with Low Cost Add-Ons</b> .....	4717-4720
Coghill, Ian* ( <i>University of Strathclyde</i> ); Jordan, Kirsty Charlotte ( <i>University of Strathclyde</i> ); Black, Richard Anthony ( <i>University of Strathclyde</i> ); Livingstone, Iain ( <i>NHS Greater Glasgow &amp; Clyde</i> ); Giardini, Mario Ettore ( <i>University of Strathclyde</i> )	
18:00-19:30	FrPOS-07.3
<b>Estimation of Time Delay between Artery and Vein Pulsation using Experimental Video-Ophthalmoscope</b> .....	4721-4724
Valterova, Eva* ( <i>Faculty of Electrical Engineering &amp; Communication, Brno Univer</i> ); Tornow, Ralf-Peter ( <i>University of Erlangen</i> ); Kolar, Radim ( <i>Brno University of Technology</i> )	

18:00-19:30 FrPOS-07.4  
**Eye Movement Analysis using a Binocular Video-Ophthalmoscope** ..... 4725-4728  
Kolar, Radim\* (*Brno University of Technology*); Odstrcilik, Jan (*Brno University of Technology*); Labounkova, Ivana (*Brno University of Technology*); Hracho, Michal (*Brno University of Technology*); Tornow, Ralf-Peter (*University of Erlangen*)

18:00-19:30 FrPOS-07.5  
**Blind Source Separation of Different Retinal Pulsatile Patterns from Simultaneous Long-Term Binocular Ophthalmoscopic Video-Records** ..... 4729-4732  
Labounkova, Ivana\* (*Brno University of Technology*); Labounek, Rene (*University of Minnesota*); Odstrcilik, Jan (*Brno University of Technology*); Hracho, Michal (*Brno University of Technology*); Nestrasil, Igor (*University of Minnesota*); Tornow, Ralf-Peter (*University of Erlangen*); Kolar, Radim (*Brno University of Technology*)

FrPOS-08: 18:00-19:30	Hall B
<b>Optical Imaging – Poster</b> (Poster Session)	

18:00-19:30 FrPOS-08.1  
**Chromatic Properties of Blood during Coagulation** ..... 4733-4736  
Razavi, Jahan\* (*Monta Vista School*); Arbabian, Amin (*Stanford University*)

18:00-19:30 FrPOS-08.2  
**PIV Analysis of Stented Haemodynamics in the Descending Aorta** ..... 4737-4740  
Williamson, Petra Nicole (*University of Canterbury*); Docherty, Paul David\* (*University of Canterbury*); Yazdi, Sina Ghafoorpoor (*University of Canterbury*); Jermy, Mark (*University of Canterbury*); Khanafer, Adib (*Canterbury District Health Board*); Kabaliuk, Natalia (*University of Canterbury*); Geoghegan, Patrick Henry (*Aston University*)

18:00-19:30 FrPOS-08.3  
**A Comprehensive Classification System for Breast Cancer Diagnosis based on Dynamic Optical Breast Imaging** ..... 4741-4744  
Yang, Wenming\* (*Dept. of Electronic Engineering, Graduate School at Shenzhe*); Wang, Zirui (*Tsinghua University*); Chen, Kaiquan (*Tsinghua University*); Li, Zhide (*Tsinghua University*); Liao, Qingmin (*Tsinghua University*)

18:00-19:30 FrPOS-08.4  
**Automated Iris Segmentation from Anterior Segment OCT Images with Occludable Angles via Local Phase Tensor** ..... 4745-4749  
Shang, Qiaoling (*Shenyang Jianzhu University*); Zhao, Yitian\* (*Chinese Academy of Sciences*); Hao, Huaying (*Ningbo University*); Chen, Zhili (*Shenyang Jianzhu University*); Su, Pan (*Ningbo Institute of Industrial Technology, Chinese Academy of Sc*); Li, Fei (*Zhongshan Ophthalmic Center, State Key Laboratory of Ophthalmology*); Zhang, Xiulan (*Zhongshan Ophthalmic Center, State Key Laboratory of Ophthalmology*); Liu, Jiang (*Ningbo Institute of Materials Technology & Engineering, CAS*)

18:00-19:30 FrPOS-08.5  
**A New Texture-Based Segmentation Method for Optical Coherence Tomography Images** ..... 4750-4753  
Monemian, Maryam\* (*Isfahan University of Medical Sciences*); Rabbani, Hossein (*Isfahan Univ. of Medical Sciences*)

18:00-19:30 FrPOS-08.6  
**Convolutional Neural Network Approach to Classify Skin Lesions using Reflectance Confocal Microscopy** ..... 4754-4757  
Wodzinski, Marek\* (*AGH University of Science & Technology*); Skalski, Andrzej (*AGH University of Science & Technology*); Witkowski, Alexander (*Dept. of Dermatology, University of Modena & Reggio Emili*); Pellacani, Giovanni (*Dept. of Dermatology, University of Modena & Reggio Emili*); Łudzik, Joanna (*Dept. of Biostatistics & Telemedicine, Jagiellonian Unive*)

18:00-19:30 FrPOS-08.7  
**Fast Hyperspectral Diffuse Optical Imaging Method with Joint Sparsity** ..... 4758-4761  
Durgin, Natalie (*Spiceworks*); Grotheer, Rachel\* (*Goucher College*); Huang, Chenxi (*Yale University*); Li, Shuang (*Colorado School of Mines*); Ma, Anna (*University of California, San Diego*); Needell, Deanna (*UCLA*); Qin, Jing (*Montana State University*)



- 18:00-19:30 FrPOS-08.8  
**A Novel Hand-Held based Diffuse Optical Tomography Device for Breast Tumor Detection** ..... 4762-4765  
 Guo, Jia-Jiun (*National Chiao Tung University*); Wu, Wen-Jun (*National Chiao Tung University*); Fang, Wai-Chi\* (*National Chiao Tung University*)
- 18:00-19:30 FrPOS-08.9  
**MBLL with Weighted Partial Path Length for Multi-Distance Probe Configuration of fNIRS** ..... 4766-4769  
 Song, Xizi (*Tianjin University*); Chen, Xinrui\* (*Tianjin University*); Wang, Zhongpeng (*Tianjin University*); An, Xingwei (*Tianjin University*); Ming, Dong (*Tianjin University*)
- 18:00-19:30 FrPOS-08.10  
**Dual Layered Models of Light Scattering in the Near Infrared A: Optical Measurements and Simulation** 4770-4774  
 Almajidy, Rand Kasim (*University Medical Center, Freiburg Dept. of Neurosurgery*); Rackebrandt, Klaas (*Unity AG, Hamburg*); Gehring, Hartmut (*Dept. of Anaesthesiology, University of Luebeck, Luebeck*); Hofmann, Ulrich G.\* (*University of Freiburg*)
- 18:00-19:30 FrPOS-08.11  
**Dual Layered Models of Light Scattering in the Near Infrared B: Experimental Results with a Phantom** .. 4775-4778  
 Almajidy, Rand Kasim (*University Medical Center, Freiburg Dept. of Neurosurgery*); Rackebrandt, Klaas (*Unity AG, Hamburg*); Gehring, Hartmut (*Dept. of Anaesthesiology, University of Luebeck, Luebeck*); Hofmann, Ulrich G.\* (*University of Freiburg*)
- 18:00-19:30 FrPOS-08.12  
**Superficial Fluctuations in Functional Near-Infrared Spectroscopy** ..... 4779-4782  
 Zhang, Fan\* (*University of Oklahoma*); Cheong, Daniel (*University of Oklahoma*); Chen, Yuxuan (*University of Oklahoma*); Khan, Ali Fahim (*University of Oklahoma*); Ding, Lei (*University of Oklahoma*); Yuan, Han (*University of Oklahoma*)
- 18:00-19:30 FrPOS-08.13  
**Automatic Identification of Mixed Retinal Cells in Time-Lapse Fluorescent Microscopy Images using High-Dimensional DBSCAN** ..... 4783-4786  
 Appapogu, Divya Spoorthy (*IIT Hyderabad*); Manne, Shanmukh Reddy\* (*Indian Institute of Technology Hyderabad*); Dhyani, Vaibhav (*Indian Institute of Technology Hyderabad*); Swain, Sarpras (*Indian Institute of Technology Hyderabad*); Shahulhameed, Shahna (*L V Prasad Eye Institute Hyderabad*); Mishra, Siddhartha (*IIT Hyderabad*); Kaur, Inderjeet (*L V Prasad Eye Institute Hyderabad*); Giri, Lopamudra (*Indian Institute of Technology Hyderabad*); Jana, Soumya (*Indian Institute of Technology Hyderabad*)
- 18:00-19:30 FrPOS-08.14  
**In Silico Modelling of Blood Vessel Segmentations for Estimation of Discretization Error in Spatial Measurement and its Impact on Quantitative Fluorescence Angiography** ..... 4787-4790  
 Naber, Ady\* (*Karlsruhe Institute of Technology*); Berwanger, Daniel (*Karlsruhe Institute of Technology*); Nahm, Werner (*Karlsruhe Institute of Technology*)

FrPOS-09: 18:00-19:30	Hall B
<b>Other and Novel Imaging Applications – Poster (Poster Session)</b>	

- 18:00-19:30 FrPOS-09.1  
**A Method for Multi-Day Tracking of Gastrointestinal Smooth Muscle Contractile Patterns in Organotypic Culture** ..... 4791-4794  
 Du, Peng\* (*The University of Auckland*); Mazzone, Amelia (*Mayo Clinic*); Calder, Stefan (*Auckland Bioengineering Institute, University of Auckland*); Qian, Anna (*The University of Auckland*); Gibbons, Simon J (*Mayo Clinic College of Medicine*); Farrugia, Gianrico (*Mayo Clinic College of Medicine*); Beyder, Arthur (*Mayo Clinic*)
- 18:00-19:30 FrPOS-09.2  
**Exploring the Supra Linear Relationship between PetCO<sub>2</sub> and fMRI Signal Change with ICA** ..... 4795-4798  
 Callara, Alejandro Luis\* (*Dipartimento di Ingegneria dell'Informazione, University of Pisa*); Morelli, Maria Sole (*Scuola Superiore Sant'Anna (Pisa)*); Cauzzo, Simone (*Scuola Superiore Sant'Anna, Institute of Life Science*); Giannoni, Alberto (*Fondazione Gabriele Monasterio, Pisa*); Hartwig, Valentina (*University of Pisa*); Montanaro, Domenico (*Fondazione Toscana "G. Monasterio", National Research Council, P*); Landini, Luigi (*University of Pisa*); Passino, Claudio (*Fondazione Gabriele Monasterio, Pisa*); Emdin, Michele (*Fondazione Gabriele Monasterio, Pisa*); Vanello, Nicola (*University of Pisa*)

- 18:00-19:30 FrPOS-09.3  
**3D Ultrasound Spine Image Selection using Convolution Learning-to-Rank Algorithm** ..... 4799-4802  
 Lyu, Juan (*Harbin Engineering University*); Ling, Sai Ho, Steve\* (*University of Technology Sydney*); Banerjee, Sunetra (*University of Technology Sydney*); Zheng, Jenny (*Imperial College London*); Lai, Ka Lee (*The Hong Kong Polytechnic University*); Yang, De (*The Hong Kong Polytechnic University*); Zheng, Yong-Ping (*The Hong Kong Polytechnic University*); Su, Steven Weidong (*University of Technology, Sydney*)
- 18:00-19:30 FrPOS-09.4  
**A Novel Scanning Algorithm for MEG/EEG Imaging using Covariance Partitioning and Noise Learning** . 4803-4806  
 Cai, Chang (*University of California, San Francisco*); Sekihara, Kensuke (*Tokyo Metropolitan University*); Nagarajan, Srikantan S.\* (*University of California, San Francisco*)
- 18:00-19:30 FrPOS-09.5  
**Towards Automatic Artifact Rejection in Resting-State MEG Recordings: Evaluating the Performance of the SOUND Algorithm** ..... 4807-4810  
 Rodríguez-González, Víctor (*Biomedical Engineering Group, University of Valladolid*); Poza, Jesus\* (*University of Valladolid*); Núñez, Pablo (*University of Valladolid*); Gomez, Carlos (*University of Valladolid*); Garcia, Maria (*University of Valladolid*); Shigihara, Yoshihito (*Precision Medicine Center, Hokuto Hospital*); Hoshi, Hideyuki (*Precision Medicine Center, Hokuto Hospital*); Santamaría, Eduardo (*University of Valladolid*); Hornero, Roberto (*University of Valladolid*)
- 18:00-19:30 FrPOS-09.6  
**Bidimensional Fuzzy Entropy: Principle Analysis and Biomedical Applications** ..... 4811-4814  
 Hilal, Mirvana\* (*University of Angers*); Humeau-Heurtier, Anne (*University of Angers*)
- 18:00-19:30 FrPOS-09.7  
**Statistical Shape-Kinematics Models of the Skeletal Joints: Application to the Shoulder Complex** ..... 4815-4818  
 Fouefack, Jean-Rassaire\* (*University of Cape Town*); Alemneh, Tewodros (*University of Cape Town*); Borotikar, Bhushan (*University of Western Brittany*); Burdin, Valerie (*IMT Atlantique/Institut Mines Telecom*); Douglas, Tania S (*University of Cape Town*); Mutsvangwa, Tinashe Ernest Muzvidzwa (*University of Cape Town*)
- 18:00-19:30 FrPOS-09.8  
**Three-Dimensional Distorted Born Iterative Method Enhanced by Breast Boundary Extraction for Microwave Mammography** ..... 4819-4823  
 Noritake, Kazuki (*University of Electro-Communications*); Kidera, Shouhei\* (*University of Electro-Communications*)
- 18:00-19:30 FrPOS-09.9  
**Three Dimensional Positive Contrast Susceptibility Fast Spin Echo MR Imaging with Variable Excitation Pulses and PD Algorithm** ..... 4824-4827  
 Shi, Caiyun (*Shenzhen Institutes of Advanced Technology, Lauterbur Research C*); Cheng, Jing (*Shenzhen Institutes of Advanced Technology, Chinese Academy of S*); Su, Shi (*Shenzhen Institutes of Advanced Technology, Chinese Academy of S*); Zou, Lixian (*Shenzhen Institutes of Advanced Technology, Chinese Academy of S*); Chen, Hanwei (*Guangzhou Panyu Central Hospital*); Xie, Guoxi (*Shenzhen Institutes of Advanced Technology, Lauterbur Research C*); Liang, Dong (*Shenzhen Institutes of Advanced Technology*); Liu, Xin (*Shenzhen Institutes of Advanced Technology, Chinese Academy of Sc*); Wang, Haifeng\* (*Shenzhen Institutes of Advanced Technology, Chinese Academy of S*)
- 18:00-19:30 FrPOS-09.10  
**Biomechanics of C2C12 Cells Observed with Cellular Resolution Scanning Acoustic Microscope Combined with Optical Microscope** ..... 4828-4831  
 Hirano, Ryo (*Tohoku University*); Kanzaki, Makoto (*Tohoku University*); Arakawa, Mototaka (*Tohoku University*); Hermawan, Norma (*Tohoku University*); Kobayashi, Kazuto (*Honda Electronics Co., Ltd.*); Saijo, Yoshifumi\* (*Tohoku University*)
- 18:00-19:30 FrPOS-09.11  
**Effect of English Learning Experience on Young Children's Prefrontal Cortex Functioning for Attentional Control: An fNIRS Study** ..... 4832-4835  
 Li, Chuanjiang\* (*Southeast University*); Zhang, Mingming (*Southeast University*); Ding, Keya (*Southeast University*); Zhou, Jing (*East China Normal University*); Yu, Dongchuan (*Southeast University*)

FrPOS-10: 18:00-19:30 Hall B  
**PET and SPECT Imaging – Poster (Poster Session)**

- 18:00-19:30 FrPOS-10.1  
**Timing Calibration for PET based on Low Rank Constraint** ..... 4836-4839  
Chen, Huai\* (*Zhejiang University, College of Optical Science & Engineering*); Liu, Huafeng (*Zhejiang University*)
- 18:00-19:30 FrPOS-10.2  
**Direct 4D PET Reconstruction with Discrete Tissue Types** ..... 4840-4843  
Scipioni, Michele\* (*Dept. of Information Engineering, University of Pisa, Pisa,*)
- 18:00-19:30 FrPOS-10.3  
**Localisation of the Lines of Response in a Continuous Cylindrical Shell PET Scanner** ..... 4844-4850  
Wilson, Keenan John (*University of Technology, Sydney*); Alabd, Roumani (*University of Technology, Sydney*);  
Abolhasan, Mehran (*University of Technology, Sydney*); Safavi-Naeini, Mitra (*Australian Nuclear Science & Technology Organisation*); Franklin, Daniel R\* (*University of Technology, Sydney*)

FrPOS-11: 18:00-19:30 Hall B  
**X-Ray Radiography and CT – Poster (Poster Session)**

- 18:00-19:30 FrPOS-11.1  
**Attention-Guided Convolutional Neural Network for Detecting Pneumonia on Chest X-Rays** ..... 4851-4854  
Li, Bingchuan (*Beijing University of Posts & Telecommunications*); Kang, Guixia\* (*Beijing University of Posts & Telecommunications*); Cheng, Kai (*Beijing University of Posts & Telecommunications*); Zhang, Ningbo (*Beijing University of Posts & Telecommunications*)
- 18:00-19:30 FrPOS-11.2  
**Morphological Area Gradient: System-Independent Dense Tissue Segmentation in Mammography Images** ..... 4855-4858  
Torres, German\* (*Tampere University*); Sassi, Antti (*Tampere University Hospital*); Otso, Arponen (*Tampere University Hospital*); Holli-Helenius, Kirsi (*Tampere University Hospital*); Laaperi, Anna-Leena (*Tampere University Hospital*); Rinta-Kiikka, Irina (*Tampere University Hospital*); Kamarainen, Joni (*Tampere University*); Pertuz, Said (*Universidad Industrial de Santander*)
- 18:00-19:30 FrPOS-11.3  
**Calibration of Stereo Radiography System for Radiostereometric Analysis Application** ..... 4859-4862  
Allab, Amiel\* (*Ecole de Technologie Supérieure*); Vazquez, Carlos (*École de Technologie Supérieure*); Cresson, Thierry (*Ecole de Technologie Supérieure*); De Guise, Jacques (*Ecole de Technologie Supérieure*)
- 18:00-19:30 FrPOS-11.4  
**Do Mammographic Systems Affect the Performance of Computerized Parenchymal Analysis?** ..... 4863-4866  
Pertuz, Said\* (*Universidad Industrial de Santander*); Sassi, Antti (*Tampere University Hospital*); Holli-Helenius, Kirsi (*Tampere University Hospital*); Otso, Arponen (*Tampere University Hospital*); Laaperi, Anna-Leena (*Tampere University Hospital*); Rinta-Kiikka, Irina (*Tampere University Hospital*)
- 18:00-19:30 FrPOS-11.5  
**Augmenting Soft Tissue Contrast using Edge-Enhancing Phase-Imaging Techniques in X-Ray Microtomography** ..... 4867-4870  
Reunamo, Aino\* (*Tampere University*); Hannula, Markus (*Tampere University*); Hyttinen, Jari (*Tampere University of Technology*)
- 18:00-19:30 FrPOS-11.6  
**Automatic Segmentation of Coronary Artery Lumen via Anisotropic Graph-Cuts** ..... 4871-4874  
Wan, Min (*Nanchang University*); Ma, Libin (*Nanchang University*); Zhao, Xiaodan (*National Heart Centre Singapore*); Leng, Shuang (*National Heart Centre Singapore*); Zhang, Jun-Mei (*National Heart Center*); Tan, Ru-San (*National Heart Centre Singapore*); Zhong, Liang\* (*Duke-Duke Medical School, National University of Singapore*)

18:00-19:30 FrPOS-11.7  
**Hybrid Optimization Method (HOM) in Dual Energy Mammography Reconstruction** ..... 4875-4880  
 Komolafe, Temitope Emmanuel (*University of Science & Technology of China, Hefei*); Zhang, Cheng\* (*Suzhou Institute of Biomedical Engineering & Technology, China*)

18:00-19:30 FrPOS-11.8  
**Deep Learning-Based Radiomics Models for Early Recurrence Prediction of Hepatocellular Carcinoma with Multi-Phase CT Images and Clinical Data** ..... 4881-4884  
 Wang, Weibin (*Ritsumeikan University*); Chen, Yen-Wei\* (*Ritsumeikan University*); Iwamoto, Yutaro (*Ritsumeikan University*); Han, Xian-Hua (*Ritsumeikan University*); Chen, Qingqing (*Sir Run Shaw Hospital, Zhejiang University*); Hu, Hongjie (*Sir Run Run Shaw Hospital*); Lin, Lanfen (*Zhejiang University*); Zhang, Qiaowei (*Sir Run Run Shaw Hospital, Zhejiang University*)

FrPOS-12: 18:00-19:30 Hall B  
**Cardiac Electrophysiology – Poster** (Poster Session)

18:00-19:30 FrPOS-12.1  
**Predicting Electrical Storm using Episodes' Parameters from ICD Recorded Data** ..... 4885-4888  
 Shakibfar, Saeed\* (*University of Copenhagen*); Yazdchi, Mohammadreza (*Isfahan University*); Aliakbaryhosseinabadi, Susan (*the Center for Sensory-Motor Intraction, Dept. of Health Sc*)

18:00-19:30 FrPOS-12.2  
**A Numerical Evaluation of Multi-Lead Subcutaneous Implantable Cardioverter Defibrillator for Low Energy and Less Damage in Swine** ..... 4889-4892  
 Lai, Dakun\* (*University of Electronic Science & Technology of China*); Fan, Xiaobiao (*University of Electronic Science & Technology*); Chen, Qingquan (*Quxian County People's Hospital*)

18:00-19:30 FrPOS-12.3  
**A Robust Algorithm for Selecting Optimal Regularization Parameter based on Bilateral Accumulative Area** ..... 4893-4896  
 Chen, Riqing (*The Institute of Biomedical Engineering, Graduate School at Shen*); Li, Jianning (*Tsinghua University*); Wu, Jian\* (*Tsinghua University*)

18:00-19:30 FrPOS-12.4  
**Convolutional Neural Network based Detection of Atrial Fibrillation Combing R-R Intervals and F-Wave Frequency Spectrum** ..... 4897-4900  
 Lai, Dakun\* (*University of Electronic Science & Technology of China*); Zhang, Xinshu (*University of Electronic Science & Technology of China*); Zhang, Yifei (*University of Electronic Science & Technology of China*); Heyat, Md Belal Bin Heyat (*University of Electronic Science & Technology of China*)

FrPOS-13: 18:00-19:30 Hall B  
**Cardiac Mechanics – Poster** (Poster Session)

18:00-19:30 FrPOS-13.1  
**Improving in Vitro Evaluation Capabilities of Cardiac Assist Devices through a Validated Exercise Simulation** ..... 4901-4904  
 Pauls, Jo P\* (*Griffith University, Southport, Australia*); Roberts, Llion Roberts (*Griffith University*); Stephens, Andrew (*Innovative Cardiovascular Engineering & Technology Laboratory*); Fraser, John F. (*Prince Charles Hospital, Brisbane, Queensland*); Tansley, Geoff (*Griffith University, Queensland, Australia*); Gregory, Shaun David (*Queensland University of Technology*)

18:00-19:30 FrPOS-13.2  
**Reliability of Left Atrial Pressure Estimation from Left Ventricular Filling Measurement in a Total Artificial Heart** ..... 4905-4908  
 Diedrich, Mario\* (*RWTH Aachen – Institute of Applied Medical Engineering*); Steinseifer, Ulrich (*RWTH Aachen University*); Schmitz-Rode, Thomas (*RWTH Aachen University, Institute of Applied Medical Engineering*); Risvanis, Fotios (*RWTH Aachen – Institute of Applied Medical Engineering*); Arens, Jutta (*RWTH Aachen*); Kirn, Borut (*Medical Faculty, University of Ljubljana*)

18:00-19:30 FrPOS-13.3  
**Heart Failure Phenotypes Require Sex-Specific Criteria which are based on Ventricular Dimensions** ..... 4909-4912  
 Kerkhof, Peter LM\* (*VU University Medical Center*); Heyndrickx, Guy R. (*Cardiovascular Center, OLV Clinic, Aalst*); Handly, Neal (*Dept. Emergency Medicine, Drexel University College of Medicine,*)

FrPOS-14: 18:00-19:30 Hall B  
**Cardiorespiratory Vibrations – Poster** (Poster Session)

18:00-19:30 FrPOS-14.1  
**Influence of Empirical Mode Decomposition on Heart Rate Variability Indices Obtained from Smartphone Seismocardiograms** ..... 4913-4916  
 Siecinski, Szymon\* (*Silesian University of Technology, Faculty of Biomedical Engineering*); Kostka, Pawel Stanislaw (*Silesian University of Technology*); Tkacz, Ewaryst (*Silesian Univ. of Tech, Faculty of Biomedical Engineering*)

18:00-19:30 FrPOS-14.2  
**Effect of Static Respiratory Volume on the Waveform of Cardiac-Induced Sternal Vibrations** ..... 4917-4921  
 Skoric, James\* (*McGill University*); D'Mello, Yannick (*McGill University*); Lortie, Michel (*MacDonald, Dettwiler & Associates Corporation*); Stephane, Gagnon (*MacDonald, Dettwiler & Associates Corporation*); Plant, David (*McGill University*)

18:00-19:30 FrPOS-14.3  
**Monitoring Cardiac Function by Accelerometer – Detecting Start Systole from the Acceleration Signal makes Additional ECG Recordings for R-Peak Detection Redundant** ..... 4922-4925  
 Wajdan, Ali\* (*The Intervention Centre, Oslo University Hospital & University*); Krogh, Magnus Reinsfelt (*University of Oslo*); Villegas-Martinez, Manuel (*University of Oslo*); Halvorsen, Per Stainer (*Intervention Centre, University Hospital Oslo*); Grymyr, Ole-Johannes Holm Nielsen (*University of Oslo, The Intervention Centre OUS Rikshospitalet*); Elle, Ole Jacob (*The Intervention Centre, Oslo University Hospital & Dept.*); Remme, Espen W. (*The Intervention Centre, Oslo University Hospital*)

18:00-19:30 FrPOS-14.4  
**A Novel Bimodal Stethoscope for Gastric Collection of Heart Sounds: Preliminary Results** ..... 4926-4929  
 Dopierala, Cindy\* (*Université Grenoble Alpes, TIMC-IMAG Lab*); Boucher, Francois (*Univ. Grenoble Alpes, TIMC – IMAG*); Frikha, Mohamed-Ridha (*Université Grenoble Alpes, VetAgro Sup*); Thiebault, Jean-Jacques (*Université Grenoble Alpes, VetAgro Sup*); Defaye, Pascal (*Université Grenoble Alpes, CHUGA*); Tuvignon, Patrick (*Université Grenoble Alpes, CHUGA*); Fontecave-Jallon, Julie (*Univ. Grenoble Alpes, CNRS, CHU Grenoble Alpes, Grenoble INP*); Cinquin, Philippe (*Joseph Fourier University / CNRS*); Gumery, Pierre-Yves (*Université Grenoble Alpes*)

18:00-19:30 FrPOS-14.5  
**Analysis of Tracheal and Pulmonary Continuous Adventitious Respiratory Sounds in Asthma** ..... 4930-4933  
 Lozano-García, Manuel\* (*Institute for Bioengineering of Catalonia (IBEC), The Barcelona*); Davidson, Clare Muireann (*University College Dublin*); Jané, Raimon (*Institut de Bioenginyeria de Catalunya (IBEC)*)

FrPOS-15: 18:00-19:30 Hall B  
**Heart Rate and Blood Pressure Variability – Poster** (Poster Session)

18:00-19:30 FrPOS-15.1  
**Quantification of Different Regulatory Pathways Contributing to Heartbeat Dynamics during Multiple Stimuli: A Proof of the Concept** ..... 4934-4937  
 Ghiasi, Shadi\* (*University of Pisa*); Greco, Alberto (*University of Pisa*); Faes, Luca (*University of Palermo*); Javorka, Michal (*Comenius University, Jessenius Faculty of Medicine*); Barbieri, Riccardo (*Politecnico di Milano*); Scilingo, Enzo Pasquale (*University of Pisa*); Valenza, Gaetano (*University of Pisa*)

18:00-19:30 FrPOS-15.2  
**The Role of Haptic Stimuli on Affective Reading: A Pilot Study** ..... 4938-4941  
 Ghiasi, Shadi\* (*University of Pisa*); Valenza, Gaetano (*University of Pisa*); Morelli, Maria Sole (*Scuola Superiore Sant'Anna (Pisa)*); Bianchi, Matteo (*University of Pisa*); Scilingo, Enzo Pasquale (*University of Pisa*); Greco, Alberto (*University of Pisa*)

18:00-19:30 FrPOS-15.3  
**Characterizing Autonomic Response to Arousing Visual-Auditory Multi-Modal Task in Autism Spectrum Disorder (ASD)** ..... 4942-4945  
Cavinato, Lara\* (*Politecnico di Milano*); Cardinaux, Annie (*Massachusetts Institute of Technology*); Jain, Kriti (*Massachusetts Institute of Technology*); Jamal, Wasifa (*University of Southampton*); Kjølgaard, Margaret (*Marymount College*); Sinha, Pawan (*mit.edu*); Barbieri, Riccardo (*Politecnico di Milano*)

18:00-19:30 FrPOS-15.4  
**Robust Beat-to-Beat Interval from Wearable PPG using RLS and SSA** ..... 4946-4952  
Bhattacharjee, Tanuka\* (*Research & Innovation, TATA Consultancy Services, India*); Dutta Choudhury, Anirban (*Tata Consultancy Services Ltd.*); Pal, Arpan (*Tata Consultancy Services*)

18:00-19:30 FrPOS-15.5  
**Assessing Synergy/Redundancy of Baroreflex and Non-Baroreflex Components of the Cardiac Control during Sleep** ..... 4953-4956  
Cairo, Beatrice\* (*Universita' degli Studi di Milano*); Bari, Vlasta (*IRCCS Policlinico San Donato*); De Maria, Beatrice (*IRCCS Fondazione Salvatore Maugeri, Milano*); Vaini, Emanuele (*IRCCS Policlinico San Donato*); Guaraldi, Pietro (*IRCCS, Institute of Neurological Sciences of Bologna, Bologna, I*); Lucini, Daniela (*Università degli studi di Milano*); Pagani, Massimo (*Università degli studi di Milano*); Provini, Federica (*University of Bologna*); Calandra Buonaura, Giovanna (*Dipartimento di Scienze Biomediche e Neuromotorie, Alma Mater St*); Cortelli, Pietro (*Dipartimento di Scienze Biomediche e Neuromotorie, Alma Mater St*); Porta, Alberto (*Università degli Studi di Milano*)

FrPOS-16: 18:00-19:30 Hall B  
**Respiratory and Pulmonary Systems** (Poster Session)

18:00-19:30 FrPOS-16.1  
**Physical Fitness Contributes to Cardio-Respiratory Synchronization** ..... 4957-4960  
Perry, Sean\* (*University of Warwick*); Khovanova, Natasha (*University of Warwick*); Khovanov, Igor (*University of Warwick*)

18:00-19:30 FrPOS-16.2  
**Effects of Different Modes of Mechanical Ventilation on Aerodynamics of the Patient-Specific Airway: A Numerical Study** ..... 4961-4964  
Zhu, Limin (*Shanghai Children's Medical Center (SCMC) Affiliated Shanghai Ji*); Shen, Juanya (*Shanghai Children's Medical Center (SCMC) Affiliated Shanghai Ji*); Gong, Xiaolei (*Shanghai Children's Medical Center (SCMC) Affiliated Shanghai Ji*); Liu, Liping (*Shanghai Children's Medical Center (SCMC) Affiliated Shanghai Ji*); Liu, Jinlong\* (*Shanghai Children's Medical Center, Shanghai Jiao Tong University*); Xu, Zhuoming (*Shanghai Children's Medical Center (SCMC) Affiliated Shanghai Ji*)

18:00-19:30 FrPOS-16.3  
**Efficacy of Continuous Positive Airway Pressure in Casualties Suffering from Primary Blast Lung Injury: A Modeling Study** ..... 4965-4968  
Scott, Timothy (*Academic Dept. of Military Anaesthesia & Critical Care, R*); Haque, Mainul (*University of Nottingham*); Das, Anup (*University of Warwick*); Cliff, Ian (*University Hospital North Midlands, Stoke-On-Trent, UK*); Bates, Declan Gerard\* (*University of Warwick*); Hardman, Jonathan G. (*University of Nottingham*)

18:00-19:30 FrPOS-16.4  
**Changes of Particle Deposition Caused by Different Breathing Patterns during Active Lung Simulation** ..... 4969-4972  
Pasteka, Richard\* (*University of Applied Sciences Technikum Wien*); Forjan, Mathias (*University of Applied Sciences Technikum Wien*)

18:00-19:30 FrPOS-16.5  
**Wave Reflection in an Anatomical Model of the Pulmonary Circulation in Local and Global Hypertensive Disease** ..... 4973-4976  
Shaarbaq Ebrahimi, Behdad\* (*University of Auckland*); Tawhai, Merryn (*The University of Auckland*); Kumar, Haribalan (*University of Auckland*); Clark, Alys (*The University of Auckland*)

**Sleep Apnea – Poster** (Poster Session)

- 18:00-19:30 FrPOS-17.1  
**SnoreNet: Detecting Snore Events from Raw Sound Recordings** ..... 4977-4981  
 Sun, Jingpeng (*University of Chinese Academy of Sciences*); Hu, Xiyuan\* (*Institute of Automation, Chinese Academy of Sciences, University*); Zhao, Yingying (*South Campus of Guanganmen Hospital, China Academy of Chinese Me*); Sun, Shuchen (*Guanganmen Hospital, China Academy of Chinese Medical*); Chen, Chen (*Chinese Academy of Sciences, University of Chinese Academy of Sc*); Peng, Silong (*Institute of Automation, Chinese Academy of Sciences, University*)
- 18:00-19:30 FrPOS-17.2  
**Automatic Silence Events Detector from Smartphone Audio Signals: A Pilot mHealth System for Sleep Apnea Monitoring at Home** ..... 4982-4985  
 Castillo-Escario, Yolanda (*Institute for Bioengineering of Catalonia (IBEC)*); Ferrer-Lluis, Ignasi (*Institute for Bioengineering of Catalonia*); Montserrat, Josep Maria (*Hospital Clínic de Barcelona. Universitat de Barcelona (UB)*); Jané, Raimon\* (*Institut de Bioenginyeria de Catalunya (IBEC)*)
- 18:00-19:30 FrPOS-17.3  
**Dynamic Estimation of Cerebral Blood Flow using Blood Pressure Signal in Sleep Apnea Patients** ..... 4986-4989  
 Jani, Mahrshi (*University of Texas At Arlington*); Soltan Zadi, Armin (*University of Texas at Arlington*); Alex, Raichel (*University of Texas Arlington*); Zhang, Rong (*University of Texas Southwestern Medical Center at Dallas*); Watenpugh, Donald (*Sleep Consultants Inc.*); Behbehani, Khosrow\* (*University of Texas at Arlington*)
- 18:00-19:30 FrPOS-17.4  
**Automatic Event Detector from Smartphone Accelerometry: Pilot mHealth Study for Obstructive Sleep Apnea Monitoring at Home** ..... 4990-4993  
 Ferrer-Lluis, Ignasi\* (*Institute for Bioengineering of Catalonia*); Castillo-Escario, Yolanda (*Institute for Bioengineering of Catalonia (IBEC)*); Montserrat, Josep Maria (*Hospital Clínic de Barcelona. Universitat de Barcelona (UB)*); Jané, Raimon (*Institut de Bioenginyeria de Catalunya (IBEC)*)
- 18:00-19:30 FrPOS-17.5  
**Non-Linear HRV Analysis to Quantify the Effects of Intermittent Hypoxia using an OSA Rat Model** ..... 4994-4997  
 Romero, Daniel\* (*Institute for Bioengineering of Catalonia*); Jané, Raimon (*Institut de Bioenginyeria de Catalunya (IBEC)*)
- 18:00-19:30 FrPOS-17.6  
**Quantifying Long QT Syndrome in Obese Sleep Apnea Patients Undergoing Roux-En-Y Gastric Bypass Surgery** ..... 4998-5001  
 Al-Abed, Mohammad\* (*Hashemite University*); Al-Bashir, Areen (*Jordan University of Science & Technology*); Obeidat, Nathir (*University of Jordan*); Alzyoud, Sukaina (*The Hashemite University*); Abu-Khalaf, Mahmoud (*University of Jordan*); Obeidat, Mohammad (*University of Jordan*); AlRyalat, Saif AlDeen (*University of Jordan*); Abu Khadra, Haya (*The Hashemite University*); Jalamneh, Mais (*The Hashemite University*); Al-Bluwi, Rania (*The Hashemite University*); Al-Omari, Wafaa (*The Hashemite University*)
- 18:00-19:30 FrPOS-17.7  
**Pre-Diabetic Patients with Severe Obstructive Sleep Apnea: Novel Parameters of Hypoxia during Sleep Correlate with Insulin Resistance** ..... 5002-5005  
 Perantoni, Eleni\* (*Aristotle University of Thessaloniki, Greece*); Chouvarda, Ioanna (*Aristotle University*); Filos, Dimitrios (*Aristotle University o Thessaloniki*); Steiropoulos, Paschalis (*Democritus University of Thrace, Alexandroupoli*); Archodogeorgis, Konstantinos (*Democritus University of Thrace, Alexandroupoli*)

**Vascular Hemodynamics – Poster** (Poster Session)

- 18:00-19:30 FrPOS-18.1  
**The Effect of Error Propagation in the 3D Reconstruction of Coronary Segments using CTCA Images on Crucial Hemodynamic Parameters** ..... 5006-5009  
 Siogkas, Panagiotis (*Forth-IMBB*); Sakellarios, Antonis\* (*Forth-Biomedical Research Institute*); Kyriakidis, Savvas (*Institute of Molecular Biology & Biotechnology, FORTH*); Anagnostopoulos, Constantinos (*Biomedical Research Foundation, Academy of Athens*); Pelosi, Gualtiero (*Institute of Clinical Physiology, National Research Council*); Rocchiccioli, Silvia (*Institute of Clinical Physiology, National Research Council, Pis*); Michalis, Lampros (*University of Ioannina*); Fotiadis, Dimitrios I. (*University of Ioannina*)
- 18:00-19:30 FrPOS-18.2  
**A Computational Multi-Level Atherosclerotic Plaque Growth Model for Coronary Arteries** ..... 5010-5013  
 Pleouras, Dimitrios (*Dept. of Biomedical Research, Forth-IMBB, GR 45110 Ioannina, Gre*); Sakellarios, Antonis\* (*Forth-Biomedical Research Institute*); Kyriakidis, Savvas (*Institute of Molecular Biology & Biotechnology, FORTH*); Kigka, Vassiliki (*University of Ioannina*); Siogkas, Panagiotis (*Forth-IMBB*); Tsompou, Panagiota (*Unit of Medical Technology & Intelligent Information Systems,*); Tachos, Nikolaos (*Unit of Medical Technology & Intelligent Information Systems,*); Georga, Eleni I. (*University of Ioannina*); Andrikos, Ioannis (*University of Ioannina*); Rocchiccioli, Silvia (*Institute of Clinical Physiology, National Research Council, Pis*); Pelosi, Gualtiero (*Institute of Clinical Physiology, National Research Council*); Michalis, Lampros (*University of Ioannina*); Fotiadis, Dimitrios I. (*University of Ioannina*)
- 18:00-19:30 FrPOS-18.3  
**An in Vitro Flow Model for Cardiovascular Inflammation** ..... 5014-5017  
 Oweis, Ghanem F.\* (*American University of Beirut*)
- 18:00-19:30 FrPOS-18.4  
**Two-Element Fractional-Order Windkessel Model to Assess the Arterial Input Impedance** ..... 5018-5023  
 Bahloul, Mohamed A. (*KAUST*); Laleg, Taous-Meriem\* (*King Abdullah University of Science & Technology (KAUST)*)
- 18:00-19:30 FrPOS-18.5  
**Synthetic PPG Generation from Haemodynamic Model with Baroreflex Autoregulation: A Digital Twin of Cardiovascular System** ..... 5024-5029  
 Mazumder, Oishee\* (*Tata Consultancy Services*); Roy, Dibyendu (*TCS Research*); Bhattacharya, Sakyajit (*TCS Innovation Labs*); Sinha, Aniruddha (*Tata Consultancy Services Ltd.*); Pal, Arpan (*Tata Consultancy Services*)
- 18:00-19:30 FrPOS-18.6  
**Beat to Beat Modulation of Arterial Pulse Wave Velocity Induced by Vascular Smooth Muscle Tone** ..... 5030-5033  
 Cymberknop, Leandro Javier (*Universidad Tecnológica Nacional*); Gabaldon, Felipe (*Technical University of Madrid*); Armentano, Ricardo Luis\* (*Republic University*)

**Vascular Monitoring – Poster** (Poster Session)

- 18:00-19:30 FrPOS-19.1  
**Multimodal Image-Free Ultrasound Technique for Evaluation of Arterial Viscoelastic Properties: A Feasibility Study** ..... 5034-5037  
 V, Raj Kiran\* (*IIT Madras*); P M, Nabeel (*Indian Institute of Technology Madras*); Joseph, Jayaraj (*HTIC, Indian Institute of Technology Madras*); Frese, Hanna (*Healthcare Technology Innovation Center*); Sivaprakasam, Mohanasankar (*Indian Institute of Technology Madras*)
- 18:00-19:30 FrPOS-19.2  
**Continuous Assessment of Carotid Diameter using an Accelerometer Patch Probe for Ambulatory Arterial Stiffness Monitoring** ..... 5038-5041  
 R, Arathy\* (*Indian Institute of Technology Madras*); P M, Nabeel (*Indian Institute of Technology Madras*); Joseph, Jayaraj (*HTIC, Indian Institute of Technology Madras*); V V, Abhidev (*Healthcare Technology Innovation Centre, IIT Madras*); Sivaprakasam, Mohanasankar (*Indian Institute of Technology Madras*)



18:00-19:30 FrPOS-19.3  
**Cuffless Blood Pressure Estimation from Only the Waveform of Photoplethysmography using CNN** ..... 5042-5045  
Shimazaki, Shota\* (*Aichi Prefectural University*); Kawanaka, Haruki (*Aichi Prefectural University*); Ishikawa, Hiroki (*Murata Manufacturing Co., Ltd*); Inoue, Koichi (*Murata Manufacturing Co., Ltd.*); Oguri, Koji (*Aichi Prefectural University*)

18:00-19:30 FrPOS-19.4  
**Blood Pressure Estimation based on Pulse Arrival Time and Heart Rate: A Correlation Analysis for Critically Ill Patients** ..... 5046-5050  
Dash, Ashutosh (*Indian Institute of Technology, Kharagpur*); Jain, Karan (*Indian Institute of Technology, Kharagpur*); Ghosh, Nirmalya (*Indian Institute of Technology (IIT), Kharagpur*); Patra, Amit (*Indian Institute of Technology Kharagpur*); Dutta Choudhury, Anirban\* (*Tata Consultancy Services Ltd.*)

18:00-19:30 FrPOS-19.5  
**Image-Free Technique for Flow Mediated Dilation using ARTSENS® Pen** ..... 5051-5054  
Joseph, Jayaraj (*HTIC, Indian Institute of Technology Madras*); S Chandran, Dinu (*All India Institute of Medical Sciences, New Delhi*); V, Raj Kiran\* (*IIT Madras*); V V, Abhidev (*Healthcare Technology Innovation Centre, IIT Madras*); Sivaprakasam, Mohanasankar (*Indian Institute of Technology Madras*)

18:00-19:30 FrPOS-19.6  
**A Frequency-Domain Approach to Noninvasive Intracranial Pressure Estimation** ..... 5055-5058  
Jaishankar, Rohan (*Massachusetts Institute of Technology*); Fanelli, Andrea (*Massachusetts Institute of Technology*); Filippidis, Aristotelis (*Boston Medical Center*); Vu, Thai (*Boston Medical Center*); Holsapple, James (*Boston Medical Center, Boston University School of Medicine*); Heldt, Thomas\* (*Massachusetts Institute of Technology*)

FrPOS-20: 18:00-19:30	Hall B
<b>Neuromuscular Systems</b> (Poster Session)	

18:00-19:30 FrPOS-20.1  
**A Closed-Loop Method to Identify EMG-Torque Dynamics in Human Balance Control** ..... 5059-5062  
Amiri, Pouya\* (*PhD Candidate, Dept. of Biomedical Engineering, McGill Univ*); Kearney, Robert Edward (*McGill University*)

18:00-19:30 FrPOS-20.2  
**Mediolateral Stability Index as a Biomarker for Parkinson's Disease Progression: A Graph Connectivity based Approach** ..... 5063-5067  
Mazumder, Oishee (*Tata Consultancy Services*); Gavas, Rahul\* (*TCS Research & Innovation, Tata Consultancy Services Ltd.*); Sinha, Aniruddha (*Tata Consultancy Services Ltd.*)

18:00-19:30 FrPOS-20.3  
**Controller Gains of an Inverted Pendulum are Influenced by the Visual Feedback Position** ..... 5068-5071  
Cesonis, Justinas\* (*Technical University of Munich*); Leib, Raz (*Technical University of Munich*); Franklin, Sae (*Institute for Cognitive Systems, Technical University of Munich*); Franklin, David W. (*Technical University of Munich*)

18:00-19:30 FrPOS-20.4  
**A Computer Simulation Study on the Influences of Loss and Damage of Primary Muscle Spindle Afferents on Soleus Muscle Stretch Reflex** ..... 5072-5075  
Crepaldi Rodrigues, Eliane\* (*University of Campinas*); Elias, Leonardo (*University of Campinas*)

18:00-19:30 FrPOS-20.5  
**A Simplified Estimation of Abnormal Reflex Torque Due to Elbow Spasticity using Neuro-Musculoskeletal Model** ..... 5076-5079  
Sung, Joohwan (*Daegu Gyeongbuk Institute of Science & Technology (DGIST)*); Choi, Seoyoung (*Daegu Gyeongbuk Institute of Science & Technology*); Kim, Junyoung (*Daegu Gyeongbuk Institute of Science & Technology (DGIST)*); Kim, Jonghyun\* (*DGIST*)

18:00-19:30	FrPOS-20.6
<b>Anticipatory and Compensatory Postural Responses during Perturbed Standing in Individuals with Traumatic Brain Injury</b> .....	5080-5083
Pilkar, Rakesh* ( <i>Kessler Foundation</i> ); Ibironke, Oluwaseun ( <i>Kessler Foundation</i> ); Ehrenberg, Naphtaly ( <i>Kessler Foundation</i> ); Nolan, Karen J. ( <i>Kessler Foundation</i> )	
18:00-19:30	FrPOS-20.7
<b>A Novel Time-Domain based Feature for EMG-PR Prosthetic and Rehabilitation Application</b> .....	5084-5087
Pancholi, Sidharth* ( <i>Malaviya National Institute of Technology</i> ); Jain, Prateek ( <i>Malaviya National Institute of Technology</i> ); Varghese, Arathy ( <i>Malaviya National Institute of Technology</i> ); Joshi, Amit M. ( <i>Malaviya National Institute of Technology</i> )	
18:00-19:30	FrPOS-20.8
<b>A Recurrent Neural Network for Hand Gesture Recognition based on Accelerometer Data</b> .....	5088-5091
Koch, Philipp* ( <i>University of Lübeck</i> ); Dreier, Mark ( <i>Universität zu Lübeck</i> ); Maaß, Marco ( <i>University of Lübeck</i> ); Böhme, Martina ( <i>University of Luebeck</i> ); Phan, Huy ( <i>University of Kent</i> ); Mertins, Alfred ( <i>University of Lübeck</i> )	
18:00-19:30	FrPOS-20.9
<b>Analysis of Standing Balance on Sloped Surfaces in Individuals with Lumbar Disc Herniation</b> .....	5092-5095
Li, Jinping ( <i>Shandong University</i> ); Wei, Na ( <i>Qilu Hospital, Shandong University</i> ); Yue, Shouwei ( <i>Dept. of Physical Medicine &amp; Rehabilitation, Qilu Hospital</i> ); Zhang, Yang ( <i>Dept. of Physical Medicine &amp; Rehabilitation, Qilu Hospital</i> ); Li, Ke* ( <i>Shandong University</i> )	
18:00-19:30	FrPOS-20.10
<b>Effects of Somatosensory Information Provision to Fingertips for Mitigation of Postural Sway and Promotion of Muscle Coactivation in an Upright Posture</b> .....	5096-5099
Mitani, Ryoma* ( <i>Yokohama National University</i> ); Shimatani, Koji ( <i>Prefectural University of Hiroshima</i> ); Sakata, Mami ( <i>Yokohama National University</i> ); Mukaeda, Takayuki ( <i>Graduate School of Engineering, Yokohama National University</i> ); Shima, Keisuke ( <i>Yokohama National University</i> )	
18:00-19:30	FrPOS-20.11
<b>Preliminary Results of a Dual Balancing Task</b> .....	5100-5103
Cherif, Amel* ( <i>Istituto Italiano di Tecnologia</i> ); Zenzeri, Jacopo ( <i>Istituto Italiano di Tecnologia</i> ); Morasso, Pietro ( <i>Italian Institute of Technology</i> )	
18:00-19:30	FrPOS-20.12
<b>Strategy Preference in Complex Dynamical Tasks: Preliminary Results</b> .....	5104-5107
Belgiovine, Giulia* ( <i>Istituto Italiano di Tecnologia</i> ); Morasso, Pietro ( <i>Italian Institute of Technology</i> ); Zenzeri, Jacopo ( <i>Istituto Italiano di Tecnologia</i> )	
18:00-19:30	FrPOS-20.13
<b>Synergy-Based Myocontrol of a Multiple Degree-of-Freedom Humanoid Robot for Functional Tasks</b> .....	5108-5112
Lunardini, Francesca ( <i>Politecnico di Milano</i> ); Antonietti, Alberto ( <i>Politecnico di Milano</i> ); Casellato, Claudia ( <i>Politecnico di Milano</i> ); Pedrocchi, Alessandra* ( <i>Politecnico di Milano</i> )	
18:00-19:30	FrPOS-20.14
<b>Onset Detection to Study Muscle Activity in Reaching and Grasping Movements in Rats</b> .....	5113-5116
Castillo-Escario, Yolanda* ( <i>Institute for Bioengineering of Catalonia (IBEC)</i> ); Rodríguez-Cañón, María ( <i>Universitat Autònoma de Barcelona / CIBERNED / Institute for Bio</i> ); Garcia-Alias, Guillermo ( <i>Universitat Autònoma de Barcelona</i> ); Jané, Raimon ( <i>Institut de Bioenginyeria de Catalunya (IBEC)</i> )	
18:00-19:30	FrPOS-20.15
<b>Identification of Muscle Fasciculations from Surface EMG: Comparison with Ultrasound-Based Detection</b> .....	5117-5120
Botter, Alberto* ( <i>Politecnico di Torino</i> ); Carbonaro, Marco ( <i>Politecnico di Torino</i> ); Vieira, Taian ( <i>Politecnico di Torino</i> ); Hodson-Tole, Emma ( <i>Manchester Metropolitan University</i> )	
18:00-19:30	FrPOS-20.16
<b>Increase in Muscle Activation during Physiotherapy with Electromyography Biofeedback for Patients with Acute Cervical Spinal Cord Injuries</b> .....	5121-5124
Li, Guijin ( <i>Shirley Ryan AbilityLab</i> ); Doman, Caitlin ( <i>Shirley Ryan AbilityLab</i> ); Suresh, Nina* ( <i>Shirley Ryan Ability Lab</i> )	

FrPOS-21: 18:00-19:30	Hall B
<b>Neural Interfaces – Poster (Poster Session)</b>	
18:00-19:30	FrPOS-21.1
<b>Recessed Traces for Planarized Passivation of Chronic Neural Microelectrodes</b> .....	5125-5128
Nolta, Nicholas ( <i>University of Connecticut</i> ); Ghelich, Pejman ( <i>University of Connecticut</i> ); Han, Martin* ( <i>University of Connecticut</i> )	
18:00-19:30	FrPOS-21.2
<b>Investigation of using Cyclic Olefin Copolymer as Neural Electrode</b> .....	5129-5132
Baek, Changhoon* ( <i>Seoul National University</i> ); Seo, Jong Mo ( <i>Seoul National University, School of Engineering</i> )	
FrPOS-22: 18:00-19:30	Hall B
<b>Neural Signal Processing – Poster (Poster Session)</b>	
18:00-19:30	FrPOS-22.1
<b>Automatic Detection of High Frequency Oscillations (80-500Hz) based on Convolutional Neural Network in Human Intracerebral Electroencephalogram</b> .....	5133-5136
Ma, Kefei ( <i>University of Electronic Science &amp; Technology of China</i> ); Lai, Dakun* ( <i>University of Electronic Science &amp; Technology of China</i> ); Chen, Zichu ( <i>University of Electronic Science &amp; Technology of China</i> ); Zeng, Zhuoheng ( <i>University of Electronic Science &amp; Technology of China</i> ); Zhang, Xinyue ( <i>University of Electronic Science &amp; Technology of China</i> ); Chen, Wenjing ( <i>West China Hospital of Sichuan University</i> ); Zhang, Heng ( <i>West China Hospital of Sichuan University</i> )	
18:00-19:30	FrPOS-22.2
<b>Cross-Frequency Coupling Features of Postictal Generalized EEG Suppression State</b> .....	5137-5140
Grigorovsky, Vasily* ( <i>University of Toronto</i> ); del Campo, Martin ( <i>University Health Network</i> ); Chinvarun, Yotim ( <i>Director of Comprehensive Epilepsy Program &amp; Neurology Unit, P</i> ); Carlen, Peter L. ( <i>University of Toronto</i> ); Bardakjian, Berj Luther ( <i>University of Toronto</i> )	
18:00-19:30	FrPOS-22.3
<b>Novel Metrics to Measure the Effect of Additive Inputs on the Activity of Sensory System Neurons</b> .....	5141-5145
Hosseini, Maryam* ( <i>Université de Sherbrooke</i> ); Rodriguez, Gerardo ( <i>University of Minnesota</i> ); Guo, Hongsun ( <i>University of Minnesota</i> ); Lim, Hubert ( <i>University of Minnesota</i> ); Plourde, Eric ( <i>Université de Sherbrooke</i> )	
18:00-19:30	FrPOS-22.4
<b>Single Neuron Imaging Reveals Metabotropic Glutamate Receptor-Mediated Bursting and Delay in Calcium Oscillation in Hippocampal Neurons</b> .....	5146-5149
Singh, Ranjana ( <i>Indian Institute of Technology Hyderabad</i> ); Saxena, Abha* ( <i>Indian Institute of Technology Hyderabad</i> ); Giri, Lopamudra ( <i>Indian Institute of Technology Hyderabad</i> )	
18:00-19:30	FrPOS-22.5
<b>HEAR to Remove Pops and Drifts: The High-Variance Electrode Artifact Removal (HEAR) Algorithm</b> .....	5150-5155
Kobler, Reinmar Josef* ( <i>Graz University of Technology</i> ); Sburlea, Andreea Ioana ( <i>Graz University of Technology</i> ); Mondini, Valeria ( <i>University of Bologna</i> ); Müller-Putz, Gernot ( <i>Graz University of Technology</i> )	
18:00-19:30	FrPOS-22.6
<b>EEG based Analysis of Cortical Activity during Mirror Visual Feedback Target-Directed Movement</b> .....	5156-5159
Rohafza, Maryam* ( <i>New Jersey Institute of Technology</i> ); Saleh, Soha ( <i>Kessler Foundation</i> ); Adamovich, Sergei ( <i>New Jersey Institute of Technology</i> )	
18:00-19:30	FrPOS-22.7
<b>EEG-Based Classification of Olfactory Response to Pleasant Stimuli</b> .....	5160-5163
Abbasi, Nida Itrat ( <i>National University of Singapore</i> ); Bose, Rohit ( <i>National University of Singapore</i> ); Bezerianos, Anastasios ( <i>National University of Singapore</i> ); Thakor, Nitish ( <i>National University of Singapore</i> ); Dragomir, Andrei* ( <i>National University of Singapore</i> )	
18:00-19:30	FrPOS-22.8
<b>A Preliminary Analysis on Impact of Additive Flicker Noise on Detection Sensitivity of Neural Spikes</b> ...	5164-5167
Eisen, Erik Sul ( <i>San Diego State University</i> ); Töreyn, Hakan* ( <i>San Diego State University</i> )	

18:00-19:30	FrPOS-22.9
<b>Cortical Patterns for Prediction of Subjective Preference Induced by Chords</b> .....	5168-5171
Yano, Hajime* ( <i>Kobe University</i> ); Takiguchi, Tetsuya ( <i>Kobe University</i> ); Nakagawa, Seiji ( <i>Chiba University</i> )	
18:00-19:30	FrPOS-22.10
<b>Changes in Neuronal Entropy in a Network Model of the Cortico-Basal Ganglia during Deep Brain Stimulation</b> .....	5172-5175
Fleming, John* ( <i>University College Dublin</i> ); Lowery, Madeleine ( <i>University College Dublin</i> )	
18:00-19:30	FrPOS-22.11
<b>Classification of Rehabilitation Participation in Elderly In-Patients with Mild Cognitive Impairments Utilising Physiological Responses</b> .....	5176-5179
Kim, Jung-Yeon* ( <i>ICT Convergence Rehabilitation Engineering Research Center, Soon</i> ); Nam, Yunyoung ( <i>SoonChunHyang University</i> ); Lee, Seong-A ( <i>SoonChunHyang University</i> )	
18:00-19:30	FrPOS-22.12
<b>A Priori Sample Size Determination for the Number of Subjects in an EEG Experiment</b> .....	5180-5183
Guttman-Flury, Eva* ( <i>Shanghai Jiao Tong University</i> ); Sheng, Xinjun ( <i>Shanghai Jiao Tong University</i> ); Zhang, Dingguo ( <i>Shanghai Jiao Tong University</i> ); Zhu, Xiangyang ( <i>Shanghai Jiao Tong University</i> )	

FrPOS-23: 18:00-19:30	Hall B
<b>Neural Stimulation – Poster</b> (Poster Session)	

18:00-19:30	FrPOS-23.1
<b>Infrared Laser Pulses Excite Action Potentials in Primary Cortex Neurons in Vitro</b> .....	5184-5187
Xia, Qingling ( <i>Chongqing University</i> ); Hou, Wensheng* ( <i>Bioengineering Inst of Chongqing Univ</i> ); Nyberg, Tobias ( <i>Royal Institute of Technology, Sweden</i> ); Zhang, Li ( <i>Chongqing University</i> )	
18:00-19:30	FrPOS-23.2
<b>Skull Impact on the Ultrasound Beam Profile of Transcranial Focused Ultrasound Stimulation</b> .....	5188-5191
Tsai, Pin-Chien ( <i>The Pennsylvania State University</i> ); Sadeghi Gougheri, Hesam ( <i>Pennsylvania State University</i> ); Kiani, Mehdi* ( <i>Pennsylvania State University</i> )	
18:00-19:30	FrPOS-23.3
<b>Modulation of Multiunit Spike Activity by Transcranial AC Stimulation (tACS) in the Rat Cerebellar Cortex</b> .....	5192-5195
Asan, Ahmet ( <i>New Jersey Institute of Technology</i> ); Sahin, Mesut* ( <i>New Jersey Institute of Technology</i> )	
18:00-19:30	FrPOS-23.4
<b>Influence of Gender-Related Differences in Transcranial Direct Current Stimulation: A Computational Study</b> .....	5196-5199
Thomas, Chris ( <i>Soterix Medical, Inc.</i> ); Ghodratiostani, Iman ( <i>University of Sao Paulo</i> ); Delbem, Alexandre ( <i>University of Sao Paulo</i> ); Ali, Afaq ( <i>Soterix Medical, Inc.</i> ); Datta, Abhishek* ( <i>Soterix Medical, Inc.</i> )	
18:00-19:30	FrPOS-23.5
<b>A Wireless Neurostimulator System with an Embedded ARM Microprocessor</b> .....	5200-5203
Ersoz, Alpaslan ( <i>University of Connecticut</i> ); Phu, Helen ( <i>University of Connecticut</i> ); Kim, Insoo ( <i>University of Connecticut Health Center</i> ); Han, Martin* ( <i>University of Connecticut</i> )	
18:00-19:30	FrPOS-23.6
<b>Deep Brain Stimulation in the Globus Pallidus Modulates Pallidal and Subthalamic Neural Oscillations</b> .....	5204-5207
Geng, Xinyi ( <i>Fudan University</i> ); Zhang, Ruili ( <i>Fudan University, Institute of Science &amp; Technology for Brain-</i> ); Shen, Lei ( <i>Fudan University; Institute of Science &amp; Technology for Brain-</i> ); Wang, Jingying ( <i>Fudan University</i> ); Zhang, Jianguo ( <i>Beijing Neurosurgical Institute, Capital Medical University</i> ); Wang, Shouyan* ( <i>Fudan University</i> )	
18:00-19:30	FrPOS-23.7
<b>Identification of Effective Stimulation Parameters to Abort Epileptic Seizures in a Neural Mass Model</b> ...	5208-5211
Arrais, Marouan* ( <i>University of Rennes 1</i> ); Wendling, Fabrice ( <i>INSERM – Université de Rennes 1</i> ); Modolo, Julien ( <i>Univ. Rennes, INSERM, LTSI-U1099</i> )	

18:00-19:30 FrPOS-23.8  
**Patient-Specific Simulations of Deep Brain Stimulation Electric Field with Aid of In-House Software**  
**ELMA** ..... 5212-5216  
 Johansson, Johannes\* (*Linköping University*); Alonso, Fabiola (*Linköping University*); Wardell, Karin (*Linköping University*)

FrPOS-24: 18:00-19:30 Hall B  
**Neurological Disorders** (Poster Session)

18:00-19:30 FrPOS-24.1  
**Quantifying Changes in Brain Function Following Injury via Network Measures** ..... 5217-5220  
 Salsabilian, Shiva (*Rutgers University*); Bibineyshvili, Elena (*Rutgers University*); Margolis, David (*Rutgers University*); Najafizadeh, Laleh\* (*Rutgers University*)

18:00-19:30 FrPOS-24.2  
**A Tendon Indentation Method to Quantify Velocity-Dependent Reflex Responses after Hemispheric Stroke** ..... 5221-5224  
 Afzal, Taimoor (*Shirley Ryan Ability Lab*); Rymer, William Zev (*Northwest. & Rehab Inst of Chicago*); Suresh, Nina\* (*Shirley Ryan Ability Lab*)

18:00-19:30 FrPOS-24.3  
**Cortical Stroke Affects Activity and Stability of Theta/Delta States in Remote Hippocampal Regions** ..... 5225-5228  
 Ip, Zachary (*University of Washington*); Rabiller, Gratianna (*UCSF*); He, Jiwei (*University of California, San Francisco*); Yao, Zhaojie (*University of Washington, Seattle*); Akamatsu, Yosuke (*University of California San Francisco*); Nishijimi, Yasuo (*University of California San Francisco*); Liu, Jialing (*UCSF*); Yazdan-Shahmorad, Azadeh\* (*University of Washington*)

18:00-19:30 FrPOS-24.4  
**Post-Stroke Motor Deficits Are Most Evident at Frequencies Near 125 Hz in EMG Multivariate Probability Distributions** ..... 5229-5232  
 Aggarwal, Anu\* (*Central Michigan University*); Wright, Zachary (*University of Illinois at Chicago, Shirley Ryan AbilityLab*); Huang, Felix (*Shirley Ryan AbilityLab*); Patton, James (*U. Illinois at Chicago (UIC), & the Shirley Ryan Ability Lab (fo)*)

FrPOS-25: 18:00-19:30 Hall B  
**Rehabilitation – Poster** (Poster Session)

18:00-19:30 FrPOS-25.1  
**Using Virtual Reality to Examine the Neural and Physiological Responses to Height and Perturbations in Quiet Standing** ..... 5233-5236  
 Kaur, Rachneet (*University of Illinois at Urbana Champaign*); Sun, Rongyi (*University of Illinois at Urbana-Champaign*); Ziegelman, Liran (*University of Illinois at Urbana-Champaign*); Sowers, Richard (*University of Illinois at Urbana-Champaign*); Hernandez, Manuel\* (*University of Illinois*)

18:00-19:30 FrPOS-25.2  
**Comparing Auditory Brainstem Responses Evoked by Click and Sweep-Tone in Normal-Hearing Adults** ..... 5237-5240  
 Jiang, Yanbing (*Shenzhen Institutes of Advanced Technology*); Wang, Dan (*the CAS Key Laboratory of Human-Machine Intelligence-Synergy Sys*); Liu, Zhenzhen (*the CAS Key Laboratory of Human-Machine Intelligence-Synergy Sys*); Tan, Jingqian (*The Third Affiliated Hospital, Sun Yat-Sen University*); Samuel, Oluwarotimi Williams (*Shenzhen Institutes of Advanced Technology*); Deng, Hanjie (*the CAS Key Laboratory of Human-Machine Intelligence-Synergy Sys*); Wang, Xin (*Shenzhen Institutes of Advanced Technology, Chinese Academy of S*); Zhu, Mingxing (*ShenZhen Institutes of Advanced Technology Chinese Academy of Sc*); Wang, Xiaochen (*the CAS Key Laboratory of Human-Machine Intelligence-Synergy Sys*); Sun, Shurui (*the School of Pharmacy & Bioengineering, Chongqing University*); Li, Peng (*The Third Affiliated Hospital of Sun Yat-Sen University*); Chen, Shixiong\* (*Shenzhen Institutes of Advanced Technology*); Li, Guanglin (*Shenzhen Institutes of Advanced Technology*)

18:00-19:30	FrPOS-25.3
<b>The Effects of Repetitive Transcranial Magnetic Stimulation (rTMS) on Balance Control in Children with Cerebral Palsy</b> .....	5241-5244
Dadashi, Farnoosh ( <i>Tehran University of Medical Sciences</i> ); Shahrokhi, Amin ( <i>Noorafshar Hospital, Tehran, Iran</i> ); Nourian, Ruhollah ( <i>Sports Medicine Research Center, Tehran University of Medical Sc</i> ); Irani, Ashkan ( <i>Dept. of Occupational Therapy, Faculty of Rehabilitation, S</i> ); Molavi, Mohammad ( <i>Dey Hospital &amp; Pejvak Radiology Center, Tehran, Iran</i> ); Rafieenazari, Zahra ( <i>Djavad Mowafaghian Research Center &amp; Shahid Beheshti Universit</i> ); Mirbagheri, Mehdi ( <i>Northwestern University/TUMS</i> ); Mirbagheri, Alireza* ( <i>Tehran University of Medical Sciences (TUMS)</i> )	
18:00-19:30	FrPOS-25.4
<b>Development of a Dynamic Oriented Rehabilitative Integrated System</b> .....	5245-5250
Summa, Susanna* ( <i>Bambino Gesù Children's Hospital, IRCCS</i> ); Gori, Riccardo ( <i>Pegaso onlus</i> ); Castelli, Enrico ( <i>Pediatric Hospital Bambino Gesù</i> ); Petrarca, Maurizio ( <i>Pediatric Hospital Bambino Gesù</i> )	
18:00-19:30	FrPOS-25.5
<b>Kinematic Redundancy Analysis during Goal-Directed Motion for Trajectory Planning of an Upper-Limb Exoskeleton Robot</b> .....	5251-5255
Wang, Chen ( <i>Institute of Automation, Chinese Academy of Sciences</i> ); Peng, Liang ( <i>Institute of Automation, Chinese Academy of Sciences</i> ); Hou, Zeng-Guang* ( <i>Institute of Automation, Chinese Academy of Sciences</i> ); Li, Jingyue ( <i>China Rehabilitation Research Center, Beijing Bo'ai Hospital</i> ); Luo, Lincong ( <i>Institute of Automation, Chinese Academy of Sciences</i> ); Chen, Sheng ( <i>Institute of Automation, Chinese Academy of Sciences</i> ); Wang, Weiqun ( <i>Chinese Academy of Sciences</i> )	
18:00-19:30	FrPOS-25.6
<b>The Effects of Anti-Gravity Treadmill Training on Gait Characteristics in Children with Cerebral Palsy</b> ..	5256-5259
Lotfian, Mahboube ( <i>Tehran University of Medical Sciences</i> ); Dadashi, Farnoosh ( <i>Tehran University of Medical Sciences</i> ); Rafieenazari, Zahra ( <i>Djavad Mowafaghian Research Center &amp; Shahid Beheshti Universit</i> ); Shahrokhi, Amin ( <i>Noorafshar Hospital, Tehran, Iran</i> ); Rasteh, Mehrnaz ( <i>Day Hospital, Tehran, Iran.</i> ); Molavi, Mohammad ( <i>Dey Hospital &amp; Pejvak Radiology Center, Tehran, Iran</i> ); Mirbagheri, Alireza ( <i>Tehran University of Medical Sciences (TUMS)</i> ); Mirbagheri, Mehdi* ( <i>Northwestern University/TUMS</i> )	

FrPOS-26: 18:00-19:30	Hall B
<b>Sensory Neuroprostheses – Poster</b> (Poster Session)	

18:00-19:30	FrPOS-26.1
<b>Modeling Fixational Eye Movement for the Vision Prosthesis</b> .....	5260-5263
Rizzo, Rudy ( <i>University of Padova</i> ); Seo, Jong Mo* ( <i>Seoul National University, School of Engineering</i> )	
18:00-19:30	FrPOS-26.2
<b>A Preliminary Study on Virtual Electrode for Subretinal Prostheses by Computational Model</b> .....	5264-5267
Wang, Ning ( <i>Shanghai Jiao Tong University</i> ); Song, Xiaoyu ( <i>Shanghai Jiao Tong University</i> ); Li, Tong ( <i>Shanghai Jiao Tong University</i> ); Guo, Tianruo ( <i>University of New South Wales</i> ); Li, Liming* ( <i>Shanghai Jiao Tong University</i> )	
18:00-19:30	FrPOS-26.3
<b>Design of an Integrated Subretinal Implant using Cellular Neural Networks for Binary Image Generation in a 130 nm BiCMOS Process</b> .....	5268-5273
Potschka, Julian* ( <i>Friedrich-Alexander-University Erlangen-Nuremberg</i> ); Soell, Christopher ( <i>Friedrich-Alexander University Erlangen-Nuremberg</i> ); Kirchner, Jens ( <i>University of Erlangen-Nuremberg</i> ); Mardin, Christian ( <i>Friedrich-Alexander-University Erlangen-Nuremberg</i> ); Stadelmayer, Markus ( <i>Friedrich-Alexander-University Erlangen-Nuremberg</i> ); Maiwald, Tim ( <i>Friedrich-Alexander-University Erlangen-Nuremberg</i> ); Breun, Sascha ( <i>Friedrich-Alexander-University Erlangen-Nuremberg</i> ); Kolb, Katharina ( <i>Friedrich-Alexander-University Erlangen-Nuremberg</i> ); Bauch, Andreas ( <i>Friedrich-Alexander-University Erlangen-Nuremberg</i> ); Dietz, Marco ( <i>Friedrich-Alexander-University Erlangen-Nuremberg</i> ); Beck, Christopher ( <i>Friedrich-Alexander-University Erlangen-Nuremberg</i> ); Matthias, Voelkel ( <i>Friedrich-Alexander-University Erlangen-Nuremberg</i> ); Hagelauer, Amelie ( <i>Friedrich-Alexander-Universität Erlangen-Nürnberg</i> ); Weigel, Robert ( <i>University of Erlangen Nuremberg</i> )	

**Biorobotics and Biomechanics (I) – Poster (Poster Session)**

- 18:00-19:30 FrPOS-27.1  
**Integration of Forearm sEMG Signals with IMU Sensors for Trajectory Planning and Control of Assistive Robotic Arm** ..... 5274-5277  
 Schabron, Bridget (*Wichita State University*); Reust, Adam (*Wichita State University*); Desai, Jaydip\* (*Wichita State University*); Yihun, Yimesker (*Wichita State University*)
- 18:00-19:30 FrPOS-27.2  
**Impact of an Uncooperative Passenger on the Control of an Externally Guided Self-Balancing Patient-Transport System** ..... 5278-5282  
 Phlippen, Lovis (*RWTH Aachen University*); Verjans, Mark\* (*RWTH Aachen University*); Schleer, Philipp (*RWTH Aachen University*); Drobinsky, Sergey (*RWTH Aachen University*); Radermacher, Klaus (*RWTH Aachen University, Chair of Medical Engineering*)
- 18:00-19:30 FrPOS-27.3  
**Characterization of Helical Propulsion Inside in Vitro and Ex Vivo Models of a Rabbit Aorta** ..... 5283-5286  
 Mahdy, Dalia (*German University in Cairo*); Hesham El Feshawy, Sarah\* (*German University in Cairo GUC*); Mansour, Mohanad (*German University in Cairo*); Basla, Ibrahim (*German University in Cairo*); Hamdi, Nabila (*The German University in Cairo*); Khalil, Islam S. M. (*University of Twente*); Misra, Sarthak (*University of Twente*); Mohamed, Abdallah (*German University in Cairo*)
- 18:00-19:30 FrPOS-27.4  
**Bio-Inspired Model of Humanoid Robot for Ascending Movement** ..... 5287-5290  
 Vatankhah, Maryam\* (*Borough of Manhattan Community College, City University of New York*); Kobravi, Hamid Reza (*Islamic Azad University, Mashhad Branch*); Ritter, Arthur (*Stevens Institute of Technology*)
- 18:00-19:30 FrPOS-27.5  
**Pilot Study of Cadence, a Novel Shoe for Patients with Foot Drop** ..... 5291-5296  
 Evora, Arlette\* (*University of California, Santa Barbara*); Sloan, Erinn (*University of California, Santa Barbara*); Castellino, Sean (*Santa Barbara Cottage Hospital*); Hawkes, Elliot W. (*University of California, Santa Barbara*); Susko, Tyler (*MIT*)
- 18:00-19:30 FrPOS-27.6  
**Short-Term Effects of Robot-Resistance Exercises on Muscle Strength and Activations: Types of Muscle Contraction and Speed of Contraction** ..... 5297-5300  
 Choi, Wiha (*DGIST*); Oh, Sehoon (*DGIST*); Lee, Junghoon (*DGIST*); Lee, Chan (*DGIST*); Kim, Young-Kwan\* (*Chonnam National University*)
- 18:00-19:30 FrPOS-27.7  
**Analytic Model for Quadruped Locomotion Task-Space Planning** ..... 5301-5304  
 Tiseo, Carlo\* (*University of Edinburgh*); Vijayakumar, Sethu (*The University of Edinburgh*); Mistry, Michael (*School of Informatics of The University of Edinburg*)
- 18:00-19:30 FrPOS-27.8  
**A Novel Underactuated Robotic Finger with Variable Stiffness Joints** ..... 5305-5309  
 Teng, Zhicheng (*Xi'an Jiao Tong University*); Xu, Guanghua\* (*Xi'an Jiao Tong University*); Liang, Renghao (*Xi'an Jiao Tong University*); Li, Min (*School of Mechanical Engineering, Xi'an Jiao Tong University*); Zhang, Sicong (*Xi'an Jiao Tong University*); Tao, Tangfei (*Xi'an Jiao Tong University*)
- 18:00-19:30 FrPOS-27.9  
**A Fully Implantable Wireless Stimulation System for Pigeon Navigation** ..... 5310-5313  
 Choi, Gwang Jin\* (*Seoul National University*); Jang, Jungwoo (*Seoul National University*); Kim, Sunhyo (*College of Veterinary Medicine & Research Institute for Veteri*); Baek, Changhoon (*Seoul National University*); Yun, Seunghyeon (*Seoul National University*); Shim, Shinyong (*Seoul National University*); Seo, Jungmin (*Seoul National University*); Jung, Younginha (*Nanoscience & Technology, Seoul National University*); Seo, Kangmoon (*Seoul National University College of Veterinary Medicine*); Seo, Jong Mo (*Seoul National University, School of Engineering*); Song, Yoon-Kyu (*Seoul National University*); Kim, Sung June (*Seoul National University*)

18:00-19:30	FrPOS-27.10
<b>Estimation of Muscle Activity Change under Different Bolus Conditions using Musculoskeletal Model of Swallowing</b> .....	5314-5317
Urabe, Mariko* ( <i>Tokyo University of Science</i> ); Hashimoto, Takuya ( <i>Tokyo University of Science</i> ); Kikuchi, Takahiro ( <i>Musashino Red Cross Hospital</i> ); Michiwaki, Yukihiko ( <i>Musashino Red Cross Hospital</i> ); Koike, Takuji ( <i>The University of Electro-Communications</i> )	
18:00-19:30	FrPOS-27.11
<b>Optimizing Probability Threshold of Convolution Neural Network to Improve HRV-Based Acute Stress Detection Performance</b> .....	5318-5321
He, Jiayuan ( <i>University of Waterloo</i> ); Jiang, Ning* ( <i>University of Waterloo</i> )	
18:00-19:30	FrPOS-27.12
<b>Bone Conduction as Sensory Feedback Interface: A Preliminary Study</b> .....	5322-5325
Mayer, Raphael Maria* ( <i>The University of Melbourne</i> ); Mohammadi, Alireza ( <i>The University of Melbourne</i> ); Alici, Gursel ( <i>University of Wollongong</i> ); Choong, Peter ( <i>The University of Melbourne</i> ); Oetomo, Denny ( <i>The University of Melbourne</i> )	
18:00-19:30	FrPOS-27.13
<b>Designing Configurable Arm Rehabilitation Games: How Do Different Game Elements Affect User Motion Trajectories?</b> .....	5326-5330
Guneyso Ozgur, Arzu* ( <i>EPFL</i> ); Wessel, Maximilian Jonas ( <i>Ecole Polytechnique Fédérale de Lausanne (EPFL)</i> ); Asselborn, Thibault ( <i>EPFL</i> ); Olsen, Jennifer Kaitlyn ( <i>EPFL</i> ); Johal, Wafa ( <i>EPFL</i> ); Ozgur, Ayberk ( <i>EPFL</i> ); Hummel, Friedhelm Christoph ( <i>EPFL</i> ); Dillenbourg, Pierre ( <i>EPFL</i> )	
18:00-19:30	FrPOS-27.14
<b>Body Segment Mechanical Signal Contributions to Continuous Prediction of Locomotor Transitions Performed under Varying Anticipation</b> .....	5331-5334
Kazemimoghadam, Mahdih ( <i>The University of Texas at Dallas</i> ); Fey, Nicholas* ( <i>The University of Texas at Dallas</i> )	
18:00-19:30	FrPOS-27.15
<b>Modeling Perturbed Posture through an Adaptive Sliding Mode Approach</b> .....	5335-5338
Tigrini, Andrea* ( <i>Università Politecnica delle Marche</i> ); Mengarelli, Alessandro ( <i>Università Politecnica delle Marche</i> ); Cardarelli, Stefano ( <i>Università Politecnica delle Marche</i> ); Strazza, Annachiara ( <i>Università Politecnica delle Marche</i> ); Di Nardo, Francesco ( <i>Polytechnic University of Marche</i> ); Fioretti, Sandro ( <i>Università Politecnica delle Marche</i> ); Verdini, Federica ( <i>Università Politecnica delle Marche</i> )	
18:00-19:30	FrPOS-27.16
<b>Human Wrist Impedance Estimation based on Impulse Response Induced by Snap-Through Buckling of Closed-Elastica</b> .....	5339-5343
Yagi, Keisuke* ( <i>Ibaraki University</i> ); Mochiyama, Hiromi ( <i>University of Tsukuba</i> )	
18:00-19:30	FrPOS-27.17
<b>Influence of Tactile Sensitivity in the Finger on Postural Control while using the Light touch Effect</b> .....	5344-5347
Oshita, Kazushige* ( <i>Kyushu Kyoritsu University</i> ); Yano, Sumio ( <i>Kobe University</i> )	

FrPOS-28: 18:00-19:30	Hall B
<b>Biorobotics and Biomechanics (II) – Poster (Poster Session)</b>	

18:00-19:30	FrPOS-28.1
<b>Using a Texture Analyser to Objectively Quantify Foot Orthoses</b> .....	5348-5351
Cuppens, Kris* ( <i>Mobilab – Thomas More University College</i> ); De Raeve, Eveline ( <i>Mobilab – Thomas More University College</i> ); Saey, Tom ( <i>Mobilab – Thomas More University of Applied Sciences</i> ); Broeckx, Mario ( <i>Mobilab – Thomas More University College</i> ); Knippels, Ingrid ( <i>Mobilab – Thomas More University College</i> ); Claes, Johan ( <i>Lab4Food, Microbial &amp; Molecular Systems, KU Leuven</i> ); Muraru, Luiza ( <i>Thomas More University of Applied Sciences</i> ); Creylman, Veerle ( <i>Thomas More University of Applied Sciences</i> )	
18:00-19:30	FrPOS-28.2
<b>Experimental Modal Analysis of an In-Situ Clavicle</b> .....	5352-5355
Rusovici, Razvan* ( <i>UCF</i> ); Topping, Daniel ( <i>UCF College of Medicine</i> ); Eriksson, Sven ( <i>University of Central Florida College of Medicine</i> ); Lopez, Daralys ( <i>University of Central Florida</i> )	



18:00-19:30	FrPOS-28.3
<b>The Effect of the Freezing Time on Muscle Fiber Mechanical Properties</b> .....	5356-5359
Kammoun, Malek ( <i>Sorbonne Université, Université de Technologie de Compiègne, UMR</i> ); Pouletaut, Philippe ( <i>UTC France</i> ); Nguyen, Tan-Nhu* ( <i>Université de Technologie de Compiègne</i> ); Malayannan, Subramaniam ( <i>Dept. of Biochemistry &amp; Molecular Biology, Mayo Clinic, R</i> ); Hawse, John R ( <i>Dept. of Biochemistry &amp; Molecular Biology, Mayo Clinic, R</i> ); Bensamoun, Sabine ( <i>UTC</i> )	
18:00-19:30	FrPOS-28.4
<b>Distributed Bio-Inspired Humanoid Posture Control</b> .....	5360-5365
Lippi, Vittorio* ( <i>TU Berlin</i> ); Molinari, Fabio ( <i>TU Berlin</i> ); Seel, Thomas ( <i>Technische Universität Berlin</i> )	
18:00-19:30	FrPOS-28.5
<b>EMG-Based Control in a Test Platform for Exoskeleton with One Degree of Freedom</b> .....	5366-5369
Suplino, Lucas Oliveira ( <i>University of Sao Paulo</i> ); Fischi Sommer, Leonardo ( <i>University of São Paulo</i> ); Forner-Cordero, Arturo* ( <i>Escola Politécnica da Universidade de Sao Paulo</i> )	
18:00-19:30	FrPOS-28.6
<b>Investigation of the Optic Nerve Head Morphology Influence to the Optic Nerve Head Biomechanics – Patient Specific Model</b> .....	5370-5373
Satekenova, Elnara ( <i>Nazarbayev University</i> ); Ko, Match Wai Lun ( <i>The University of Hong Kong</i> ); Kim, Jong Ryeol* ( <i>Nazarbayev University</i> )	
18:00-19:30	FrPOS-28.7
<b>Investigation of the Optic Nerve Head Morphology Influence to the Optic Nerve Head Biomechanics – Population Specific Model</b> .....	5374-5377
Ko, Match Wai Lun* ( <i>The University of Hong Kong</i> ); Lai, Chrissi Chi Ching ( <i>The University of Hong Kong</i> ); Ng, Partick Chun Kit ( <i>The University of Hong Kong</i> ); Chow, Billy Ho Yeung ( <i>The University of Hong Kong</i> ); Woo, Moses Jun Seen ( <i>The University of Hong Kong</i> ); Yim, Kingsley Ho Chiu ( <i>The University of Hong Kong</i> ); Kim, Jong Ryeol ( <i>Nazarbayev University</i> )	
18:00-19:30	FrPOS-28.8
<b>Precision Motion Control using Nonlinear Contact Force Model in a Surgical Device</b> .....	5378-5381
Ng, Cailin* ( <i>NUS</i> ); Liang, Wenyu ( <i>National University of Singapore</i> ); Gan, Chee Wee ( <i>NUS</i> ); Lim, Hsueh Yee ( <i>NUS</i> ); Tan, Kok Kiong ( <i>National University of Singapore</i> )	
18:00-19:30	FrPOS-28.9
<b>Evaluation of the Influence of Cyclic Loading on a Laser Sintered Transtibial Prosthetic Socket using Digital Image Correlation (DIC)</b> .....	5382-5385
Saey, Tom* ( <i>Mobilab – Thomas More University of Applied Sciences</i> ); Muraru, Luiza ( <i>Thomas More University of Applied Sciences</i> ); De Raeve, Eveline ( <i>Mobilab – Thomas More University College</i> ); Cuppens, Kris ( <i>Mobilab – Thomas More University College</i> ); Balcaen, Ruben ( <i>Faculty of Engineering Technology, KU Leuven</i> ); Creylman, Veerle ( <i>Thomas More University of Applied Sciences</i> )	
18:00-19:30	FrPOS-28.10
<b>Prosthetic Hip ROM from Multibody Software Simulation</b> .....	5386-5389
Putame, Giovanni ( <i>PolitoBIOMed Lab, Dept. of Mechanical &amp; Aerospace Enginee</i> ); Pascoletti, Giulia* ( <i>University of Perugia</i> ); Franceschini, Giordano ( <i>Dept. of Engineering, University of Perugia</i> ); Dichio, Giancarlo ( <i>PolitoBIOMed Lab, Dept. of Mechanical &amp; Aerospace Enginee</i> ); Terzini, Mara ( <i>PolitoBIOMed Lab, Dept. of Mechanical &amp; Aerospace Enginee</i> )	
18:00-19:30	FrPOS-28.11
<b>A New Trajectory Determination Method for Robot-Assisted Ankle Ligament Rehabilitation</b> .....	5390-5393
Liu, Zixiao ( <i>Southern University of Science &amp; Technology</i> ); Zhong, Bin ( <i>Southern University of Science &amp; Technology</i> ); Zhong, Wenjuan ( <i>Southern University of Science &amp; Technology</i> ); Guo, Kq ( <i>Southern University of Science &amp; Technology</i> ); Zhang, Mingming* ( <i>Southern University of Science &amp; Technology</i> )	
18:00-19:30	FrPOS-28.12
<b>Design of a Myoelectric 3D-Printed Prosthesis for a Child with Upper Limb Congenital Amputation</b> .....	5394-5398
Ccorimanya, Luis* ( <i>University of Tsukuba</i> ); Watanabe, Reiko ( <i>University of Tsukuba Hospital</i> ); Hassan, Modar ( <i>University of Tsukuba</i> ); Hada, Yasushi ( <i>University of Tsukuba Hospital</i> ); Suzuki, Kenji ( <i>University of Tsukuba</i> )	

18:00-19:30	FrPOS-28.13
<b>Learning-Based Parameter Estimation for Hysteresis Modeling in Robotic Catheterization</b> .....	5399-5402
Omisore, Olatunji Mumini* ( <i>Shenzhen Institutes of Advanced Technology, Chinese Academy of S</i> ); Shipeng, Han ( <i>Shenzhen Institutes of Advanced Technology, Chinese Academy of S</i> ); Zhou, Tao ( <i>Shenzhen Institutes of Advanced Technology, Chinese Academy of S</i> ); Al-Handarish, Yousef ( <i>Shenzhen Institutes of Advanced Technology, Chinese Academy of S</i> ); Du, Wenjing ( <i>Shenzhen Institutes of Advanced Technology, Chinese Academy of S</i> ); Ivanov, Kamen ( <i>Shenzhen Institutes of Advanced Technology, Chinese Academy of S</i> ); Wang, Lei ( <i>Shenzhen Institutes of Advanced Technology</i> )	
18:00-19:30	FrPOS-28.14
<b>Reducing the Number of Degrees of Freedom to Control an Eye Surgical Robot through Classification of Surgical Phases</b> .....	5403-5406
Askaripoor, Hadi* ( <i>Technical University Munich</i> ); Mingchuan, Zhou ( <i>Technical University Munich</i> ); Lohmann, Chris ( <i>Klinikum Rechst der isaar, Muenchen</i> ); Cerveri, Pietro ( <i>Politecnico di Milano</i> ); Nasser, M. Ali ( <i>Technische Universitaet Muenchen</i> )	
18:00-19:30	FrPOS-28.15
<b>Design of a Non-Invasive Pulse Rate Controlled Deep Vein Thrombosis Prophylaxis Lower Limb Device</b> .....	5407-5410
K, Vinay* ( <i>IIT Bangalore</i> ); Vazhiyal, Vikas ( <i>NIMHANS</i> ); Rao, Madhav ( <i>IITBangalore</i> )	
18:00-19:30	FrPOS-28.16
<b>Design and Preliminary Evaluation of a Novel Robotic System for Mobilization of Glenohumeral Joint</b> ..	5411-5414
Azarsa, Mohammad Hassan ( <i>Dept. of Medical Physics &amp; Biomedical Engineering, School</i> ); Mirbagheri, Alireza* ( <i>Tehran University of Medical Sciences (TUMS)</i> ); Shadmehr, Azadeh ( <i>Tehran University of Medical Sciences</i> ); Karimi, Nouredin ( <i>Tehran University of Medical Sciences</i> ); Mirbagheri, Mehdi ( <i>Northwestern University/TUMS</i> )	
18:00-19:30	FrPOS-28.17
<b>Comparison of Two Intervertebral Disc Failure Models in a Numerical C4-C5 Trauma Model</b> .....	5415-5418
Beausejour, Marie-Helene ( <i>Ecole de Technologie Superieure</i> ); Petit, Yvan* ( <i>École de Technologie Supérieure</i> ); Arnoux, Pierre-Jean ( <i>Laboratoire de Biomécanique Appliquée, Aix-Marseille Université</i> ); Wagnac, Eric ( <i>Ecole de Technologie Superieure</i> )	

FrPOS-29: 18:00-19:30	Hall B
<b>Diagnostic Devices – Physiological Monitoring (I) – Poster (Poster Session)</b>	

18:00-19:30	FrPOS-29.1
<b>Attentional Bias for Emotional Faces in Depressed and Non-Depressed Individuals: An Eye-Tracking Study</b> .....	5419-5422
Figueiredo, Germano R.* ( <i>Federal University of Technology – Paraná</i> ); Ripka, Wagner L. ( <i>UTFPR- Federal Technological University of Paraná</i> ); Romaneli, Eduardo F. R. ( <i>UTFPR – Federal University of Technology – Paraná</i> ); Ulbricht, Leandra ( <i>UTFPR – Federal University of Technology – Paraná</i> )	
18:00-19:30	FrPOS-29.2
<b>Unsupervised GEI-Based Gait Disorders Detection from Different Views</b> .....	5423-5426
Elkholy, Amr* ( <i>Egypt-Japan University for Science &amp; Technology(E-JUST)</i> ); Makihara, Yasushi ( <i>The Institute of Scientific &amp; Industrial Research, Osaka Unive</i> ); Gomaa, Walid ( <i>Egypt-Japan University for Science &amp; Technology(E-JUST)</i> ); Ahad, Md Atiqur Rahman ( <i>The Institute of Scientific &amp; Industrial Research, Osaka Unive</i> ); Yagi, Yasushi ( <i>Osaka University</i> )	
18:00-19:30	FrPOS-29.3
<b>Delevopment of an Application for Aid in Cataract Screening</b> .....	5427-5430
Pereira da Cunha, Ana Julia* ( <i>UFRN</i> ); Soares Gadelha de Lima, Luis Felipe ( <i>Federal University of Rio Grande do Norte</i> ); Ribeiro, Anna Giselle ( <i>Universidade Federal do Rio Grande do Norte</i> ); D. Vilar Wanderley, Caroline ( <i>Universidade Federal do Rio Grande do Norte (UFRN)</i> ); Diniz, Anthony ( <i>Federal University of Rio Grande do Norte</i> ); Bezerra Soares, Heliana ( <i>Federal University of Rio Grande do Norte</i> )	
18:00-19:30	FrPOS-29.4
<b>INSA Wound Mapping System: II. Preliminary Porcine Results</b> .....	5431-5434
Montalibet, Amalric* ( <i>INL UMR-5270 – INSA Lyon</i> ); Massot, Bertrand ( <i>INL, CNRS UMR 5270, INSA Lyon, University of Lyon</i> ); Dahri-Correia, Latifa ( <i>MEDAE SAS</i> ); McAdams, Eric ( <i>INSA Lyon</i> )	

18:00-19:30 FrPOS-29.5  
**Study of Patients Self-Training Influence on Peripheral Neuropathies Diseases Diagnosis through D.I.T.A Device** ..... 5435-5438  
 Avila Mireles, Edwin Johnatan\* (*Istituto Italiano di Tecnologia*); Abidi, Haider (*Istituto Italiano di Tecnologia*); D'Imperio, Mariapaola (*Istituto Italiano di Tecnologia*); Liberini, Paolo (*Spedali Civili Di Brescia, Neurological Clinic, Brescia, Italy*); Caldwell, Darwin G. (*Italian Institute of Technology*); Cannella, Ferdinando (*Istituto Italiano di Tecnologia*); Scaccia, Massimiliano (*Istituto Italiano di Tecnologia*)

FrPOS-30: 18:00-19:30	Hall B
<b>Diagnostic Devices – Physiological Monitoring (II) – Poster (Poster Session)</b>	

18:00-19:30 FrPOS-30.1  
**Nocturnal Hypoglycemia Detection using Optimal Bayesian Algorithm in an EEG Spectral Moments based System** ..... 5439-5442  
 Ngo, Cuong Q.\* (*Swinburne University of Technology*); Chai, Rifai (*Swinburne University of Technology*); Nguyen, Tuan V. (*University of Technology, Sydney, Australia*); Jones, Timothy (*Princess Margaret Hospital for Children*); Nguyen, Hung T. (*Swinburne University of Technology*)

18:00-19:30 FrPOS-30.2  
**Classification of Postprandial Glycemic Patterns in Type 1 Diabetes Subjects under Closed-Loop Control: An in Silico Study** ..... 5443-5446  
 Schröder, Corinna (*University of Stuttgart*); Diez, Jose Luis (*Politechnical University of Valencia*); Laguna, Alejandro (*Politechnical University of Valencia*); Bondia, Jorge (*Technical University of Valencia*); Tarín, Cristina\* (*University of Stuttgart*)

18:00-19:30 FrPOS-30.3  
**Multi-Cartridge Fluorescence Reader for Quantitative Immunoassays** ..... 5447-5450  
 Bheemavarapu, Lalitha Pratyusha\* (*Indian Institute of Technology, Madras*); Shah, Malay Ilesh (*Healthcare Technology Innovation Center (HTIC), Indian Institute*); Joseph, Jayaraj (*HTIC, Indian Institute of Technology Madras*); Sivaprakasam, Mohanasankar (*Indian Institute of Technology Madras*)

18:00-19:30 FrPOS-30.4  
**Training a Neural Network for Vocal Stereotypy Detection** ..... 5451-5455  
 Fetzner, John (*University of St. Thomas*); Min, Cheol-Hong\* (*University of St. Thomas*)

18:00-19:30 FrPOS-30.5  
**Early Detection of Mild Cognitive Impairment using Pervasive Sensing** ..... 5456-5459  
 Chowdhury, Arijit\* (*TCS*); Bhattacharya, Sakyajit (*TCS Innovation Labs*); Ghose, Avik (*TCS Research & Innovation*); Krishnan, Balasubramaniam (*TCS*)

18:00-19:30 FrPOS-30.6  
**Estimation of Arterial Pulse Wave Velocity from Doppler Radar Measurements: A Feasibility Study** ..... 5460-5464  
 Vasireddy, Rakesh\* (*Inselspital, Bern University Hospital*); Goette, Josef (*Institute for Human Centered Engineering, Bern University of App*); Jacomet, Marcel (*Institute for Human Centered Engineering, Bern University of App*); Vogt, Andreas (*Dept. of Anaesthesiology & Pain Medicine, Inselspital, Bern*)

18:00-19:30 FrPOS-30.7  
**Modeling the Variability of Insulin Sensitivity for People with Type 1 Diabetes based on Clinical Data from an Artificial Pancreas Study** ..... 5465-5468  
 Blanc, Romain (*Univ. Grenoble Alpes, CEA, LETI*); Romero Ugalde, Héctor Manuel (*Univ. Grenoble Alpes, CEA, LETI*); Benhamou, Pierre Yves (*Univ. Grenoble Alpes, CHU Grenoble Alpes, Endocrinology*); Charpentier, Guillaume (*Centre Hospitalier Sud-Francilien, Dept. of Diabetes & En*); Franc, Sylvia (*CERITD*); Hunecker, Erik (*Diabeloop*); Villeneuve, Emma (*Univ. Grenoble Alpes, CEA, LETI*); Doron, Maeva\* (*CEA LETI*)

18:00-19:30 FrPOS-30.8  
**Establishing Pose based Features using Histograms for the Detection of Abnormal Infant Movements** . 5469-5472  
 McCay, Kevin\* (*Northumbria University*); Ho, Edmond S. L. (*Northumbria University*); Marcroft, Claire (*Newcastle Hospitals NHS Trust*); Embleton, Nicholas (*Newcastle Hospitals NHS Trust*)

18:00-19:30 FrPOS-30.9  
**Breathing Detection from Tracheal Sounds in Both Temporal and Frequency Domains in the Context of Phrenic Nerve Stimulation** ..... 5473-5476  
 LU, Xinyue\* (*University of Montpellier, INRIA, NeuroResp*); Guiraud, David (*INRIA*); Renaux, Serge (*ATROTECH/NEURORESP/SIRMED*); Similowski, Thomas (*UPRES EA2397 Université Paris VI Pierre et Marie Curie*); Azevedo-Coste, Christine (*INRIA/LIRMM*)

18:00-19:30 FrPOS-30.10  
**Feasibility Study of a Novel MRI-Safe and Interactive Respiratory Biofeedback System** ..... 5477-5480  
 Ellerau, Mona (*Otto-von-Guericke University Magdeburg*); Odenbach, Robert\* (*Otto-von-Guericke University Magdeburg*); Friebe, Michael (*Otto-von-Guericke-University*)

18:00-19:30 FrPOS-30.11  
**Signal Quality in Reconstructed 12-Lead Ambulatory ECGs Recorded using 3-Lead Device** ..... 5481-5487  
 Ivanovic, Marija\* (*Vinca Institute of Nuclear Sciences*); Miletic, Marjan (*Vinca Institute of Nuclear Sciences, University of Belgrade, Mik*); Subotic, Ida (*Clinical center of Serbia*); Boljevic, Darko (*Institute for Cardiovascular Diseases "Dedinje"*)

FrPOS-31: 18:00-19:30	Hall B
<b>Health Technology and Clinical Engineering – Poster (Poster Session)</b>	

18:00-19:30 FrPOS-31.1  
**Development of Adapted Guitar to Improve Motor Function after Stroke: Feasibility Study in Young Adults** ..... 5488-5493  
 Dechenaud, Marcelline\* (*Louisiana State University*); Laidig, Daniel (*TU Berlin*); Seel, Thomas (*Technische Universität Berlin*); Gilbert, Hunter B. (*Louisiana State University*); Kuznetsov, Nikita (*Louisiana State University*)

18:00-19:30 FrPOS-31.2  
**TTR-FAP Progression Evaluation based on Gait Analysis using a Single RGB-D Camera** ..... 5494-5497  
 Vilas-Boas, Maria\* (*INESC-TEC & Faculty of Engineering, University of Porto*); Rocha, Ana Patrícia (*University of Aveiro*); Choupina, Hugo Miguel Pereira (*University of Porto*); Cardoso, Márcio Neves (*Hospital Santo António, Centro Hospitalar do Porto E.P.E.*); Fernandes, José Maria (*University of Aveiro (PT 501461108)*); Coelho, Teresa (*Unidade Corino de Andrade, Hospital Santo António, Centro Hospit*); Cunha, Joao Paulo Silva (*INESC TEC / University of Porto*)

18:00-19:30 FrPOS-31.3  
**Using Thermography as Auxiliary Tool to Thyroid Cancer Diagnosis: Case Study** ..... 5498-5501  
 Magas, Viviane (*Federal University of Technology – Paraná (UTFPR)*); Ulbricht, Leandra\* (*UTFPR – Federal University of Technology – Paraná*); Romaneli, Eduardo F. R. (*UTFPR – Federal University of Technology – Paraná*); Gamba, Humberto (*Federal Univ. of Technology UTFPR- C.N.P.J.*)

18:00-19:30 FrPOS-31.4  
**DigitalROM: Development and Validation of a System for Assessment of Shoulder Range of Motion** ..... 5502-5505  
 Muaremi, Amir\* (*Novartis Institutes for Biomedical Research*); Walsh, Lorcan (*Novartis*); Stanton, Tom (*Novartis*); Schieker, Matthias (*Novartis Institutes for Biomedical Research*); Clay, Ieuan (*Novartis Institutes for Biomedical Research*)

18:00-19:30 FrPOS-31.5  
**Non-Invasive Assessments of the Advanced Glycation End Products in Human Skin using Reflectance NIR Spectroscopy** ..... 5506-5509  
 Shin, Eui Seok\* (*Samsung Advanced Institute of Technology*); Park, Yun Sang (*Samsung Electronics Co., Ltd.*); Nam, Sung Hyun (*Samsung Advanced Institute of Technology, Samsung Electronics*)

18:00-19:30 FrPOS-31.6  
**New Strategy of Visual Acuity Assessment by Consecutively-Sized Landolt Ring Symbol** ..... 5510-5513  
 Lee, Ho Jin\* (*Seoul National University*); Lee, Woon-Hee (*Seoul National University*); Bae, So Hyun (*Hallym University*); Seo, Jong Mo (*Seoul National University, School of Engineering*)

**Therapeutic Systems and Technologies – Poster (Poster Session)**

- 18:00-19:30 FrPOS-32.1  
**An Noninvasive and Impedance-Ignored Control Strategy of the Ablation Zone in Radiofrequency Ablation Therapy** ..... 5514-5517  
 Zheng, Yaobin (*Shanghai Jiao Tong University*); Zhang, Kangwei (*Shanghai Jiao Tong University*); Zou, Jincheng (*Shanghai Jiao Tong University*); Zou, Ke (*Shanghai Jiao Tong University*); Sun, Jianqi (*Shanghai Jiao Tong University*); Zhang, Aili\* (*Shanghai Jiao Tong University*)
- 18:00-19:30 FrPOS-32.2  
**Post-Treatment Analysis of Irreversible Electroporation Waveforms Delivered to Human Pancreatic Cancer Patients** ..... 5518-5521  
 Beitel-White, Natalie\* (*Virginia Tech*); Martin, Robert C. G. (*University of Louisville*); Davalos, Rafael (*Virginia Tech*)
- 18:00-19:30 FrPOS-32.3  
**Miniaturized Peristaltic Rotary Pump for Non-Continuous Drug Dosing** ..... 5522-5526  
 Tamadon, Izadyar\* (*Scuola Superiore Sant'Anna*); Simoni, Virginia (*University of Pisa*); Iacovacci, Veronica (*Scuola Superiore Sant'Anna*); Vistoli, Fabio (*University of Pisa*); Ricotti, Leonardo (*Scuola Superiore Sant'Anna*); Menciasci, Arianna (*Scuola Superiore Sant'Anna*)
- 18:00-19:30 FrPOS-32.4  
**Improved Outcomes in Hemodialysis/Hemodiafiltration (HD/HDF) Treatments Applying Exercise and Physio-Logical Monitoring Techniques: Preliminary Results** ..... 5527-5530  
 Lopez del Angel, Francisco (*Universidad Autonoma Metropolitana*); Azpiroz-Leehan, Joaquin\* (*Universidad Autonoma Metropolitana*); Martinez-Licon, Fabiola (*Universidad Autonoma Metropolitana*); Moron Mendoza, Andres (*Asociación Mexicana de Obesidad Riñon y Nutricion*); Fonseca Alva, Angel (*Nefrored SAPI*); Quevedo, Karina (*Nefrored SAPI*); Rosas Andreu, Gerardo (*Nefrored SAPI*); Cadena, Miguel (*Universidad Autonoma Metropolitana*); De la Rosa, Ana Maria (*Nefrored SAPI*); Mendez, Danilo (*Universidad Nacional Autónoma de Mexico*); Sacristan, Emilio (*Universidad Autónoma Metropolitana*)

**Saturday, 27 July 2019****Brain-Computer Interface (I) (Oral Session)****Chair:** Carrozza, Maria Chiara (*Scuola Superiore Sant'Anna*)

- 08:30-08:45 SaA01.1  
**Decoding Speech from Single Trial MEG Signals using Convolutional Neural Networks and Transfer Learning** ..... 5531-5535  
 Dash, Debadatta\* (*The University of Texas at Dallas*); Ferrari, Paul (*University of Texas at Austin*); Heitzman, Daragh (*Texas Neurology*); Wang, Jun (*University of Texas at Dallas*)
- 08:45-09:00 SaA01.2  
**Investigating Evoked EEG Responses to Targets Presented in Virtual Reality** ..... 5536-5539  
 Lapborisuth, Pawan (*Columbia University*); Faller, Josef (*Columbia University*); Koss, Jonathan\* (*Columbia University*); Waytowich, Nicholas (*Army Research Laboratory*); Touryan, Jonathan (*U.S. Army Research Laboratory*); Sajda, Paul (*Columbia University*)
- 09:00-09:15 SaA01.3  
**Enhancing Mu-Based BCI Performance with Rhythmic Electrical Stimulation at Alpha Frequency** ..... 5540-5543  
 Zhang, XiangZi (*Jinan University*); Guo, Yaqiu (*Jinan University*); Gao, BoYu (*Jinan University*); Long, Jinyi\* (*Jinan University*)
- 09:15-09:30 SaA01.4  
**Trajectory Decoding of Arm Reaching Movement Imageries for Brain-Controlled Robot Arm System** ..... 5544-5547  
 Jeong, Ji-Hoon (*Korea University*); Shim, Kyung-Hwan (*Korea University*); Kim, Dong-Joo (*Korea University*); Lee, Seong-Whan\* (*Korea University*)

09:30-09:45 SaA01.5  
**An SSVEP-BCI in Augmented Reality** ..... 5548-5551  
Liu, Pengxiao (*Tianjin University*); Ke, Yufeng\* (*Tianjin University*); Du, Jiale (*Tianjin University*); Liu, Wentao (*Tianjin University*); Kong, Linghan (*Tianjin University*); Wang, Ningci (*Tianjin University*); Xu, Minpeng (*Tianjin University*); An, Xingwei (*Tianjin University*); Ming, Dong (*Tianjin University*)

09:45-10:00 SaA01.6  
**Estimation of Mental Workload Induced by Different Presentation Rates in Rapid Serial Visual Presentation Tasks** ..... 5552-5555  
Yi, Weibo\* (*Beijing Machine & Equipment Institute*); Qiu, Shuang (*Institute of Automation, Chinese Academy of Science*); Fan, Xin-An (*Beijing Machine & Equipment Institute*); Zhang, Lijian (*Beijing Machine & Equipment Institute*)

SaA02: 08:30-10:00 Hall A8 – Level 1  
**Signal Processing and Classification of Photoplethysmographic Signals** (Oral Session)  
Chair: Faes, Luca (*University of Palermo*)

08:30-08:45 SaA02.1  
**RespNet: A Deep Learning Model for Extraction of Respiration from Photoplethysmogram** ..... 5556-5559  
R, Vignesh\* (*Healthcare Technology Innovation Center, IIT Madras*); Murugesan, Balamurali (*Indian Institute of Technology Madras*); Balakarthikeyan, Vaishali (*Healthcare Technology Innovation Centre*); M Shankaranarayana, Sharath (*Indian Institute of Technology Madras*); SP, Preejith (*Healthcare Technology Innovation Center – IIT Madras*); Ram, Keerthi (*IIT Madras*); Joseph, Jayaraj (*HTIC, Indian Institute of Technology Madras*); Sivaprakasam, Mohanasankar (*Indian Institute of Technology Madras*)

08:45-09:00 SaA02.2  
**PPG-Based Blood Pressure Monitoring by Pulse Wave Analysis: Calibration Parameters are Stable for Three Months** ..... 5560-5563  
Proenca, Martin\* (*CSEM SA*); Bonnier, Guillaume (*CSEM SA*); Ferrario, Damien (*CSEM*); Verjus, Christophe (*CSEM*); Lemay, Mathieu (*CSEM*)

09:00-09:15 SaA02.3  
**Sleep-Wake Classification using Statistical Features Extracted from Photoplethysmographic Signals** ... 5564-5567  
Motin, Mohammad Abdul (*PhD Student, University of Melbourne*); Karmakar, Chandan\* (*Deakin University*); Penzel, Thomas (*Charité Universitätsmedizin Berlin*); Palaniswami, Marimuthu (*The University of Melbourne*)

09:15-09:30 SaA02.4  
**A Validity and Reliability Study of Conditional Entropy Measures of Pulse Rate Variability** ..... 5568-5571  
Pernice, Riccardo\* (*University of Palermo*); Javorka, Michal (*Comenius University, Jessenius Faculty of Medicine*); Krohova, Jana (*Comenius University in Bratislava*); Czippelova, Barbora (*Dept. of Physiology, Comenius University, Jessenius Faculty*); Turianikova, Zuzana (*Dept. of Physiology, Comenius University, Jessenius Faculty*); Busacca, Alessandro (*Università degli Studi di Palermo*); Faes, Luca (*University of Palermo*)

09:30-09:45 SaA02.5  
**Photoplethysmography Signal Analysis to Assess Obesity, Age Group and Hypertension** ..... 5572-5575  
Ferdinando, Hany\* (*University of Oulu*); Huotari, Matti (*University of Oulu*); Myllylä, Teemu (*University of Oulu*)

09:45-10:00 SaA02.6  
**Motion Artifact Removal of Photoplethysmogram (PPG) Signal** ..... 5576-5580  
Abdul Majeed, Ibrahim\* (*Samsung R&D India – Bangalore*); Sujit, Jos (*Samsung Research India-Bangalore*); Arora, Rahul (*Samsung R&D Institute India Bangalore*); Karam, Choi (*Samsung Advanced Institute of Technology*); Bae, Sang Kon (*Samsung Advanced Inst of Tech*)

**Optical Imaging – Coherence Tomography (Oral Session)**

- 08:30-08:45 SaA03.1  
**Glaucoma Assessment from OCT using Capsule Network** ..... 5581-5584  
 Gaddipati, Divya Jyothi\* (*International Institute of Information Technology*); Desai, Alakh (*International Institute of Information Technology, Hyderabad*); Sivaswamy, Jayanthi (*International Institute of Information Technology-Hyderabad*); Vermeer, Koenraad A. (*Rotterdam Ophthalmic Institute, Rotterdam Eye Hospital*)
- 08:45-09:00 SaA03.2  
**Super-Resolution OCT using Sparse Representations and Heavy-Tailed Models** ..... 5585-5588  
 Valdez Zermeno, Daniel (*University of Bristol*); Mayo, Perla\* (*University of Bristol*); Nicholson, Lindsay (*University of Bristol*); Achim, Alin (*University of Bristol*)
- 09:00-09:15 SaA03.3  
**Speckle Reduction in Optical Coherence Tomography via Super-Resolution Reconstruction** ..... 5589-5592  
 Zhao, Rui (*Shenyang Jianzhu University*); Zhao, Yitian\* (*Chinese Academy of Sciences*); Chen, Zhili (*Shenyang Jianzhu University*); Zhao, Yifan (*Cranfield University*); Yang, Jianlong (*Cixi Institute of Biomedical Engineering, Chinese Academy of Sci*); Hu, Yan (*Chinese Academy of Sciences*); Cheng, Jun (*Institute of Biomedical Engineering, Chinese Academy of Sciences*); Liu, Jiang (*Ningbo Institute of Materials Technology & Engineering, CAS*)
- 09:15-09:30 SaA03.4  
**Relation between Retinal Vasculature and Retinal Thickness in Macular Edema** ..... 5593-5596  
 Ajaz, Aqsa\* (*RMIT University*); Aliahmad, Behzad (*RMIT University*); Sarossy, Marc (*RMIT University*); Kant Kumar, Dinesh (*RMIT University*)
- 09:30-09:45 SaA03.5  
**Using Convolutional Neural Networks for Classification of Bifurcation Regions in IVOC Images** ..... 5597-5600  
 Miyagawa, Makoto (*Federal University of Amazonas*); Costa, Marly G. F. (*Federal University of Amazonas – UFAM*); Gutierrez, Marco (*Heart Institute, University of Sao Paulo Medical School*); Costa, Joao Pedro (*Universidade Federal do Amazonas*); Costa Filho, Cicero F. F.\* (*Universidade Federal do Amazonas*)
- 09:45-10:00 SaA03.6  
**Optical Coherence Tomography Image Reconstruction using Morphological Component Analysis** ..... 5601-5604  
 Rabbani, Hossein\* (*Isfahan Univ. of Medical Sciences*); Mokhtary, Marzieh (*Isfahan University of Medical Sciences*)

**Bio-Electric Monitoring Applications (Oral Session)****Co-Chair:** Kidmose, Preben (*Aarhus University, Denmark*)

- 08:30-08:45 SaA04.1  
**EEG-Based Mental Workload Estimation** ..... 5605-5608  
 Samima, Shabnam (*Indian Institute of Technology Kharagpur*); Sarma, Monalisa\* (*Indian Institute of Technology Kharagpur*)
- 08:45-09:00 SaA04.2  
**Emotional State Estimation using Sensor Fusion of EEG and EDA** ..... 5609-5612  
 Yasemin, Mine\* (*Istanbul Technical University*); Sarikaya, Mehmet Ali (*Istanbul Technical University*); Ince, Gökhan (*Istanbul Technical University*)
- 09:00-09:15 SaA04.3  
**Generic Dry-Contact Ear-EEG** ..... 5613-5616  
 Rands Bertelsen, Astrid (*Aarhus University*); Bladt, Henriette (*Aarhus University*); Christensen, Christian Bech (*Aarhus University*); Kappel, Simon Lind (*University of Moratuwa*); Toft, Hans Olaf (*Widex A/S*); Rank, Mike Lind (*Widex A/S*); Mikkelsen, Kaare (*University of Aarhus*); Kidmose, Preben\* (*Aarhus University, Denmark*)

09:15-09:30		SaA04.4
<b>An Efficient Algorithm for the Extraction of Fetal ECG from Standard and Non-Standard Multi Abdominal Maternal Leads</b> .....		
	Pini, Nicolò* ( <i>Politecnico di Milano</i> ); Magenes, Giovanni ( <i>University of Pavia</i> ); Fanelli, Andrea ( <i>Massachusetts Institute of Technology</i> ); Signorini, Maria G. ( <i>Politecnico di Milano</i> )	5617-5620
09:30-09:45		SaA04.5
<b>Capacitive Multi-Electrode Array with Real-Time Electrode Selection for Unobtrusive ECG and BIOZ Monitoring</b> .....		
	Castro, Ivan D. ( <i>KU Leuven &amp; imec</i> ); Patel, Aakash* ( <i>imec</i> ); Torfs, Tom ( <i>imec</i> ); Puers, Robert ( <i>Catholic University of Leuven</i> ); Van Hoof, Chris ( <i>imec</i> )	5621-5624
09:45-10:00		SaA04.6
<b>Characterization of Implanted Stents through Neointimal Tissue Bioimpedance Simulations</b> .....		
	Portillo-Anaya, Jose María ( <i>Universidad de Sevilla</i> ); Perez, Pablo ( <i>Instituto de Microelectrónica de Sevilla / Universidad de Sevilla</i> ); Huertas, Gloria ( <i>Instituto de Microelectrónica de Sevilla / Universidad de Sevilla</i> ); Olmo, Alberto ( <i>Universidad de Sevilla</i> ); Serrano, Juan A. ( <i>Instituto de Microelectrónica de Sevilla (IMSE/US)</i> ); Andres, Maldonado-Jacobi ( <i>Instituto de Microelectrónica de Sevilla / Universidad de Sevilla</i> ); Yufera, Alberto* ( <i>University of Seville</i> )	5625-5628
<b>SaA05: 08:30-10:00</b> Hall A2 – Level 1		
<b>Time-Frequency Analysis of Cardiovascular Signals</b> (Oral Session)		
<b>Chair:</b> Augustyniak, Piotr ( <i>AGH University of Science and Tech</i> )		
<b>Co-Chair:</b> Hernández, Alfredo I. ( <i>Univ. of Rennes 1 and INSERM U199</i> )		
08:30-08:45		SaA05.1
<b>A Direct Transform of Discrete Non-Uniform ECG to a Time-Scale Representation</b> .....		
	Augustyniak, Piotr* ( <i>AGH University of Science &amp; Tech</i> )	5629-5632
08:45-09:00		SaA05.2
<b>ECG Delineation using a Piecewise Gaussian Derivative Model with Parameters Estimated from Scale-Dependent Algebraic Expressions</b> .....		
	Spicher, Nicolai* ( <i>University of Applied Sciences &amp; Arts Dortmund</i> ); Kukuk, Markus ( <i>University of Applied Sciences &amp; Arts Dortmund</i> )	5633-5637
09:00-09:15		SaA05.3
<b>Differences in Brugada Syndrome Patients through Ventricular Repolarization Analysis during Sleep</b> ...		
	Romero, Daniel ( <i>Institute for Bioengineering of Catalonia</i> ); Béhar, Nathalie ( <i>Université de Rennes 1</i> ); Mabo, Philippe ( <i>Université de Rennes 1</i> ); Hernández, Alfredo I* ( <i>Univ. of Rennes 1 &amp; INSERM U1099</i> )	5638-5641
09:15-09:30		SaA05.4
<b>Spectro-Temporal Feature based Multi-Channel Convolutional Neural Network for ECG Beat Classification</b> .....		
	Chen, Hao ( <i>Biofourmis</i> ); Wibowo, Sandi ( <i>Biofourmis</i> ); Majmudar, Maulik ( <i>Massachusetts General Hospital</i> ); Rajput, Kuldeep Singh* ( <i>Biofourmis</i> )	5642-5645
09:30-09:45		SaA05.5
<b>Cardiotocograph Data Classification Improvement by using Empirical Mode Decomposition</b> .....		
	Fuentealba, Patricio* ( <i>Otto von Guericke Universität, Magdeburg.</i> ); Illanes, Alfredo ( <i>Otto-von-Guericke University of Magdeburg</i> ); Ortmeier, Frank ( <i>Otto von Guericke Universität, Magdeburg.</i> )	5646-5649
09:45-10:00		SaA05.6
<b>Estimation of Beat-to-Beat Interval and Systolic Time Intervals using Phono and Seismocardiograms</b> ..		
	Ahmaniemi, Teemu* ( <i>VTT Technical Research Center of Finland</i> ); Rajala, Satu ( <i>Nokia Technologies</i> ); Lindholm, Harri ( <i>Nokia Technologies</i> )	5650-5656



SaA07: 08:30-10:00

Hall A4 – Level 1

**Micro/Nano-Bioengineering** (Oral Session)

**Chair:** Bansod, Yogesh (*University of Rostock*)

**Co-Chair:** Weizel, Alina (*University of Rostock*)

08:30-08:45

SaA07.1

**High Density Nanowire Electrodes for Intracortical Microstimulation** ..... 5657-5660

Puttaswamy, Srinivasu Valagerahally\* (*Ulster University*); Shi, Qiongfeng (*National University of Singapore*);  
Steele, David (*Ulster University*); Fishlock, Sam (*Ulster University*); Lee, Chengkuo (*National University of  
Singapore*); McLaughlin, James (*University of Ulster*)

08:45-09:00

SaA07.2

**Development of Size-Selective Microfluidic Platform** ..... 5661-5664

Chen, Zheyuan\* (*Texas A&M University*); Yamaguchi, Hirohito (*Hamad Bin Khalifa University*); Kameoka, Jun  
(*Texas A&M University*)

09:00-09:15

SaA07.3

**Evaluating Plasma Skimming with Whole Blood in Small Gap Region Imitating Clearance of Blood  
Pumps** ..... 5665-5669

Jiang, Ming\* (*Tokyo Institute of Technology*); Murashige, Tomotaka (*Tokyo Institute of Technology*); Sakota,  
Daisuke (*National Institute of Advanced Industrial Science & Technology*); Hijikata, Wataru (*Tokyo Institute of  
Technology*)

09:15-09:30

SaA07.4

**Rapid Label-Free DNA Quantification by Multi-Frequency Impedance Sensing on a Chip** .....  B0E

Sui, Jianye\* (*Rutgers, the State University of New Jersey*); Gandotra, Neeru (*Yale University*); Scharfe, Curt  
(*Yale University*); Javanmard, Mehdi (*Rutgers University New Bru*)

09:30-09:45

SaA07.5

**Computational Simulation of Electromagnetic Fields on Human Targets for Magnetic Targeting  
Applications** ..... 5674-5677

Fiocchi, Serena\* (*Consiglio Nazionale delle Ricerche CNR*); Chiaramello, Emma (*IEIIT Institute of Electronics,  
Computers & Telecommunication*); Bonato, Marta (*IEIIT Institute of Electronics, Computers &  
Telecommunication*); Tognola, Gabriella (*CNR IEIIT – Istituto di Elettronica e di Ingegneria dell'Informa*);  
Catalucci, Daniele (*Consiglio Nazionale delle Ricerche, Istituto di Ricerca Genetica*); Parazzini, Marta  
(*Consiglio Nazionale delle Ricerche*); Ravazzani, Paolo (*Consiglio Nazionale delle Ricerche CNR*)

09:45-10:00

SaA07.6

**A Novel Spinal Cord Surrogate for the Study of Compressive Traumatic Spinal Cord Injuries** ..... 5678-5680

Diotalevi, Lucien (*École de Technologie Supérieure*); Petit, Yvan\* (*École de Technologie Supérieure*);  
Peyrache, Louis-Marie (*École de Technologie Supérieure*); Facchinello, Yann (*École de Technologie  
Supérieure*); Mac-Thiong, Jean-Marc (*Dept. of Surgery, Faculty of Medicine, University of Montre*); Wagnac,  
Eric (*Ecole de Technologie Superieure*)

SaA08: 08:30-10:00

M8 – Level 3

**Health Informatics – Health Data Acquisition, Transmission, Management and Visualization** (Oral Session)

08:30-08:45

SaA08.1

**Differential Watermarking of Multilead ECG Baseline** ..... 5681-5684

Augustyniak, Piotr\* (*AGH University of Science & Tech*)

08:45-09:00

SaA08.2

**Fully Automated Subtraction of Heart Activity for Fetal Magnetoencephalography Data** ..... 5685-5689

Sippel, Katrin\* (*University of Tübingen*); Moser, Julia (*University of Tübingen*); Schleger, Franziska (*University  
of Tübingen*); Escalona-Vargas, Diana Irazú (*University of Arkansas for Medical Sciences*); Preissl, Hubert  
(*University of Tübingen*); Rosenstiel, Wolfgang (*Dept. of Computer Engineering, University Tübingen,  
Germany*); Spüler, Martin (*University of Tübingen*)

09:00-09:15	SaA08.3
<b>A Mixed Reality System for the Simulation of Emergency and First-Aid Scenarios</b> .....	5690-5695
Girau, Elisa ( <i>University of Genoa</i> ); Mura, Fabrizio ( <i>University of Genoa</i> ); Bazurro, Simone ( <i>University of Genoa</i> – <i>Centro di Ateneo di Simulazione e Formazio</i> ); Casadio, Maura ( <i>University of Genova</i> ); Chirico, Marco ( <i>University of Genoa</i> – <i>Centro di Ateneo di Simulazione e Formazio</i> ); Solari, Fabio ( <i>University of Genoa</i> ); Chessa, Manuela* ( <i>University of Genoa</i> )	
09:15-09:30	SaA08.4
<b>An Artificial Intelligence-Based System for Nutrient Intake Assessment of Hospitalised Patients</b> .....	5696-5699
Lu, Ya ( <i>University of Bern</i> ); Stathopoulou, Thomai ( <i>University of Bern</i> ); Vasiloglou, Maria F. ( <i>University of Bern</i> ); Christodoulidis, Stergios ( <i>University of Bern</i> ); Blum, Beat ( <i>University Hospital Bern</i> ); Walser, Thomas ( <i>Inselspital, Bern University Hospital, University of Bern</i> ); Meier, Vinzenz ( <i>Inselspital, Bern University Hospital, University of Bern</i> ); Stanga, Zeno ( <i>Bern University Hospital, University of Bern</i> ); Mougiakakou, Stavroula* ( <i>University of Bern</i> )	
09:30-09:45	SaA08.5
<b>A Sustainable HL7 FHIR based Ontology for PHR Data</b> .....	5700-5703
Kilintzis, Vassilis* ( <i>Aristotle University of Thessaloniki</i> ); Kosvyra, Alexandra ( <i>Aristotle University of Thessaoniki</i> ); Beredimas, Nikolaos ( <i>Aristotle University of Thessaloniki</i> ); Natsiavas, Pantelis ( <i>Aristotle University of Thessaloniki</i> ); Maglaveras, Nikolaos ( <i>Aristotle University of Thessaloniki</i> ); Chouvarda, Ioanna ( <i>Aristotle University</i> )	
09:45-10:00	SaA08.6
<b>Predicting Stroke from Electronic Health Records</b> .....	5704-5707
Chidozie Shamrock, Nwosu ( <i>NCIRL</i> ); Dev, Soumyabrata ( <i>The ADAPT Centre</i> ); Bhardwaj, Peru ( <i>Trinity College Dublin</i> ); Veeravalli, Bharadwaj ( <i>National University of Singapore</i> ); John, Deepu* ( <i>UCD</i> )	

SaA11: 08:30-10:00	M4 – Level 3
<b>Sleep Apnea</b> (Oral Session)	
<b>Chair:</b> Penzel, Thomas ( <i>Charité Universitätsmedizin Berlin</i> )	
<b>Co-Chair:</b> Khoo, Michael ( <i>University of Southern California</i> )	

08:30-08:45	SaA11.1
<b>An Investigation of the Relationship between the Apnoea Hypopnoea Index and Apnoea Hypopnoea Duration Per Hour</b> .....	5708-5711
de Chazal, Philip* ( <i>University of Sydney</i> ); Sadr, Nadi ( <i>University of Sydney</i> )	
08:45-09:00	SaA11.2
<b>Recognition of Sleep/Wake States Analyzing Heart Rate, Breathing and Movement Signals</b> .....	5712-5715
Gaiduk, Maksym* ( <i>HTWG Konstanz</i> ); Seepold, Ralf ( <i>HTWG Konstanz</i> ); Penzel, Thomas ( <i>Charité Universitätsmedizin Berlin</i> ); Ortega, Juan Antonio ( <i>Universidad de Sevilla</i> ); Glos, Martin ( <i>Charité-Universitaetsmedizin Berlin</i> ); Martinez Madrid, Natividad ( <i>Reutlingen University</i> )	
09:00-09:15	SaA11.3
<b>Trend Statistics Network and Channel Invariant EEG Network for Sleep Arousal Study</b> .....	5716-5722
Rao M V, Achuth ( <i>Indian Institute of Science</i> ); Ghosh, Prasanta ( <i>Indian Institute of Science</i> ); Bhattacharjee, Tanuka* ( <i>Research &amp; Innovation, TATA Consultancy Services, India</i> ); Dutta Choudhury, Anirban ( <i>Tata Consultancy Services Ltd.</i> )	
09:15-09:30	SaA11.4
<b>Effects of Optimized Heart Failure Medication on Central Sleep Apnea with Cheyne-Stokes Respiration Pattern in Chronic Heart Failure with Reduced Left-Ventricular Ejection Fraction</b> .....	5723-5726
Schoebel, Christoph* ( <i>Charité Universitaetsmedizin Berlin</i> ); Fietze, Ingo ( <i>Charité-Universitaetsmedizin Berlin</i> ); Penzel, Thomas ( <i>Charité Universitätsmedizin Berlin</i> )	
09:30-09:45	SaA11.5
<b>Dynamic Estimation of Cerebral Blood Flow using Photo-Plethysmography Signal during Simulated Apnea</b> .....	5727-5730
Soltan Zadi, Armin ( <i>University of Texas at Arlington</i> ); Alex, Raichel ( <i>University of Texas Arlington</i> ); Zhang, Rong ( <i>University of Texas Southwestern Medical Center at Dallas</i> ); Watenpugh, Donald ( <i>Sleep Consultants Inc.</i> ); Behbehani, Khosrow* ( <i>University of Texas at Arlington</i> )	

09:45-10:00 SaA11.6  
**Linear Mixed Effects Modelling of Oxygen Desaturation after Sleep Apneas and Hypopneas: A Pilot Study** ..... 5731-5734  
 Solà-Soler, Jordi\* (*Institut de Bioenginyeria de Catalunya (IBEC)*); Giraldo, Beatriz (*Universitat Politècnica de Catalunya*); Jané, Raimon (*Institut de Bioenginyeria de Catalunya (IBEC)*)

SaA12: 08:30-10:00	M6 – Level 3
<b>Imaging for Surgery and Intervention (Oral Session)</b>	
<b>Co-Chair:</b> Friebe, Michael ( <i>Otto-von-Guericke-University</i> )	

08:30-08:45 SaA12.1  
**RASNet: Segmentation for Tracking Surgical Instruments in Surgical Videos using Refined Attention Segmentation Network** ..... 5735-5738  
 Ni, ZhenLiang (*Institute of Automation, Chinese Academy of Sciences*); Bian, Gui-Bin (*Institute of Automation, Chinese Academy of Sciences*); Xie, Xiao-Liang (*Chinese Academy of Sciences*); Hou, Zeng-Guang\* (*Institute of Automation, Chinese Academy of Sciences*); Zhou, Xiaohu (*Institute of Automation, Chinese Academy of Sciences*); Zhou, Yanjie (*Institute of Automation, Chinese Academy of Sciences*)

08:45-09:00 SaA12.2  
**Novel Similarity Metric for Image-Based Out-of-Plane Motion Estimation in 3D Ultrasound** ..... 5739-5742  
 Balakrishnan, Sathish\* (*Otto von Guericke University Magdeburg*); Patel, Rajan (*Otto von Guericke University Magdeburg*); Illanes, Alfredo (*Otto-von-Guericke University of Magdeburg*); Friebe, Michael (*Otto-von-Guericke-University*)

09:00-09:15 SaA12.3  
**Quantifying Dermatology: Method and Device for User-Independent Ultrasound Measurement of Skin Thickness** ..... 5743-5748  
 Beaudoin, Judith (*Massachusetts Institute of Technology*); Anthony, Brian W.\* (*Massachusetts Institute of Technology*)

09:15-09:30 SaA12.4  
**Towards Validating Stent Induced Micro Flow Patterns in Left Main Coronary Artery Bifurcations** ..... 5749-5752  
 Masoud-Ansari, Sina (*The University of Auckland*); Ormiston, John (*Mercy Angiography*); Webster, Mark (*Auckland District Health Board*); Pontre, Beau (*University of Auckland*); Cowan, Brett (*University of Auckland*); Beier, Susann\* (*University of New South Wales*)

09:30-09:45 SaA12.5  
**Susceptibility-Based MR Imaging of Nitinol Stent** ..... 5753-5756  
 Shi, Caiyun (*Shenzhen Institutes of Advanced Technology, Lauterbur Research C*); Wang, Haifeng (*Shenzhen Institutes of Advanced Technology, Chinese Academy of S*); Xie, Guoxi (*Shenzhen Institutes of Advanced Technology, Lauterbur Research C*); Su, Shi (*Shenzhen Institutes of Advanced Technology, Chinese Academy of S*); Huang, Yi (*Guangzhou Panyu Central Hospital*); Chen, Hanwei (*Guangzhou Panyu Central Hospital*); Liu, Xin (*Shenzhen Institutes of Advanced Technology, Chinese Academy of Sc*); Zheng, Hairong (*Shenzhen Inst of Advanced Tech*); Liang, Dong\* (*Shenzhen Institutes of Advanced Technology*)

09:45-10:00 SaA12.6  
**A New Method for the 3D Reconstruction of Coronary Bifurcations Pre and Post the Angioplasty Procedure using the QCA** ..... 5757-5760  
 Andrikos, Ioannis (*University of Ioannina*); Sakellarios, Antonis\* (*Forth-Biomedical Research Institute*); Siogkas, Panagiotis (*Forth-IMBB*); Tsompou, Panagiota (*Unit of Medical Technology & Intelligent Information Systems,*); Kigka, Vassiliki (*University of Ioannina*); Michalis, Lampros (*University of Ioannina*); Fotiadis, Dimitrios I. (*University of Ioannina*)

SaA13: 08:30-10:00 R2 – Level 3  
**New Sensing Technologies** (Oral Session)  
**Co-Chair:** Cisotto, Giulia (*University of Padova*)

- 08:30-08:45 SaA13.1  
**A Reconfigurable, Pulse-Shaping Potentiometric Readout System for Bio-Sensing Transistors** ..... 5761-5764  
Lu, Shao-Yung (*National Chiao Tung University*); Shan, Siang-Sin (*National Chiao Tung University*); Liao, Yu-Te\* (*National Chiao Tung University*); Yang, Jiancheng (*University of Florida*); Ren, Fan (*University of Florida*); Chang, Chin-Wei (*University of Florida*); Lin, Jenshan (*University of Florida*); Pearton, Stephen (*University of Florida*)
- 08:45-09:00 SaA13.2  
**A Simple and Accessible Inkjet Platform for Ultra-Short Concept-to-Prototype sEMG Electrodes Production** ..... 5765-5768  
Cisotto, Giulia\* (*University of Padova*); Rosati, Giulio (*University of Padova*); Paccagnella, Alessandro (*University of Padova*)
- 09:00-09:15 SaA13.3  
**Near Infrared Spectrometric Investigations on the Behaviour of Lactate** ..... 5769-5772  
Baishya, Nystha\* (*City, University of London*); Budidha, Karthik (*City University*); Mamouei, MohammadHossein (*City, University of London*); Qassem, Meha (*City University London*); Vadgama, Pankaj (*Queen Mary University of London*); Kyriacou, Panayiotis (*City University London*)
- 09:15-09:30 SaA13.4  
**Towards the Design of an Impedance-Controlled HD-sEMG Amplifier: A Feasibility Study** ..... 5773-5776  
Cerone, Giacinto Luigi\* (*Politecnico di Torino*); Gazzoni, Marco (*Politecnico di Torino*)
- 09:30-09:45 SaA13.5  
**Hearables: Feasibility and Validation of In-Ear Electrocardiogram** ..... 5777-5780  
Hammour, Ghena (*Imperial College London*); Yarici, Metin\* (*Imperial College London*); von Rosenberg, Wilhelm (*Imperial College London*); Mandic, Danilo (*Imperial College*)
- 09:45-10:00 SaA13.6  
**Wearable Multimodal Stethoscope Patch for Wireless Biosignal Acquisition and Long-Term Auscultation** ..... 5781-5785  
Klum, Michael\* (*Technische Universität Berlin*); Leib, Fabian (*Technische Universität Berlin*); Oberschelp, Casper (*Technische Universität Berlin*); Martens, David (*Technische Universität Berlin*); Pielmus, Alexandru Gabriel (*Technische Universität Berlin*); Tigges, Timo (*Technical University Berlin*); Penzel, Thomas (*Charité Universitätsmedizin Berlin*); Orglmeister, Reinhold (*Technische Universität Berlin*)

SaA14: 08:30-10:00 R3 – Level 3  
**Time-Frequency Analysis of Electrophysiological Signals** (Oral Session)  
**Chair:** Hornero, Roberto (*University of Valladolid*)  
**Co-Chair:** Boylan, Geraldine (*University College Cork*)

- 08:30-08:45 SaA14.1  
**Characterization of EEG Resting-State Activity in Alzheimer's Disease by Means of Recurrence Plot Analyses** ..... 5786-5789  
Núñez, Pablo (*University of Valladolid*); Poza, Jesus\* (*University of Valladolid*); Gomez, Carlos (*University of Valladolid*); Barroso-García, Verónica (*University of Valladolid*); Ruiz-Gómez, Saúl J. (*Biomedical Engineering Group, University of Valladolid*); Maturana-Candelas, Aarón (*University of Valladolid*); Tola-Arribas, Miguel A. (*Dept. of Neurology, Hospital Universitario Río Hortega*); Cano, Mónica (*Dept. of Clinical Neurophysiology, Hospital Universitario R*); Hornero, Roberto (*University of Valladolid*)
- 08:45-09:00 SaA14.2  
**Correntropy based Robust Decomposition of Neuromodulations** ..... 5790-5793  
Akella, Shailaja (*University of Florida, Gainesville*); Principe, Jose\* (*University of Florida*)

09:00-09:15	SaA14.3
<b>State-Space Global Coherence to Estimate the Spatio-Temporal Dynamics of the Coordinated Brain Activity</b> .....	5794-5798
Yousefi, Ali* ( <i>Massachusetts General Hospital &amp; Harvard Medical School</i> ); Saadati Fard, Reza ( <i>Isfahan University of Technology</i> ); Eden, Uri ( <i>Boston University</i> ); Brown, Emery ( <i>MIT</i> )	
09:15-09:30	SaA14.4
<b>Machine Learning without a Feature Set for Detecting Bursts in the EEG of Preterm Infants</b> .....	5799-5802
O'Toole, John M.* ( <i>University College Cork</i> ); Boylan, Geraldine ( <i>University College Cork</i> )	
09:30-09:45	SaA14.5
<b>Multitaper Infinite Hidden Markov Model for EEG</b> .....	5803-5807
Song, Andrew* ( <i>Massachusetts Institute of Technology</i> ); Chlon, Leon ( <i>MIT</i> ); Soulat, Hugo ( <i>MGH – MIT</i> ); Tauber, John ( <i>Massachusetts Institute of Technology</i> ); Subramanian, Sandya ( <i>Massachusetts Institute of Technology</i> ); Ba, Demba ( <i>MIT</i> ); Prerau, Michael ( <i>Massachusetts General Hospital</i> )	
09:45-10:00	SaA14.6
<b>Drug-Specific Models Improve the Performance of an EEG-Based Automated Brain-State Prediction System</b> .....	5808-5811
Kashkooli, Kimia* ( <i>Tufts University School of Medicine</i> ); Polk, Sam, L ( <i>Tufts University</i> )	

SaA15: 08:30-10:00 <b>Ultrasound Imaging – Cardiac and Vascular Applications</b> (Oral Session) <b>Chair:</b> Stieglitz, Thomas ( <i>University of Freiburg</i> ) <b>Co-Chair:</b> Fotiadis, Dimitrios I. ( <i>University of Ioannina</i> )	M3 – Level 3
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08:30-08:45	SaA15.1
<b>A Comparison of Three Multimodality Coronary 3D Reconstruction Methods</b> .....	5812-5815
Tsompou, Panagiota ( <i>Unit of Medical Technology &amp; Intelligent Information Systems,</i> ); Siogkas, Panagiotis ( <i>Forth-IMBB</i> ); Sakellarios, Antonis* ( <i>Forth-Biomedical Research Institute</i> ); Andrikos, Ioannis ( <i>University of Ioannina</i> ); Kigka, Vassiliki ( <i>University of Ioannina</i> ); Lemos, Pedro ( <i>Dept. of Interventional Cardiology at the Heart Institute (InCor)</i> ); Michalis, Lampros ( <i>University of Ioannina</i> ); Fotiadis, Dimitrios I. ( <i>University of Ioannina</i> )	
08:45-09:00	SaA15.2
<b>Left Ventricular Vortices in Myocardial Infarction Observed with Echodynamography</b> .....	5816-5819
Oktamuliani, Sri ( <i>Graduate School of Biomedical Engineering, Tohoku University</i> ); Hasegawa, Kaoru ( <i>Tohoku University</i> ); Saijo, Yoshifumi* ( <i>Tohoku University</i> )	
09:00-09:15	SaA15.3
<b>Experimental Characterization of Optoacoustic Phantoms in Gel Wax and Polyvinyl Alcohol for Blood Pressure Measurements</b> .....	5820-5823
Amado Rey, Ana Belén* ( <i>University of Freiburg</i> ); Mittnacht, Annette ( <i>University of Freiburg</i> ); Stieglitz, Thomas ( <i>University of Freiburg</i> )	
09:15-09:30	SaA15.4
<b>Three-Dimensional Extension of Blood Vessel Network by Combining Multiple Ultrasound Volumes from Different Directions</b> .....	5824-5827
Katai, Takuya ( <i>Tokyo Univ. of Agriculture &amp; Technology</i> ); Yasuda, Ikumu ( <i>Tokyo Univ. of Agriculture &amp; Technology</i> ); Watanabe, Kosuke ( <i>Tokyo Univ. of Agriculture &amp; Technology</i> ); Okadome, Kansai ( <i>Tokyo Univ. of Agriculture &amp; Technology</i> ); Edamoto, Yoshihiro ( <i>Higashi-Saitama National Hospital</i> ); Enosawa, Shin ( <i>National Center for Child Health &amp; Development</i> ); Masuda, Kohji* ( <i>Tokyo Univ. A&amp;T</i> )	
09:30-09:45	SaA15.5
<b>Patch based Texture Classification of Thyroid Ultrasound Images using Convolutional Neural Network</b> .....	5828-5831
Poudel, Prabal* ( <i>Otto-von-Guericke-Universität Magdeburg</i> ); Illanes, Alfredo ( <i>Otto-von-Guericke University of Magdeburg</i> ); Sadeghi, Maryam ( <i>Otto-von-Guericke University, Institute of Medical Technology, I</i> ); Friebe, Michael ( <i>Otto-von-Guericke-University</i> )	

09:45-10:00 SaA15.6  
**Higher Order Statistical Analysis for Thyroid Texture Classification and Segmentation in 2D  
 Ultrasound Images** ..... 5832-5835  
 Mahmoodian, Naghmeh\* (*Otto-von-Guericke-Universität Magdeburg*); Poudel, Prabal (*Otto-von-Guericke-Universität Magdeburg*); Illanes, Alfredo (*Otto-von-Guericke University of Magdeburg*); Friebe, Michael (*Otto-von-Guericke-University*)

SaA16: 08:30-10:00 M5 – Level 3  
**Surgical Robotics** (Oral Session)  
**Chair:** Casals, Alicia (*Center of Research in Biomedical Engineering, Universitat Politècnica de Catalunya, Barcelona Tech*)  
**Co-Chair:** Esfahani, Ehsan (*University at Buffalo, SUNY*)

08:30-08:45 SaA16.1  
**Mechanical Design and Modeling of a Manipulator Tool for a Compact Multiple-Tool Single Port  
 Laparoscopic Robot Platform** ..... 5836-5841  
 Wang, Fanxin\* (*University of Illinois at Urbana-Champaign*); Toombs, Nicholas (*University of Illinois at Urbana-Champaign*); Kesavadas, Thenkurussi (*UIUC/HCESC*); Ferreira, Placid (*University of Illinois at Urbana-Champaign*)

08:45-09:00 SaA16.2  
**Surgical Skill Assessment using Motor Control Features and Hidden Markov Model** ..... 5842-5845  
 Gorantla, Kuber Reddy (*University at Buffalo*); Esfahani, Ehsan\* (*University at Buffalo, SUNY*)

09:00-09:15 SaA16.3  
**Determination of a Tactile Feedback Strategy for use in Robotized Percutaneous Procedures** ..... 5846-5850  
 Zhu, Rui\* (*Hochschule Furtwangen*); Rubbert, Lennart (*INSA Strasbourg*); Renaud, Pierre (*INSA Strasbourg*); Mescheder, Ulrich (*Institute for Microsystems Technology (IMST), Furtwangen Univers*)

09:15-09:30 SaA16.4  
**Development of a Transoral Robotic Surgery Training Platform** ..... 5851-5854  
 Geoghegan, Rory\* (*University of California, Los Angeles*); Song, Jonathan (*University of California, Los Angeles*); Singh, Aadesh (*University of California, Los Angeles*); Le, Tyler (*University of California, Los Angeles*); Abiri, Ahmad (*University of California, Los Angeles*); Mendelsohn, Abie H (*UCLA School of Medicine*)

09:30-09:45 SaA16.5  
**Vision based Robot Assistance in TTTS Fetal Surgery** ..... 5855-5861  
 Sayols, Narcís (*Universitat Politècnica de Catalunya*); Hernansanz, Albert (*Technical University of Catalonia*); Parra, Johanna (*Fetal i+D Fetal Medicine Research Center, BCNatal*); Eixarch, Elisenda (*BCNatal, Hospital Clinic, Hospital Sant Joan de Déu*); Gratacós, Eduard (*Fetal i+D Fetal Medicine Research Center, BCNatal – Barcelona Ce*); Amat, Josep (*Universitat Politècnica de Catalunya, Barcelona Tech.*); Casals, Alicia\* (*Center of Research in Biomedical Engineering, Universitat Politè*)

09:45-10:00 SaA16.6  
**Quantitative Evaluation of Bleeding during Blood Vessel Puncture Caused by Fine Needle in Lower  
 Abdomen** ..... 5862-5866  
 Izumi, Koki\* (*Waseda University*); Tsumura, Ryosuke (*Waseda University*); Iwata, Hiroyasu (*Waseda University*)

SaA17: 08:30-10:00 R12 – Level 3  
**Wearable Inertial Sensors and Systems** (Oral Session)  
**Co-Chair:** Beudel, Martijn (*Amsterdam University Medical Center*)

08:30-08:45 SaA17.1  
**A Clinical Applicable Smartwatch Application for Measuring Hyperkinetic Movement Disorder Severity** ..... 5867-5870  
 Vochteloo, Martijn (*Hanze University of Applied Sciences*); Tijssen, Marina AJ (*Dept Neurology, UMCG, University of Groningen*); Beudel, Martijn\* (*Amsterdam University Medical Center*)

08:45-09:00	SaA17.2
<b>Estimating Movements of Human Body for the Shirt-Type Wearable Device Mounted on the Strain Sensors based on Convolutional Neural Networks</b> .....	5871-5876
Ogata, Kunihiro* ( <i>National Institute of Advanced Industrial Science &amp; Technology</i> ); Matsumoto, Yoshio ( <i>Advanced Industrial Science &amp; Technology</i> )	
09:00-09:15	SaA17.3
<b>IMU Sensor Fusion Algorithm for Monitoring Knee Kinematics in ACL Reconstructed Patients</b> .....	5877-5881
Bravo, Graciela ( <i>Pontificia Universidad Católica de Chile</i> ); Halvorson, Ryan* ( <i>UCSF</i> ); Matthew, Robert, P ( <i>UC Berkeley</i> ); Lansdown, Drew ( <i>UCSF</i> ); Ma, Benjamin ( <i>UCSF</i> ); Bajcsy, Ruzena ( <i>UC Berkeley, CITRIS</i> )	
09:15-09:30	SaA17.4
<b>Techniques for Improving the Reliability of Prosthesis Wearer Muscle Signals using Pressure and EMG Sensors</b> .....	5882-5885
Shin, Jin Woo ( <i>Korea Polytechnic University</i> ); Eom, Su Hong ( <i>Korea Polytechnic University</i> ); Lee, Chol U ( <i>Korea Polytechnic University</i> ); Lee, Eung Hyuk* ( <i>Korea Polytechnic University</i> )	
09:30-09:45	SaA17.5
<b>Gut-Brain Computer Interfacing (GBCI): Wearable Monitoring of Gastric Myoelectric Activity</b> .....	5886-5889
Vujic, Angela* ( <i>MIT</i> ); Krause, Christopher ( <i>MIT</i> ); Georgette, Tso ( <i>MIT</i> ); Lin, Jiaqi ( <i>Dept. of Chemical Engineering, David H. Koch Institute for</i> ); Han, Bicheng ( <i>Harvard University</i> ); Maes, Pattie ( <i>MIT Media Lab</i> )	
09:45-10:00	SaA17.6
<b>A Novel Parameterisation of Phase Plots for Monitoring of Parkinson's Disease</b> .....	5890-5893
Dunne-Willows, Michael* ( <i>EPSRC Centre for Doctoral Training in Cloud Computing for Big Da</i> ); Watson, Paul ( <i>School of Computing Science, Newcastle University, Newcastle Upo</i> ); Shi, Jian ( <i>School of Mathematics &amp; Statistics, Newcastle University</i> ); Rochester, Lynn ( <i>Newcastle University</i> ); Del Din, Silvia ( <i>Newcastle University</i> )	

SaA18: 08:30-10:00	R13 – Level 3
<b>Neural Stimulation (I)</b> (Oral Session)	

08:30-08:45	SaA18.1
<b>Constrained Maximum Intensity Optimized Multi-Electrode tDCS Targeting of Human Somatosensory Network</b> .....	5894-5897
Khan, Asad* ( <i>Universität Klinikum Münster, University of Münster</i> ); Antonakakis, Marios ( <i>University of Muenster</i> ); Vogenauer, Nikolas ( <i>University of Münster</i> ); Wollbrink, Andreas ( <i>University of Muenster</i> ); Suntrup-Krueger, Sonja ( <i>University Hospital Muenster</i> ); Schneider, Till ( <i>Dept. of Neurophysiology &amp; Pathophysiology, University Me</i> ); Herrmann, Christoph ( <i>Research Center Neurosensory Science, European Medical School, U</i> ); Nitsche, Michael A. ( <i>Georg-August-University, Goettingen</i> ); Paulus, Walter ( <i>Georg-August-University, Goettingen</i> ); Hauelsen, Jens ( <i>Technische Universität Ilmenau</i> ); Wolters, Carsten ( <i>University of Muenster</i> )	
08:45-09:00	SaA18.2
<b>Electric Field Distribution during Non-Invasive Electric and Magnetic Stimulation of the Cervical Spinal Cord</b> .....	5898-5901
Fernandes, Sofia Rita ( <i>Faculdade de Ciências e Faculdade de Medicina da Universidade de</i> ); Salvador, Ricardo ( <i>Neuroelectrics</i> ); de Carvalho, Mamede ( <i>IMM Molecular Medicine Institute, Faculty of Medicine, Universit</i> ); Miranda, Pedro Cavaleiro* ( <i>Faculdade de Ciências, Universidade de Lisboa</i> )	
09:00-09:15	SaA18.3
<b>Beta Power May Meditate the Effect of Gamma-TACS on Motor Performance</b> .....	5902-5908
Mastakouri, Atalanti Anastasia* ( <i>Max Planck Institute for Intelligent Systems</i> ); Schölkopf, Bernhard ( <i>MPI for Biological Cybernetics</i> ); Grosse-Wentrup, Moritz ( <i>Max Planck Institute for Intelligent Systems</i> )	
09:15-09:30	SaA18.4
<b>Towards Safe Infrared Nerve Stimulation: A Systematic Experimental Approach</b> .....	5909-5912
Schlett, Paul* ( <i>Uniklinik Freiburg</i> ); Wegner, Celine ( <i>inomed Medizintechnik GmbH</i> ); Krueger, Thilo B ( <i>inomed Medizintechnik GmbH</i> ); Hofmann, Ulrich G. ( <i>University of Freiburg</i> )	

09:30-09:45 SaA18.5  
**A Computational Analysis of the Electric Field Components in Transcranial Direct Current Stimulation** ..... 5913-5917  
 Callejón Leblic, María Amparo\* (*Faculty of Sciences. University of Lisbon*); Miranda, Pedro Cavaleiro (*Faculdade de Ciências, Universidade de Lisboa*)

09:45-10:00 SaA18.6  
**The Lasting Effects of 1Hz Repetitive Transcranial Magnetic Stimulation on Resting State EEG in Healthy Subjects** ..... 5918-5922  
 Qiu, Shuang\* (*Institute of Automation, Chinese Academy of Science*); Wang, Shengpei (*Research Center for Brain-inspired Intelligence & National Lab*); Yi, Weibo (*Beijing Machine & Equipment Institute*); Zhang, Chuncheng (*Institute of Automation, Chinese Academy of Sciences*); He, Huiguang (*Institute of Automation, Chinese Academy of Sciences*)

SaA19: 08:30-10:00 <b>Image Segmentation (I)</b> (Oral Session)	R4 – Level 3
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08:30-08:45 SaA19.1  
**Epistemic Uncertainty Modeling for Vessel Segmentation** ..... 5923-5927  
 Martin, Rémi\* (*Ecole de Technologie Supérieure*); Miró, Joaquim (*Dept. of Pediatrics, CHU Sainte-Justine*); Duong, Luc (*Ecole de Technologie Supérieure*)

08:45-09:00 SaA19.2  
**Simultaneous Tissue Classification and Lateral Ventricle Segmentation via a 2D U-Net Driven by a 3D Fully Convolutional Neural Network** ..... 5928-5931  
 Wu, Jiong (*Sun Yat-Sen University*); Zhang, Yue (*Southern University of Science & Technology*); Tang, Xiaoying\* (*Southern University of Science & Technology*)

09:00-09:15 SaA19.3  
**Instance Segmentation of Nematode Cysts in Microscopic Images of Soil Samples** ..... 5932-5936  
 Chen, Long\* (*RWTH Aachen University, Aachen, Germany*); Strauch, Martin (*RWTH Aachen University*); Daub, Matthias (*Julius Kühn Institute: Federal Research Centre for Cultivated Pl*); Jansen, Marcus (*LemnaTec GmbH, Aachen, Germany*); Luigs, Hans-Georg (*LemnaTec GmbH, Aachen, Germany*); Merhof, Dorit (*RWTH Aachen University*)

09:15-09:30 SaA19.4  
**Pancreas Segmentation in Abdominal CT Scans using Inter-/Intra-Slice Contextual Information with a Cascade Neural Network** ..... 5937-5940  
 Yang, Zhengzheng (*Northwest University*); Zhang, Lei (*Northwest University*); Zhang, Min\* (*Northwest University, China*); Feng, Jun (*Northwest University*); Wu, Zheng (*First Affiliated Hospital of Xi'an Jiao Tong University*); Ren, Fenggang (*First Affiliated Hospital of Xi'an Jiao Tong University*); Lv, Yi (*First Affiliated Hospital of Xi'an Jiao Tong University*)

09:30-09:45 SaA19.5  
**Electroanatomic Mapping to Determine Scar Regions in Patients with Atrial Fibrillation** ..... 5941-5944  
 He, Jiyue\* (*University of Pennsylvania*); Jang, Kuk Jin (*University of Pennsylvania*); Walsh, Katie (*Hospital of The University of Pennsylvania*); Liang, Jackson (*Hospital of The University of Pennsylvania*); Dixit, Sanjay (*Hospital of The University of Pennsylvania*); Mangharam, Rahul (*University of Pennsylvania*)

09:45-10:00 SaA19.6  
**Localization of Small Neoplastic Lesions in Colonoscopy by Estimating Edge, Texture and Motion Saliency** ..... 5945-5948  
 Ruano, Josue (*Universidad Nacional de Colombia*); Barrera, Cristian (*Universidad Nacional de Colombia*); Bravo, Diego (*Universidad Nacional de Colombia*); Gomez, Martin (*Universidad Nacional de Colombia*); Romero, Eduardo\* (*Universidad Nacional de Colombia*)



**Brain-Computer Interface (II)** (Oral Session)

- 10:30-10:45 SaB01.1  
**Applying Intuitive EEG-Controlled Grasp Neuroprostheses in Individuals with Spinal Cord Injury: Preliminary Results from the MoreGrasp Clinical Feasibility Study** ..... 5949-5955  
 Müller-Putz, Gernot\* (*Graz University of Technology*); Ofner, Patrick (*Graz University of Technology*); Pereira, Joana (*Graz University of Technology*); Pinegger, Andreas (*Graz University of Technology*); Schwarz, Andreas (*Graz, University of Technology*); Zube, Marcel (*Graz University of Technology*); Eck, Ute (*Heidelberg University Hospital*); Hessing, Björn (*Heidelberg University Hospital*); Schneiders, Matthias (*Heidelberg University Hospital*); Rupp, Rüdiger (*Heidelberg University Hospital*)
- 10:45-11:00 SaB01.2  
**Effects of Stimulus Position on the Classification of Miniature Asymmetric VEPs for Brain-Computer Interfaces** ..... 5956-5959  
 Xu, Minpeng (*Tianjin University*); Zhou, Xiaoyu\* (*Tianjin University*); Xiao, Xiaolin (*Tianjin University*); Wang, Yijun (*Institute of Semiconductors, Chinese Academy of Sciences*); Jung, Tzyy-Ping (*University of California San Diego*); Ming, Dong (*Tianjin University*)
- 11:00-11:15 SaB01.3  
**Comparison of Visual and Auditory Modalities for Upper-Alpha EEG-Neurofeedback** ..... 5960-5966  
 Bucho, Teresa\* (*Instituto Superior Técnico, Universidade de Lisboa*); Caetano, Gina (*Instituto Superior Técnico, Universidade de Lisboa*); Vourvopoulos, Athanasios (*University of Southern California*); Accoto, Floriana (*University of Salento*); Esteves, Inês (*Instituto Superior Técnico, Universidade de Lisboa*); Badia, Sergi Bermúdez i (*Faculdade de Ciências Exatas e da Engenharia, Universidade da Ma*); Rosa, Agostinho Claudio da (*Technical University of Lisbon*); Figueiredo, Patricia (*Instituto Superior Técnico, Universidade de Lisboa*)
- 11:15-11:30 SaB01.4  
**A.Eye Drive: Gaze-Based Semi-Autonomous Wheelchair Interface** ..... 5967-5970  
 Subramanian, Mahendran (*Imperial College London*); Songur, Noyan (*Imperial College London*); Adjei, Darrell (*Imperial College London*); Orlov, Pavel (*Imperial College London*); Faisal, A. Aldo\* (*Imperial College London*)
- 11:30-11:45 SaB01.5  
**Tensor Discriminant Analysis for MI-EEG Signal Classification using Convolutional Neural Network** ..... 5971-5974  
 Huang, Shoulin (*Harbin Institute of Technology*); Peng, Hao (*Dept. of Electronic & Information Engineering, Harbin Ins*); Chen, Yang (*Harbin Institute of Technology, Shenzhen*); Sun, Kai (*Dept. of Electronic & Information Engineering, Harbin Insti*); Fang, Shen (*Dept. of Electronic & Information Engineering, Harbin Insti*); Wang, Tong (*Harbin Institute of Technology, Shenzhen*); Ma, Ting\* (*Harbin Institute of Technology at Shenzhen*)
- 11:45-12:00 SaB01.6  
**A Multifocal SSVEPs-Based Brain-Computer Interface with Less Calibration Time** ..... 5975-5978  
 Tang, Jiabei (*Tianjin University*); Xu, Minpeng (*Tianjin University*); Liu, Zheng (*Tianjin University*); Meng, Jiayuan (*Tianjin University*); Chen, Shanguang (*China Astronaut Research & Training Center*); Ming, Dong\* (*Tianjin University*)

**Signal Processing and Classification in Fetal and Neonatal Physiology** (Oral Session)Chair: Signorini, Maria G. (*Politecnico di Milano*)

- 10:30-10:45 SaB02.1  
**Influence of Averaged Fetal Heart Rate in Heart Rate Variability Analysis** ..... 5979-5982  
 De Jonckheere, Julien\* (*CHRU de Lille*); Logier, Regis (*CHRU de Lille*)
- 10:45-11:00 SaB02.2  
**Fetal Heart Rate Estimation from a Single Phonocardiogram Signal using Non-Negative Matrix Factorization** ..... 5983-5986  
 Dia, Nafissa\* (*Univ. Grenoble Alpes, CNRS, CHU Grenoble Alpes, Grenoble INP, TI*); Fontecave-Jallon, Julie (*Univ. Grenoble Alpes, TIMC – IMAG*); Gumery, Pierre-Yves (*Université Joseph Fourier*); Rivet, Bertrand (*Grenoble Universities*)

11:00-11:15	SaB02.3
<b>Characterization of EHG Contractions at Pregnancy and Term Labor by Multiscale Entropy Analysis</b> ....	5987-5990
Garcia-Gonzalez, Maria-Teresa* ( <i>Universidad Autonoma Metropolitana</i> ); Charleston-Villalobos, Sonia ( <i>Universidad Autonoma Metropolitana</i> ); Gonzalez-Camarena, Ramon ( <i>Universidad Autonoma Metropolitana</i> ); Garcia-Ruiz, Ashmed-Claudio ( <i>Universidad Autónoma Metropolitana</i> ); Aljama-Corrales, Tomas ( <i>Universidad Autonoma Metropolitana</i> )	
11:15-11:30	SaB02.4
<b>Hybrid Neonatal EEG Seizure Detection Algorithms Achieve the Benchmark of Visual Interpretation of the Human Expert</b> .....	5991-5994
Stevenson, Nathan* ( <i>QIMR Berghofer</i> ); Tapani, Karoliina ( <i>Aalto University</i> ); Vanhatalo, Sampsa ( <i>Helsinki University Central Hospital &amp; University of Helsinki,</i> )	
11:30-11:45	SaB02.5
<b>Automatic and Continuous Discomfort Detection for Premature Infants in a NICU using Video-Based Motion Analysis</b> .....	5995-5999
Sun, Yue* ( <i>Eindhoven University of Technology</i> ); Kommers, Deedee ( <i>Maxima Medical Center, Veldhoven; Eindhoven University of Techno</i> ); Wang, Wenjin ( <i>Philips Research</i> ); Joshi, Rohan ( <i>Philips Research</i> ); Shan, Caifeng ( <i>Philips Research</i> ); Tan, Tao ( <i>Eindhoven University of Technology</i> ); Aarts, Ronald M. ( <i>Philips</i> ); van Pul, Carola ( <i>Maxima Medical Center</i> ); Andriessen, Peter ( <i>Maxima Medical Center</i> ); de With, Peter ( <i>Eindhoven University of Technology</i> )	
11:45-12:00	SaB02.6
<b>The Implementation of an Apnea-Based Perinatal Stress Calculator</b> .....	6000-6003
Lavanga, Mario* ( <i>KU Leuven</i> ); De Wel, Ofelie ( <i>KU Leuven</i> ); Caicedo, Alexander ( <i>Universidad del Rosario</i> ); Deviaene, Margot ( <i>KU Leuven</i> ); Moeyersons, Jonathan ( <i>KU Leuven</i> ); Varon, Carolina ( <i>Katholieke Universiteit Leuven</i> ); Bollen, Bieke ( <i>UZ Leuven</i> ); Jansen, Katrien ( <i>Dept. of Pediatrics, University Hospital Gasthuisberg,Leuve</i> ); Ortibus, Els ( <i>UZ Leuven</i> ); Naulaers, Gunnar ( <i>University Hospitals Leuven</i> ); Van Huffel, Sabine ( <i>KU Leuven</i> )	

SaB03: 10:30-12:00	Hall A3 – Level 1
<b>Optical Imaging and Microscopy (Oral Session)</b>	

10:30-10:45	SaB03.1
<b>Quantitative Analysis of 3D Artery Volume Reconstructions using Biplane Angiography and Intravascular OCT Imaging</b> .....	6004-6007
Latus, Sarah* ( <i>Hamburg University of Technology</i> ); Neidhardt, Maximilian ( <i>Hamburg University of Technology, Institute of Medical Technolog</i> ); Lutz, Matthias ( <i>Universitätsklinikum Schleswig-Holstein</i> ); Gessert, Nils ( <i>Hamburg University of Technology, Institute of Medical Technolog</i> ); Frey, Norbert ( <i>Universitätsklinikum Schleswig-Holstein</i> ); Schlaefer, Alexander ( <i>Hamburg University of Technology</i> )	
10:45-11:00	SaB03.2
<b>Ultrasonically Steerable Graded-Index Optical Waveguides for Deep Tissue Light Delivery: Theory and Applications</b> .....	6008-6011
Scopelliti, Matteo Giuseppe ( <i>Carnegie Mellon University</i> ); Karimi, Yasin ( <i>Carnegie Mellon University</i> ); Chamanzar, Maysamreza* ( <i>Carnegie Mellon University</i> )	
11:00-11:15	SaB03.3
<b>Fractal Characterization of Subviral Particle Motion: On the Influence of Spatio-Temporal Interpolation Methods</b> .....	6012-6017
Rausch, Andreas* ( <i>Technische Hochschule Mittelhessen</i> ); Schanze, Thomas ( <i>Technische Hochschule Mittelhessen (THM), FB LSE, IBMT</i> )	
11:15-11:30	SaB03.4
<b>Tracking and Line Integration of Diffuse Cellular Subdomains by Mesh Advection</b> .....	6018-6021
Boquet-Pujadas, Aleix* ( <i>Institut Pasteur</i> ); Grimaldi, Cecilia ( <i>Institute for Cell Biology, ZMBE</i> ); Raz, Erez ( <i>Institute for Cell Biology, ZMBE</i> ); Olivo-Marin, Jean-Christophe ( <i>Institut Pasteur</i> )	

11:30-11:45 SaB03.5  
**Rotation Invariant Clustering of 3D Cell Nuclei Shapes** ..... 6022-6027  
Wagner, Patrick (*Fraunhofer Heinrich Hertz Institute*); Morath, Jakob Paul (*Max Planck Institute for Infection Biology*); Zychlinsky, Arturo (*Max Planck Institute for Infection Biology*); Müller, Klaus-Robert (*Technical University of Berlin*); Samek, Wojciech\* (*Fraunhofer Heinrich Hertz Institute*)


11:45-12:00 SaB03.6  
**Dynamic Activation Patterns of the Motor Brain Revealed by Diffuse Optical Tomography** ..... 6028-6031  
Khan, Ali Fahim\* (*University of Oklahoma*); Zhang, Fan (*University of Oklahoma*); Yuan, Han (*University of Oklahoma*); Ding, Lei (*University of Oklahoma*)

SaB04: 10:30-12:00 Hall A1 – Level 1  
**Bio-Electric Sensing** (Oral Session)  
**Co-Chair:** Leonov, Vladimir (*imec*)

10:30-10:45 SaB04.1  
**Feasibility Experiments to Detect Skin Hydration using a Bio-Impedance Sensor** ..... 6032-6035  
Sunny, Ali Imam\* (*King's College London*); Rahman, Mohammed (*King's College London*); Koutsoupidou, Maria (*King's College London*); Cano-Garcia, Helena (*King's College London, Medical Wireless Sensing Ltd.*); Thanou, Maya (*King's College London*); Rafique, Waqas (*King's College London*); Lipscombe, Oliver (*Mediwise*); Kassanos, Panagiotis (*Imperial College London*); Triantis, Iasonas (*City, University of London*); Kallos, Efthymios (*MediWise, Medical Wireless Sensing Ltd.*); Kosmas, Panos (*King's College London*)

10:45-11:00 SaB04.2  
**Bioimpedance Method for Human Body Hydration Assessment** ..... 6036-6039  
Leonov, Vladimir\* (*imec*); Lee, Seulki (*imec*); Londergan, Ana (*Qualcomm Technology, Inc.*); Martin, Russel A. (*Qualcomm Technology, Inc.*); De Raedt, Walter (*imec*); Van Hoof, Chris (*imec*)

11:00-11:15 SaB04.3  
**A Wearable Wireless Armband Sensor for High-Density Surface Electromyography Recording** ..... 6040-6044  
Tam, Simon\* (*Laval University*); Bilodeau, Guillaume (*Laval University*); Brown, Jérémy (*Laval University*); Gagnon-Turcotte, Gabriel (*Université Laval*); Campeau-Lecours, Alexandre (*Université Laval*); Gosselin, Benoit (*Laval University*)

11:15-11:30 SaB04.4  
**Tissue Paper as a Substrate for Electronic Biosensing** .....  6045-6049  
Sardar, Sakshi\* (*Rutgers University*); Javanmard, Mehdi (*Rutgers University New Bru*)

11:30-11:45 SaB04.5  
**Imaging of a Dielectric Inclusion using a Contactless Radio-Frequency Inductive Probe for Tissue Diagnosis** ..... 6049-6054  
Pasquier, Alexiane\* (*Centre de Nanosciences et de NanoTechnologies, CNRS, Univ. Paris*); Le Diraison, Yohan (*SATIE, CNRS, Université de Cergy-Pontoise*); Joubert, Pierre-Yves (*Centre de Nanosciences et de NanoTechnologies, CNRS, Univ. Paris*); Serfaty, Stéphane (*SATIE, CNRS, Université de Cergy-Pontoise*)

11:45-12:00 SaB04.6  
**Development of a Low Cost and Low Noise Amplification System for in Vitro Neuronal Recording through Microelectrode Arrays** ..... 6055-6058  
Aqrave, Zaid\* (*University of Auckland*); Patel, Nitish (*University of Auckland*); Montgomery, Johanna (*The University of Auckland, Centre for Brain Research*); Travas-Sejdic, Jadranka (*The University of Auckland*); Svirskis, Darren (*The University of Auckland, School of Pharmacy*)

SaB05: 10:30-12:00 Hall A2 – Level 1  
**Signal Processing and Classification for Contactless Measurements** (Oral Session)  
**Chair:** McDuff, Daniel Jonathan (*Microsoft*)

10:30-10:45 SaB05.1  
**Exploiting Weak Head Movements for Camera-Based Respiration Detection** ..... 6059-6062  
Schrupf, Fabian\* (*Leipzig University of Applied Sciences (HTWK)*); Mönch, Christoph (*Leipzig University of Applied Sciences*); Bausch, Gerold (*Leipzig University of Applied Sciences*); Fuchs, Mirco (*Laboratory for Biosignal Processing, Leipzig University of Appli*)

10:45-11:00	SaB05.2
<b>Classifying Individuals with ASD through Facial Emotion Recognition and Eye-Tracking</b> .....	6063-6068
Jiang, Ming ( <i>University of Minnesota</i> ); Francis, Sunday* ( <i>University of Minnesota</i> ); Srishyla, Diksha ( <i>University of Minnesota</i> ); Conelea, Christine ( <i>University of Minnesota</i> ); Zhao, Qi ( <i>University of Minnesota</i> ); Jacob, Suma ( <i>University of Minnesota</i> )	
11:00-11:15	SaB05.3
<b>Number and Angle Analysis in UWB Radar Deployment for Vital Sign Monitoring</b> .....	6069-6072
Yu, Yibo* ( <i>Beijing University of Posts &amp; Telecommunications</i> ); Yang, Xiuzhu ( <i>Beijing University of Posts &amp; Telecommunications</i> ); Qian, Hongyu ( <i>Beijing University of Posts &amp; Telecommunications</i> ); Zhang, Xinyue ( <i>Beijing University of Posts &amp; Telecommunications</i> ); Li, Lei ( <i>Beijing University of Posts &amp; Telecommunications</i> ); Zhang, Lin ( <i>Beijing University of Posts &amp; Telecommunications</i> )	
11:15-11:30	SaB05.4
<b>MUSIC-Based Non-Contact Heart Rate Estimation with Adaptive Window Size Setting</b> .....	6073-6076
Yamamoto, Kohei* ( <i>Keio University</i> ); Toyoda, Kentaroh ( <i>Keio University</i> ); Ohtsuki, Tomoaki ( <i>Keio University</i> )	
11:30-11:45	SaB05.5
<b>Contactless Anesthesia Monitoring in Spontaneously Breathing Rodents</b> .....	6077-6080
Kunczik, Janosch* ( <i>RWTH Aachen University, Faculty of Medicine</i> ); Barbosa Pereira, Carina ( <i>RWTH Aachen University</i> ); Wassermann, Laura ( <i>Hannover Medical School</i> ); Häger, Christine ( <i>Hannover Medical School</i> ); Bleich, André ( <i>Hannover Medical School</i> ); Ziegłowski, Leonie ( <i>University Hospital RWTH Aachen</i> ); Tolba, Rene ( <i>RWTH Aachen University</i> ); Czaplík, Michael ( <i>University Hospital RWTH Aachen</i> )	
11:45-12:00	SaB05.6
<b>Doppler Radar System for In-Home Gait Characterization using Wavelet Transform Analysis</b> .....	6081-6084
Soubra, Racha* ( <i>Université de Technologie de Troyes</i> ); Chkeir, Aly ( <i>University of Technology of Troyes</i> ); Mourad-Cehade, Farah ( <i>Université de Technologie de Troyes</i> ); Alshama, Daniel ( <i>University of Technology of Troyes</i> )	

SaB08: 10:30-12:00	M8 – Level 3
<b>General and Theoretical Informatics – Natural Language Processing (Oral Session)</b>	

10:30-10:45	SaB08.1
<b>FREGEX: A Feature Extraction Method for Biomedical Text Classification using Regular Expressions</b> ..	6085-6088
Flores, Christopher A.* ( <i>Universidad de Concepción</i> ); Figueroa, Rosa ( <i>Universidad de Concepcion</i> ); Pezoa, Jorge E. ( <i>Universidad de Concepción</i> )	
10:45-11:00	SaB08.2
<b>UMLS Mapping and Word Embeddings for ICD Code Assignment using the MIMIC-III Intensive Care Database</b> .....	6089-6092
Schäfer, Henning ( <i>Dept. of Computer Science, University of Applied Sciences a</i> ); Friedrich, Christoph M.* ( <i>University of Applied Sciences &amp; Arts Dortmund; Dept. of</i> )	
11:00-11:15	SaB08.3
<b>Prediction of Personal Experience Tweets of Medication use via Contextual Word Representations</b> .....	6093-6096
Jiang, Keyuan* ( <i>Purdue University Northwest</i> ); Chen, Tingyu ( <i>Purdue University Northwest</i> ); Calix, Ricardo ( <i>Purdue University Northwest</i> ); Bernard, Gordon R. ( <i>Vanderbilt University Medical Center</i> )	
11:15-11:30	SaB08.4
<b>Analyzing Progression of Motor and Speech Impairment in ALS</b> .....	6097-6102
Agurto, Carla* ( <i>IBM</i> ); Pietrowicz, Mary ( <i>IBM</i> ); Eyigoz, Elif ( <i>IBM</i> ); Mosmiller, Elizabeth ( <i>Johns Hopkins University</i> ); Baxi, Emily ( <i>Johns Hopkins University</i> ); Rothstein, Jeffrey D. ( <i>Johns Hopkins University</i> ); Roy, Promit ( <i>Johns Hopkins University</i> ); Berry, James ( <i>Massachusetts General Hospital</i> ); Maragakis, Nicholas ( <i>Johns Hopkins University</i> ); Ahmad, Omar ( <i>Kata, Johns Hopkins School of Medicine</i> ); Cecchi, Guillermo ( <i>IBM T. J. Watson Research Center, Yorktown Heights, NY</i> ); Norel, Raquel ( <i>IBM</i> )	
11:30-11:45	SaB08.5
<b>Natural Language Processing of Clinical Notes for Improved Early Prediction of Septic Shock in the ICU</b> .....	6103-6108
Liu, Ran* ( <i>The Johns Hopkins University</i> ); Greenstein, Joseph L ( <i>The Johns Hopkins University</i> ); Sarma, Sridevi V. ( <i>Johns Hopkins University</i> ); Winslow, Raimond L. ( <i>Johns Hopkins University</i> )	

11:45-12:00 SaB08.6  
**Geospatial Suicide Clusters and Emergency Responses: An Analysis of Text Messages to a Crisis Service** ..... 6109-6112  
 Larsen, Mark Erik\* (*University of New South Wales*); Torok, Michelle (*University of New South Wales*); Huckvale, Kit (*University of New South Wales*); Reda, Bilal (*University of New South Wales*); Berrouiguet, Sofian (*University Hospital of Brest*); Christensen, Helen (*University of New South Wales*)

SaB09: 10:30-12:00 M1 – Level 3  
**Models of Organs and Physiology** (Oral Session)

10:30-10:45 SaB09.1  
**Anatomical Characterization of Frontal Sinus and Development of Representative Models** ..... 6113-6117  
 Coemert, Suat\* (*Technical University of Munich*); Veith, Larissa (*Technical University of Munich*); Strauss, Gero (*University of Leipzig*); Schmitz, Pia M. (*IRDC GmbH International Reference & Development Centre for Sur*); Lueth, Tim (*Technical University of Munich*)

10:45-11:00 SaB09.2  
**Accurate Anatomical Head Segmentations: A Data Set for Biomedical Simulations** ..... 6118-6123  
 Farcito, Silvia (*IT'IS Foundation*); Puonti, Oula (*Copenhagen University Hospital Hvidovre, Denmark*); Montanaro, Hazael (*IT'IS Foundation for Research on Information Technologies in Soc*); Bicalho Saturnino, Guilherme (*Technical University of Denmark*); Nielsen, Jesper D. (*Copenhagen University Hospital Hvidovre, Denmark & Dept. of Appl*); Madsen, Camilla (*DRCRM, Technical University Denmark*); Siebner, Hartwig R. (*Hvidovre Hospital, Danish Research Center for Magnetic Resonance*); Neufeld, Esra (*Foundation for Research on Information Technologies in Society*); Kuster, Niels (*Foundation*); Lloyd, Bryn (*Foundation for Information Technology in Society (IT'IS)*); Thielscher, Axel\* (*Copenhagen University Hospital Hvidovre, Denmark & Biomedical En*)

11:00-11:15 SaB09.3  
**A Shape Optimization Technique to Predict Left Ventricle Ischemic Tissue Damage** ..... 6124-6127  
 Dempsey, Sergio C. H.\* (*Western University*); So, Aaron (*Western University*); Samani, Abbas (*Western University*)

11:15-11:30 SaB09.4  
**A Geometrical Approach to Human Saccade Simulation** ..... 6128-6131  
 Gunawardane, Palpolage Don Shehan Hiroshan\* (*University of British Columbia*); Chiao, Mu (*University of British Columbia*); W de Silva, Clarence (*University of British Columbia*)

11:30-11:45 SaB09.5  
**Real-Time Subject-Specific Head and Facial Mimic Animation System using a Contactless Kinect Sensor and System of Systems Approach** ..... 6132-6135  
 Nguyen, Tan-Nhu\* (*Université de Technologie de Compiègne*); Dakpè, Stéphanie (*CHU Amiens- Service Chirurgie Maxillo-Faciale*); Ho Ba Tho, Marie-Christine (*Université de Technologie de Compiègne*); Dao, Tien-Tuan (*University of Technology of Compiègne*)

11:45-12:00 SaB09.6  
**Modelling Optogenetic Subthreshold Effects** ..... 6136-6140  
 Luo, JunWen\* (*Newcastle University*); Nikolic, Konstantin (*Imperial College London*); Degenaar, Patrick (*Newcastle University*)

SaB10: 10:30-12:00 M2 – Level 3  
**Neural and Muscle Stimulation** (Oral Session)  
 Chair: Panescu, Dorin (*Zidan Medical, Inc.*)

10:30-10:45 SaB10.1  
**A Minimally Invasive Wirelessly Powered Brain Stimulation System for Treating Neurological Disorders** ..... 6141-6144  
 Lee, Hyungwoo\* (*Samsung Advanced Institute of Technology*); Lee, Jin San (*KyungHee University Medical Center*); Chung, Yeongu (*Asan Medical Center*); Jung, Wooram (*Samsung Medical Center*); Kang, Joonseong (*Samsung Advanced Institute of Technology*); Seo, Dae Won (*Samsung Medical Center*); Shon, Young-Min (*Samsung Medical Center*); Na, Duk-Lyul (*Samsung Medical Center*); Kim, Sang Joon (*Samsung Electronics*)

10:45-11:00	SaB10.2
<b>Task-Based Automatic Evaluation of People with Intellectual Disabilities Performed on a Robotic Table Soccer</b> .....	6145-6148
Reis Gomes, Pedro Miguel Pinto* ( <i>Lusíada University</i> ); Lima, Carlos Manuel Gregorio Santos ( <i>University of Minho</i> ); Portela de Lemos, Ana F. ( <i>Universidade Lusíada</i> ); Nicolau V Costa, António ( <i>Universidade Lusíada</i> ); P M Torrinha, Ângela ( <i>APPACDM Braga</i> ); Fatima P. S. Moreira, Maria ( <i>APPACDM Braga</i> ); G Dantas, Odete ( <i>APPACDM Braga</i> ); Daniel Lopes dos Santos, Filipe ( <i>Universidade Lusíada</i> ); Oliveira, Rui Pedro ( <i>Universidade Lusíada</i> ); Costa, José Miguel ( <i>University Lusíada</i> )	
11:00-11:15	SaB10.3
<b>Electrical Safety and Performance of the G.L.O.V.E Relative to Relevant Requirements of International Electrical Standards</b> .....	6149-6154
Jiang, Zhiyong ( <i>Shenzhen Senxunda Electronic Technology Co., Ltd., Shenzhen, Chi</i> ); Panescu, Dorin* ( <i>Zidan Medical, Inc.</i> )	
11:15-11:30	SaB10.4
<b>Toward Miniaturization of Defibrillators: Design of a Defibrillation Charge/Discharge Circuit</b> .....	6155-6158
Huang, Yanqi ( <i>Fudan University</i> ); Wen, Xin ( <i>Fudan University</i> ); Wang, Jianfei* ( <i>Fudan University</i> ); Jin, Lian ( <i>Fudan University</i> ); Qian, Li ( <i>Fudan University</i> ); Wu, Xiaomei ( <i>Fudan University</i> )	
11:30-11:45	SaB10.5
<b>Towards Automated Patient-Specific Optimization of Deep Brain Stimulation for Movement Disorders</b> ..	6159-6162
Sariikhani, Parisa ( <i>Emory University</i> ); Miocinovic, Svjetlana ( <i>Emory University</i> ); Mahmoudi, Babak* ( <i>Emory University</i> )	
11:45-12:00	SaB10.6
<b>Efficient Thermobonding Process Forming a Polyurethane based Diagnostic Catheter with Liquid Crystal Polymer</b> .....	6163-6166
Kuert, Gerhard* ( <i>Berner Fachhochschule</i> ); Jacomet, Marcel ( <i>Institute for Human Centered Engineering, Bern University of App</i> ); Niederhauser, Thomas ( <i>Bern University of Applied Sciences</i> )	

SaB14: 10:30-12:00 <span style="float: right;">R3 – Level 3</span> <b>Signal Processing and Classification for BCIs and Motor Imagery (Oral Session)</b> <b>Co-Chair:</b> Faes, Luca ( <i>University of Palermo</i> )
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10:30-10:45	SaB14.1
<b>Using Discriminative Lasso to Detect a Graph Fourier Transform (GFT) Subspace for Robust Decoding in Motor Imagery BCI</b> .....	6167-6171
Georgiadis, Kostas* ( <i>Aristotle University of Thessaloniki – Information Technologies</i> ); Laskaris, Nikos ( <i>Aristotle University of Thessaloniki</i> ); Nikolopoulos, Spiros ( <i>Information Technologies Institute, Centre for Research &amp; Tech</i> ); Adamos, Dimitrios ( <i>School of Music Studies, Faculty of Fine Arts, Aristotle Univer</i> s); Kompatsiaris, Ioannis (Yannis) ( <i>Information Technologies Institute, CERTH</i> )	
10:45-11:00	SaB14.2
<b>Level-Wise Subject Adaptation to Improve Classification of Motor and Mental EEG Tasks</b> .....	6172-6175
Sharon, Rini A ( <i>Indian Institute of Technology, Madras</i> ); Aggarwal, Sidharth* ( <i>Indian Institute of Technology, Madras</i> ); Goel, Purvi ( <i>Indian Institute of Technology, Madras</i> ); Joshi, Raviraj ( <i>Indian Institute of Technology, Madras</i> ); Sur, Mriganka ( <i>MIT</i> ); Murthy, Hema ( <i>Indian Institute of Technology Madras</i> ); Ganapathy, Sriram ( <i>Indian Institute of Science, Bangalore</i> )	
11:00-11:15	SaB14.3
<b>Mutual Information Analysis of Brain-Body Interactions during Different Levels of Mental Stress</b> .....	6176-6179
Pernice, Riccardo* ( <i>University of Palermo</i> ); Zanetti, Matteo ( <i>Dipartimento di Ingegneria Industriale, Università di Trento</i> ); Nollo, Giandomenico ( <i>University of Trento</i> ); De Cecco, Mariolino ( <i>Dipartimento di Ingegneria Industriale, Università di Trento</i> ); Busacca, Alessandro ( <i>Università degli Studi di Palermo</i> ); Faes, Luca ( <i>University of Palermo</i> )	
11:15-11:30	SaB14.4
<b>Weighted Sparse Representation for Classification of Motor Imagery EEG Signals</b> .....	6180-6183
Sreeja, S R ( <i>Indian Institute of Technology, Kharagpur</i> ); Himanshu, . ( <i>Indian Institute of Technology, Kharagpur</i> ); Samanta, Debasis* ( <i>Indian Institute of Technology Kharagpur</i> ); Sarma, Monalisa ( <i>Indian Institute of Technology Kharagpur</i> )	

11:30-11:45 SaB14.5  
**High-Frequency SSVEP Stimulation Paradigm based on Dual Frequency Modulation** ..... 6184-6187  
 Liang, Li Yan (*Tsinghua University, Dept. of Biomedical Engineering*); Yang, Chen (*Tsinghua University*); Wang, Yijun (*Institute of Semiconductors, Chinese Academy of Sciences*); Gao, Xiaorong\* (*Tsinghua University*)

11:45-12:00 SaB14.6  
**Multiple-Instance Learning for In-the-Wild Parkinsonian Tremor Detection** ..... 6188-6191  
 Papadopoulos, Alexandros\* (*Aristotle University of Thessaloniki*); Kyritsis, Konstantinos (*Aristotle University of Thessaloniki*); Bostanjopoulou, Sevasti (*Dept. of Neurology, Hippokration Hospital, Thessalonik*); Klingelhofer, Lisa (*Dept. of Neurology Technical University Dresden, Dresden, G*); Chaudhuri, Ray (*International Parkinson Excellence Research Centre, King's Colle*); Delopoulos, Anastasios (*Aristotle University of Thessaloniki*)

SaB15: 10:30-12:00	M3 – Level 3
<b>Ultrasound Imaging (I)</b> (Oral Session)	

10:30-10:45 SaB15.1  
**3D-Rendered Electromechanical Wave Imaging for Localization of Accessory Pathways in Wolff-Parkinson-White Minors** ..... 6192-6195  
 Melki, Lea (*Columbia University*); Grubb, Christopher (*Columbia University Medical Center*); Weber, Rachel (*Columbia University*); Nauleau, Pierre (*Columbia University*); Garan, Hasan (*Columbia University*); Wan, Elaine (*Columbia University*); Silver, Eric S. (*Columbia University Medical Center*); Liberman, Leonardo (*Columbia University Medical Center*); Konofagou, Elisa\* (*Columbia University*)

10:45-11:00 SaB15.2  
**Breast Calcifications Detection based on Radiofrequency Signals by Quantitative Ultrasound Multi-Parameter Fusion** ..... 6196-6199  
 Qiao, Mengyun (*Fudan University*); Guo, Yi\* (*Fudan University*); Zhou, Shichong (*Fudan University*); Chang, Cai (*Fudan University*); Wang, Yuanyuan (*Fudan University*)

11:00-11:15 SaB15.3  
**Atherosclerotic Plaque Mechanical Characterization Coupled with Vector Doppler Imaging in Atherosclerotic Carotid Arteries in-Vivo** ..... 6200-6203  
 Karageorgos, Grigorios Marios (*Columbia University*); Apostolakis, Iason-Zacharias (*Columbia University*); Nauleau, Pierre (*Columbia University*); Gatti, Vittorio (*Mr.*); Weber, Rachel (*Columbia University*); Konofagou, Elisa\* (*Columbia University*)

11:15-11:30 SaB15.4  
**Fast Approximate Time-Delay Estimation in Ultrasound Elastography using Principal Component Analysis** ..... 6204-6207  
 Zayed, Abdelrahman\* (*Concordia University*); Rivaz, Hassan (*Concordia University*)

11:30-11:45 SaB15.5  
**An Instrumented Ultrasound Probe for Shear Wave Elastography with Uneven Force Distribution** ..... 6208-6211  
 Huang, Athena Y. (*Massachusetts Institute of Technology*); Anthony, Brian W.\* (*Massachusetts Institute of Technology*)

11:45-12:00 SaB15.6  
**A Convolutional Neural Network for 250-MHz Quantitative Acoustic-Microscopy Resolution Enhancement** ..... 6212-6215  
 Mamou, Jonathan\* (*Riverside Research*); Pellegrini, Thomas (*Université de Toulouse III ; IRIT*); Kouamé, Denis (*Université de Toulouse III, IRIT UMR CNRS*); Basarab, Adrian (*Université de Toulouse*)

SaB16: 10:30-12:00 <b>Wearable Robotic Systems – Orthotics</b> (Oral Session) <b>Co-Chair:</b> Liarokapis, Minas ( <i>The University of Auckland</i> )	M5 – Level 3
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|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| 10:30-10:45 |                                                                                                                                                                                                                                                                                                             | SaB16.1   |
|             | <b>An Assistance Approach for a Powered Knee Exoskeleton during Level Walking and the Effects on Metabolic Cost</b> .....                                                                                                                                                                                   | 6216-6219 |
|             | Jang, Junwon* ( <i>Samsung Electronics</i> ); Lim, Bokman ( <i>Samsung Electronics Co., Ltd</i> ); Shim, Youngbo ( <i>Samsung Advanced Institute of Technology</i> )                                                                                                                                        |           |
| 10:45-11:00 |                                                                                                                                                                                                                                                                                                             | SaB16.2   |
|             | <b>Optimized Design of a Variable Viscosity Link for Robotic AFO</b> .....                                                                                                                                                                                                                                  | 6220-6223 |
|             | Hassan, Modar* ( <i>University of Tsukuba</i> ); Yagi, Keisuke ( <i>Ibaraki University</i> ); Kadone, Hideki ( <i>University of Tsukuba</i> ); Ueno, Tomoyuki ( <i>University of Tsukuba Hospital</i> ); Mochiyama, Hiromi ( <i>University of Tsukuba</i> ); Suzuki, Kenji ( <i>University of Tsukuba</i> ) |           |
| 11:00-11:15 |                                                                                                                                                                                                                                                                                                             | SaB16.3   |
|             | <b>An Underactuated, Tendon-Driven, Wearable Exo-Glove with a Four-Output Differential Mechanism</b> .....                                                                                                                                                                                                  | 6224-6228 |
|             | Gerez, Lucas ( <i>University of Auckland</i> ); Liarokapis, Minas* ( <i>The University of Auckland</i> )                                                                                                                                                                                                    |           |
| 11:15-11:30 |                                                                                                                                                                                                                                                                                                             | SaB16.4   |
|             | <b>Effect of Segmentation Parameters on Classification Accuracy of High-Density EMG Recordings</b> .....                                                                                                                                                                                                    | 6229-6232 |
|             | Lara, Jaime* ( <i>The University of Auckland</i> ); Paskaranandavadivel, Niranchan ( <i>The University of Auckland</i> ); Cheng, Leo K ( <i>The University of Auckland</i> )                                                                                                                                |           |
| 11:30-11:45 |                                                                                                                                                                                                                                                                                                             | SaB16.5   |
|             | <b>A Shoulder Mechanism for Assisting Upper Arm Function with Distally Located Actuators</b> .....                                                                                                                                                                                                          | 6233-6236 |
|             | Jones, Michael ( <i>University of Maine</i> ); Bouffard, Connor ( <i>University of Maine</i> ); Hejrati, Babak* ( <i>University of Maine</i> )                                                                                                                                                              |           |
| 11:45-12:00 |                                                                                                                                                                                                                                                                                                             | SaB16.6   |
|             | <b>A Pneumatic-Muscle-Actuator-Driven Knee Rehabilitation Device for CAM Therapy</b> .....                                                                                                                                                                                                                  | 6237-6242 |
|             | Martens, Mirco ( <i>Technische Universität Berlin</i> ); Zawatzki, Johannes* ( <i>Beuth Hochschule für Technik Berlin</i> ); Seel, Thomas ( <i>Technische Universität Berlin</i> ); Boblan, Ivo ( <i>Beuth Hochschule für Technik Berlin</i> )                                                              |           |

SaB17: 10:30-12:00 <b>CT Imaging</b> (Oral Session)	R12 – Level 3
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| 10:30-10:45 |                                                                                                                                                                                                                                                                                                                                                                      | SaB17.1   |
|             | <b>Hybrid Neural Networks for Mortality Prediction from LDCT Images</b> .....                                                                                                                                                                                                                                                                                        | 6243-6246 |
|             | Yan, Pingkun* ( <i>Rensselaer Polytechnic Institute</i> ); Guo, Hengtao ( <i>Rensselaer Polytechnic Institute</i> ); Wang, Ge ( <i>Rensselaer Polytechnic Institute</i> ); De Man, Ruben ( <i>Massachusetts General Hospital</i> ); Kalra, Mannudeep ( <i>Massachusetts General Hospital &amp; Harvard Medical School</i> )                                          |           |
| 10:45-11:00 |                                                                                                                                                                                                                                                                                                                                                                      | SaB17.2   |
|             | <b>Low-Dose CT Denoising using Edge Detection Layer and Perceptual Loss</b> .....                                                                                                                                                                                                                                                                                    | 6247-6250 |
|             | Gholizadeh-Ansari, Maryam ( <i>Ryerson University</i> ); Alirezaie, Javad* ( <i>Ryerson University, Univ. of Waterloo</i> ); Babyn, Paul ( <i>University of Saskatchewan</i> )                                                                                                                                                                                       |           |
| 11:00-11:15 |                                                                                                                                                                                                                                                                                                                                                                      | SaB17.3   |
|             | <b>Inner Focus Iterative Reconstruction Method with the Interlaced Phase Stepping Scanning for Grating-Based Phase Contrast Tomography</b> .....                                                                                                                                                                                                                     | 6251-6254 |
|             | Hou, Zhishang ( <i>Shanghai Jiao Tong University</i> ); Zhao, Jun ( <i>Shanghai Jiao Tong University</i> ); Sun, Jianqi* ( <i>Shanghai Jiao Tong University</i> )                                                                                                                                                                                                    |           |
| 11:15-11:30 |                                                                                                                                                                                                                                                                                                                                                                      | SaB17.4   |
|             | <b>Quantitative Pathologic Analysis of Pulmonary Nodules using Three-Dimensional Computed Tomography Images based on Latent Dirichlet Allocation</b> .....                                                                                                                                                                                                           | 6255-6258 |
|             | Gao, Mengdi ( <i>Sino-Dutch Biomedical &amp; Information Engineering School, Northe</i> ); Jiang, Hongyang* ( <i>Sino-Dutch Biomedical &amp; Information Engineering School, Northe</i> ); Zhang, Dongdong ( <i>Beijing ZhiZhen Internet Technology Co., Ltd .</i> ); Ma, He ( <i>Northeastern University</i> ); Qian, Wei ( <i>University of Texas at El Paso</i> ) |           |



11:30-11:45 SaB17.5  
**Lung Nodule Classification using a Novel Two-Stage Convolutional Neural Networks Structure** ..... 6259-6262  
 An, Yang (*University of Technology Sydney*); Hu, Tianren (*University of Technology Sydney*); Wang, Jiaqi (*University of Technology Sydney*); Lyu, Juan (*Harbin Engineering University*); Banerjee, Sunetra (*University of Technology Sydney*); Ling, Sai Ho, Steve\* (*University of Technology Sydney*)

11:45-12:00 SaB17.6  
**4DCT Ventilation Map Construction using Biomechanics-Based Image Registration and Enhanced Air Segmentation** ..... 6263-6266  
 Jafari, Parya\* (*Western University*); Yaremko, Brian (*London Regional Cancer Program*); Parraga, Grace (*Robarts Research Institute*); Hoover, Douglas (*London Health Sciences Centre*); Sadeghi-Naini, Ali (*York University*); Samani, Abbas (*Western University*)

SaB18: 10:30-12:00 <b>Neural Stimulation (II)</b> (Oral Session)	R13 – Level 3
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10:30-10:45 SaB18.1  
**Modulation of Reciprocal Inhibition at the Wrist as a Neurophysiological Correlate of Tremor Suppression: A Pilot Healthy Subject Study** ..... 6267-6272  
 Pascual Valdunciel, Alejandro (*CSIC*); Oliveira Barroso, Filipe\* (*Spanish National Research Council (CSIC)*); Muceli, Silvia (*Imperial College London*); Taylor, Julian S (*Hospital Nacional de Paraplégicos*); Farina, Dario (*Imperial College London*); Pons, Jose Luis (*Cajal Institute, Spanish Research Council*)

10:45-11:00 SaB18.2  
**Extracellular Stimulation of Neural Tissues: Activating Function and Sub-Threshold Potential Perspective** ..... 6273-6277  
 Appali, Revathi\* (*University of Rostock*); Sriperumbudur, Kiran K (*University of Rostock*); van Rienen, Ursula (*University of Rostock*)

11:00-11:15 SaB18.3  
**Extraction of Evoked Compound Nerve Action Potentials from Vagus Nerve Recordings** ..... 6278-6281  
 Chang, Yao-Chuan\* (*Feinstein Institute for Medical Research*); Ahmed, Umair (*Feinstein Institute for Medical Research*); Tomaio, Jacquelyn (*The Feinstein Institute for Medical Research*); Rieth, Loren (*University of Utah*); Datta-Chaudhuri, Timir (*Feinstein Institute for Medical Research*); Zanos, Stavros (*Feinstein Institute for Medical Research*)

11:15-11:30 SaB18.4  
**Mobile Wireless Low-Intensity Transcranial Ultrasound Stimulation System for Freely Behaving Small Animals** ..... 6282-6285  
 Kim, Evgenii\* (*Korea Institute of Science & Technology*); Sanchez-Casanova, Jorge (*Carlos III University of Madrid, University Group for Identifica*); Anguluan, Eloise (*Gwangju Institute of Science & Technology*); Kim, Hyungmin (*Korea Institute of Science & Technology*); Kim, Jae Gwan (*Gwangju Institute of Science & Technology*)

11:30-11:45 SaB18.5  
**Targeted Vagus Nerve Stimulation Does Not Disrupt Cardiac Function in the Diabetic Rat** ..... 6286-6289  
 Dirr, Elliott\* (*University of Florida*); Patel, Yogi (*Johns Hopkins University*); Lester, Lauren (*University of Florida*); Delgado, Francisco (*Dr.*); Otto, Kevin (*University of Florida*)

11:45-12:00 SaB18.6  
**Optimized Transcutaneous Spinal Cord Direct Current Stimulation using Multiple Electrodes from 3/97 System** ..... 6290-6293  
 Huang, Yu (*City College of New York*); Thomas, Chris (*Soterix Medical, Inc.*); Datta, Abhishek\* (*Soterix Medical, Inc.*)

SaB19: 10:30-12:00 R4 – Level 3  
**Image Segmentation (II)** (Oral Session)  
**Co-Chair:** Sorousmehr, S.M. Reza (*University of Michigan, Ann Arbor*)

10:30-10:45 SaB19.1  
**Cascaded CNN for View Independent Breast Segmentation in Thermal Images** ..... 6294-6297  
 Kakileti, Siva Teja\* (*Niramai Health Analytix Pvt. Ltd*); Manjunath, Geetha (*Niramai Health Analytix*); Madhu, Himanshu (*Niramai Health Analytix*)

10:45-11:00 SaB19.2  
**Automatic Corneal Ulcer Segmentation Combining Gaussian Mixture Modeling and Otsu Method** ..... 6298-6301  
 Liu, Zhenrong (*Southern University of Science & Technology*); Shi, Yankun (*Southern University of Science & Technology*); Zhan, Pengji (*Southern University of Science & Technology*); Zhang, Yue (*Southern University of Science & Technology*); Gong, Yi (*Southern University of Science & Technology*); Tang, Xiaoying\* (*Southern University of Science & Technology*)

11:00-11:15 SaB19.3  
**An Effective Encoder-Decoder Network for Neural Cell Bodies and Cell Nucleus Segmentation of EM Images** ..... 6302-6305  
 Jiang, Yi (*Institute of Automation, Chinese Academy of Sciences*); Xiao, Chi (*Institute of Automation, Chinese Academy of Sciences*); Li, Linlin (*Institute of Automation Chinese Academy of Sciences*); Chen, Xi (*Institute of Automation, Chinese Academy of Sciences*); Shen, Lijun (*Institute of Automation, Chinese Academy of Sciences*); Han, Hua\* (*Institute of Automation, Chinese Academy of Sciences*)

11:15-11:30 SaB19.4  
**An Augmented Cell Segmentation in Fluorescent in Situ Hybridization Images** ..... 6306-6309  
 Shen, Jianhuo (*Anhui Univ*); Li, Teng (*Anhui University*); Hu, Chuanrui (*Anhui University*); He, Hong (*Xiamen Chokhmah Biotechnology Co., Ltd.*); Jiang, Dashan (*Electrical Engineering & Automation, Anhui University*); Liu, Jianfei\* (*Anhui University*)

11:30-11:45 SaB19.5  
**Liver Segmentation in Abdominal CT Images using Probabilistic Atlas and Adaptive 3D Region Growing** ..... 6310-6313  
 Rafiei, Shima (*IUT*); Karimi, Nader (*Isfahan University of Technology*); Mirmahboub, Behzad (*Istituto Italiano di Tecnologia (IIT)*); Najarian, Kayvan (*University of Michigan – Ann Arbor*); Felfeliyan, Banafsheh (*Isfahan University of Technology*); Samavi, Shadrokh (*McMaster University*); Sorousmehr, S.M.Reza\* (*University of Michigan, Ann Arbor*)

11:45-12:00 SaB19.6  
**Aided Hand Detection in Thermal Imaging using RGB Stereo Vision** ..... 6314-6317  
 Smieschek, Manfred\* (*RWTH Aachen University*); Kobsik, Gregor (*Informatik 11 – Embedded Software, RWTH Aachen*); Stollenwerk, Andre (*RWTH Aachen*); Kowalewski, Stefan (*RWTH Aachen University*); Orlikowsky, Thorsten (*Uniklinik RWTH Aachen*); Mark, Schoberer (*Uniklinik RWTH Aachen*)

SaC01: 13:00-14:30 Hall A6+A7 – Level 1  
**Brain-Computer Interface (III)** (Oral Session)

13:00-13:15 SaC01.1  
**Development of a High-Speed Mental Spelling System Combining Eye Tracking and SSVEP-Based BCI with High Scalability** ..... 6318-6322  
 Lin, Xinyuan (*Zhejiang University*); Chen, Zhenyi (*Zhejiang University*); Xu, Kedi (*Qiushi Academy for Advanced Studies, Zhejiang University, Hangzhou*); Zhang, Shaomin\* (*Zhejiang University*)

13:15-13:30 SaC01.2  
**A Convolutional Neural Network for Enhancing the Detection of SSVEP in the Presence of Competing Stimuli** ..... 6323-6326  
 Ravi, Aravind (*University of Waterloo*); Manuel, Jacob (*University of Waterloo*); Heydari, Nargess (*University of Waterloo*); Jiang, Ning\* (*University of Waterloo*)

13:30-13:45 SaC01.3  
**State-Space Modeling and Fuzzy Feedback Control of Cognitive Stress** ..... 6327-6330  
Fekri Azgomi, Hamid (*University of Houston*); Wickramasuriya, Dilranjan (*University of Houston*); Faghieh, Rose T.\* (*University of Houston*)

13:45-14:00 SaC01.4  
**A Four-Class Phase-Coded SSVEP BCI at 60Hz using Refresh Rate** ..... 6331-6334  
Jiang, Lu (*Institute of Semiconductors, Chinese Academy of Sciences*); Wang, Yijun\* (*Institute of Semiconductors, Chinese Academy of Sciences*); Pei, Weihua (*Institute of Semiconductors, CAS*); Chen, Hongda (*Institute of Semiconductors, CAS*)

14:00-14:15 SaC01.5  
**A Visual-Haptic Neurofeedback Training Improves Sensorimotor Cortical Activations and BCI Performance** ..... 6335-6338  
Wang, Zhongpeng (*Tianjin University*); Zhou, Yijie (*Tianjin University*); Chen, Long (*Tianjin University*); Gu, Bin (*Tianjin University*); Liu, Shuang (*Tianjin University*); Xu, Minpeng (*Tianjin University*); Qi, Hongzhi (*Tianjin University*); He, Feng (*Tianjin University*); Ming, Dong\* (*Tianjin University*)

14:15-14:30 SaC01.6  
**Toward Comparison of Cortical Activation with Different Motor Learning Methods using Event-Related Design: EEG-fNIRS Study** ..... 6339-6342  
Jeong, Hojun\* (*DGIST (Daegu Gyeongbuk Institute of Science & Technology)*); Song, Minsu (*DGIST (Daegu Gyeongbuk Institute of Science & Technology)*); Oh, Seunghue (*DGIST*); Kim, Jongbum (*DGIST*); Kim, Jonghyun (*DGIST*)

SaC02: 13:00-14:30 Hall A8 – Level 1  
**Signal Processing and Classification of Heart Rate Variability: Methods** (Oral Session)  
**Chair:** Voss, Andreas (*University of Applied Sciences Jena*)  
**Co-Chair:** Masè, Michela (*University of Trento*)

13:00-13:15 SaC02.1  
**A Novel Algorithm for HRV Estimation from Short-Term Acoustic Recordings at Neck** ..... 6343-6346  
Sharma, Piyush\* (*Imperial College London*); Rodriguez-Villegas, Esther (*Imperial College London*)

13:15-13:30 SaC02.2  
**Modeling Framework for the Generation of Synthetic RR Series during Atrial Arrhythmias** ..... 6347-6350  
Masè, Michela\* (*University of Trento*); Marsili, Italo Augustin (*Medicaltech srl*); Nollo, Giandomenico (*University of Trento*); Ravelli, Flavia (*University of Trento*)

13:30-13:45 SaC02.3  
**Can the Detrended Fluctuation Analysis Reveal Nonlinear Components of Heart Rate Variability?** ..... 6351-6354  
Castiglioni, Paolo\* (*Fondazione Don Carlo Gnocchi ONLUS*); Parati, Gianfranco (*University of Milano-Bicocca & Istituto Auxologico Italiano, M*); Faini, Andrea (*Istituto Auxologico Italiano*)

13:45-14:00 SaC02.4  
**A Correlation-Based Algorithm for Beat-to-Beat Heart Rate Estimation from Ballistocardiograms** ..... 6355-6358  
Wen, Xin (*Fudan University*); Huang, Yanqi (*Fudan University*); Wu, Xiaomei\* (*Fudan University*); Zhang, Biyong (*BOBO Technology Ltd.*)

14:00-14:15 SaC02.5  
**Temporal Cardiovascular Causality during Orthostatic Stress by Extended Partial Directed Coherence** ..... 6359-6362  
Reulecke, Sina (*Universidad Autónoma Metropolitana*); Charleston-Villalobos, Sonia\* (*Universidad Autónoma Metropolitana*); Voss, Andreas (*University of Applied Sciences Jena*); Gonzalez-Camarena, Ramon (*Universidad Autónoma Metropolitana*); Gaitan-Gonzalez, Mercedes (*Universidad Autónoma Metropolitana*); Gonzalez-Hermosillo, Jesus Antonio (*Instituto Nacional de Cardiología*); Hernandez-Pacheco, Guadalupe (*Instituto Nacional de Cardiología "Ignacio Chavez"*); Aljama-Corrales, Tomas (*Universidad Autónoma Metropolitana*)

14:15-14:30 SaC02.6  
**Are we Training our Heartbeat Classification Algorithms Properly?** ..... 6363-6366  
 Villa, Amalia\* (*Biomed, ESAT-STADIUS, KU Leuven*); Deviaene, Margot (*KU Leuven*); Willems, Rik (*KU Leuven*); Van Huffel, Sabine (*KU Leuven*); Varon, Carolina (*Katholieke Universiteit Leuven*)

SaC03: 13:00-14:30 Hall A3 – Level 1  
**Photoacoustic/Optoacoustic/Thermoacoustic Imaging** (Oral Session)  
**Co-Chair:** Thittai, Arun Kumar (*IIT MADRAS*)

13:00-13:15 SaC03.1  
**Hybrid Neural Network for Photoacoustic Imaging Reconstruction** ..... 6367-6370  
 Lan, Hengrong\* (*ShanghaiTech University*); Zhou, Kang (*ShanghaiTech University*); Yang, Changchun (*ShanghaiTech University*); Liu, Jiang (*Ningbo Institute of Materials Technology & Engineering, CAS*); Gao, Shenghua (*ShanghaiTech University*); Gao, Fei (*ShanghaiTech University*)

13:15-13:30 SaC03.2  
**Accelerated Photoacoustic Tomography Reconstruction via Recurrent Inference Machines** ..... 6371-6374  
 Yang, Changchun (*ShanghaiTech University*); Lan, Hengrong\* (*ShanghaiTech University*); Gao, Fei (*ShanghaiTech University*)

13:30-13:45 SaC03.3  
**Non-Invasive Remote Temperature Monitoring using Microwave-Induced Thermoacoustic Imaging** ..... 6375-6378  
 Nan, Hao (*Stanford University*); Fitzpatrick, Aidan\* (*Stanford University*); Wang, Ke (*University of California, Berkeley*); Arbabian, Amin (*Stanford University*)

13:45-14:00 SaC03.4  
**Enhancing Depth of Penetration in PLD-Based Photoacoustic Imaging: Preliminary Results** ..... 6379-6382  
 Chandramoorthi, Sowmiya (*IIT Madras*); Thittai, Arun Kumar\* (*IIT MADRAS*)

14:00-14:15 SaC03.5  
**Adjustable Handheld Probe Design for Photoacoustic Imaging: Mathematical Modelling and Simulation Study** ..... 6383-6386  
 Zhao, Yongjian\* (*School of Information Science & Technology, ShanghaiTech Unive*); Tao, Ben (*Tongji University*); Yu, Shaohui (*ShanghaiTech University*); Gao, Fei (*ShanghaiTech University*)

14:15-14:30 SaC03.6  
**Ultrasound-Based Regularized Log Spectral Difference Method for Monitoring Microwave Hyperthermia** ..... 6387-6390  
 Kothawala, AliArshad (*Indian Institute of Technology Madras*); Baskaran, Divya Baskaran (*Indian Institute of Technology Madras*); Arunachalam, Kavitha (*Duke University*); Thittai, Arun Kumar\* (*IIT MADRAS*)

SaC04: 13:00-14:30 Hall A1 – Level 1  
**Biomechanical Analysis** (Oral Session)  
**Chair:** Cereatti, Andrea (*University of Sassari*)  
**Co-Chair:** Doheny, Emer (*University College Dublin*)

13:00-13:15 SaC04.1  
**Synthesising Motion Sensor Data from Biomechanical Simulations to Investigate Motion Sensor Placement and Orientation Variations** ..... 6391-6394  
 Derungs, Adrian\* (*Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU)*); Amft, Oliver (*Friedrich-Alexander Universität Erlangen-Nürnberg (FAU)*)

13:15-13:30 SaC04.2  
**IMU-Based Assessment of Ankle Inversion Kinematics and Orthosis Migration** ..... 6395-6400  
 Betz, Johannes (*TU Berlin*); Klingspor, Christoph (*TU Berlin*); Seel, Thomas\* (*Technische Universität Berlin*)

13:30-13:45 SaC04.3  
**Three-Dimensional GRF and CoP Estimation during Stair and Slope Ascent/Descent with Wearable IMUs and Foot Pressure Sensors** ..... 6401-6404  
 Fukushi, Kenichiro\* (*NEC Corporation*); Sekiguchi, Yusuke (*Tohoku University*); Honda, Keita (*Tohoku University*); Yaguchi, Haruki (*Tohoku University*); Izumi, Shin-ichi (*Tohoku University*)

13:45-14:00	SaC04.4
<b>Hand Motion Measurement using Inertial Sensor System and Accurate Improvement by Extended Kalman Filter</b> .....	6405-6408
Kitano, Keisuke* ( <i>Doshisha University</i> ); Ito, Akihito ( <i>Doshisha University</i> ); Tsujiuchi, Nobutaka ( <i>Doshisha University</i> )	
14:00-14:15	SaC04.5
<b>Regression-Based Analysis of Front Crawl Swimming using Upper-Arm Mounted Accelerometers</b> .....	6409-6412
Doheny, Emer* ( <i>University College Dublin</i> ); Goulding, Cathy ( <i>University College Dublin</i> ); Lowery, Madeleine ( <i>University College Dublin</i> )	
14:15-14:30	SaC04.6
<b>Inter-Leg Distance Measurement as a Tool for Accurate Step Counting in Patients with Multiple Sclerosis</b> .....	6413-6417
Bertuletti, Stefano* ( <i>University of Sassari</i> ); Salis, Francesca ( <i>University of Sassari</i> ); Cereatti, Andrea ( <i>University of Sassari</i> ); Angelini, Lorenza ( <i>University of Sheffield</i> ); Buckley, Ellen ( <i>University of Sheffield</i> ); Nair, K.P.S. ( <i>Sheffield Teaching Hospitals NHS Foundation Trust</i> ); Mazzà, Claudia ( <i>University of Sheffield</i> ); Della Croce, Ugo ( <i>University of Sassari</i> )	

SaC05: 13:00-14:30 <b>Connectivity and Causality</b> (Oral Session) <b>Chair:</b> Astolfi, Laura ( <i>University of Rome Sapienza</i> )	Hall A2 – Level 1
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13:00-13:15	SaC05.1
<b>Recurrent Neural Networks for Reconstructing Complex Directed Brain Connectivity</b> .....	6418-6421
Duggento, Andrea* ( <i>University of Rome "Tor Vergata"</i> ); Guerrisi, Maria ( <i>University of Rome "Tor Vergata"</i> ); Toschi, Nicola ( <i>University of Rome "Tor Vergata", Faculty of Medicine</i> )	
13:15-13:30	SaC05.2
<b>Single-Trial Connectivity Estimation through the Least Absolute Shrinkage and Selection Operator</b> .....	6422-6425
Antonacci, Yuri* ( <i>University of Rome Sapienza</i> ); Toppi, Jlenia ( <i>University of Rome "Sapienza"</i> ); Mattia, Donatella ( <i>Fondazione Santa Lucia IRCCS</i> ); Pietrabissa, Antonio ( <i>University of Rome Sapienza</i> ); Astolfi, Laura ( <i>University of Rome Sapienza</i> )	
13:30-13:45	SaC05.3
<b>Effect of Connectivity Measures on the Identification of Brain Functional Core Network at Rest</b> .....	6426-6429
Rizkallah, Jennifer* ( <i>LTSI Inserm U1099, Université de Rennes 1</i> ); Amoud, Hassan ( <i>Lebanese University</i> ); Wendling, Fabrice ( <i>INSERM – Université de Rennes 1</i> ); Hassan, Mahmoud ( <i>Université de Rennes 1</i> )	
13:45-14:00	SaC05.4
<b>Tracking Changes in Brain Network Connectivity under Transcranial Current Stimulation</b> .....	6430-6433
Jami, Apoorva Sargarwal ( <i>New York University</i> ); Guo, Xinling ( <i>Zhejiang University</i> ); Kulkarni, Prathamesh ( <i>University of Houston</i> ); Henin, Simon ( <i>NYU School of Medicine</i> ); Liu, Anli ( <i>New York University Langone Health</i> ); Chen, Zhe* ( <i>New York University School of Medicine</i> )	
14:00-14:15	SaC05.5
<b>Analysis of Volume Conduction Effects on Different Functional Connectivity Metrics: Application to Alzheimer's Disease EEG Signals</b> .....	6434-6437
Ruiz-Gómez, Saúl J. ( <i>Biomedical Engineering Group, University of Valladolid</i> ); Gomez, Carlos* ( <i>University of Valladolid</i> ); Poza, Jesus ( <i>University of Valladolid</i> ); Maturana-Candelas, Aarón ( <i>University of Valladolid</i> ); Rodríguez-González, Víctor ( <i>Biomedical Engineering Group, University of Valladolid</i> ); Garcia, Maria ( <i>University of Valladolid</i> ); Tola-Arribas, Miguel A. ( <i>Dept. of Neurology, Hospital Universitario Río Hortega</i> ); Cano, Mónica ( <i>Dept. of Clinical Neurophysiology, Hospital Universitario R</i> ); Hornero, Roberto ( <i>University of Valladolid</i> )	
14:15-14:30	SaC05.6
<b>Time-Varying Effective EEG Source Connectivity: The Optimization of Model Parameters</b> .....	6438-6441
Rubega, Maria* ( <i>University of Geneva</i> ); Pascucci, David ( <i>University of Fribourg</i> ); Rué Queralt, Joan ( <i>Dept. of Radiology, Lausanne University Hospital &amp; Univer</i> ); van Mierlo, Pieter ( <i>Ghent University, Epilog NV</i> ); Hagmann, Patric ( <i>Dept. of Radiology, University Hospital Center (CHUV) &amp; U</i> ); Plomp, Gijs ( <i>University of Fribourg</i> ); Michel, Christoph ( <i>University of Geneva</i> )	

**Neural Stimulation (III)** (Oral Session)

- 13:00-13:15 SaC06.1  
**High-Resolution Head Model of Transcranial Direct Current Stimulation: A Labeling Analysis** ..... 6442-6445  
 Thomas, Chris (*Soterix Medical, Inc.*); Huang, Yu (*City College of New York*); Faria, Paula Cristina (*ESTG, CDRSP, IPLeiria*); Datta, Abhishek\* (*Soterix Medical, Inc.*)
- 13:15-13:30 SaC06.2  
**Cortical Stimulation Induces Network-Wide Coherence Change in Non-Human Primate Somatosensory Cortex** ..... 6446-6449  
 Bloch, Julien (*University of Washington, Seattle*); Khateeb, Karam (*University of Washington*); Silversmith, Daniel (*University of California, San Francisco*); O'Doherty, Joseph E. (*University of California, San Francisco*); Sabes, Philip N. (*University of California, San Francisco*); Yazdan-Shahmorad, Azadeh\* (*University of Washington*)
- 13:30-13:45 SaC06.3  
**Quantification of Neural Conduction Block on the Rat Sciatic Nerve based on EMG Response** ..... 6450-6453  
 Pérez, Diego (*Univ. Rennes, CHU Rennes, Inserm, LTSI UMR 1099, Rennes*); Dieuset, Gabriel (*LTSI, Inserm UMR 1099, Rennes, France; University Rennes 1, Fran*); Yochum, Maxime (*Université de Rennes 1*); Senhadji, Lotfi (*Université de Rennes 1 & INSERM*); Martin, Benoit (*INSERM; Université de Rennes 1; LTSI*); Le Rolle, Virginie (*University of Rennes 1*); Hernández, Alfredo I\* (*Univ. of Rennes 1 & INSERM U1099*)
- 13:45-14:00 SaC06.4  
**Learning State-Dependent Neural Modulation Policies with Bayesian Optimization** ..... 6454-6457  
 Connolly, Mark\* (*Emory University*); Park, Sang-Eon (*Georgia Institute of Technology*); Gross, Robert (*Emory University*)
- 14:00-14:15 SaC06.5  
**Referred Sensation Areas in Transpelvic Amputee** ..... 6458-6461  
 Lontis, Eugen Romulus\* (*Aalborg University*); Yoshida, Ken (*Indiana University-Purdue University Indianapolis*); Jensen, Winnie (*Center for Sensory-Motor Interaction*)
- 14:15-14:30 SaC06.6  
**A Sub-Millimeter Lateral Resolution Ultrasonic Beamforming System for Brain Stimulation in Behaving Animals** ..... 6462-6465  
 Seok, Chunkyun\* (*North Carolina State University*); Yamaner, Feysel Yalcin (*North Carolina State University*); Sahin, Mesut (*New Jersey Institute of Technology*); Oralkan, Omer (*North Carolina State University*)

**Tissue Engineering** (Oral Session)**Co-Chair:** Majd, Sheereen (*University of Houston*)

- 13:00-13:15 SaC07.1  
**Numerical Analysis of Electromechanically Driven Bone Remodeling using the Open-Source Software Framework** ..... 6466-6471  
 Bansod, Yogesh\* (*University of Rostock*); van Rienen, Ursula (*University of Rostock*)
- 13:15-13:30 SaC07.2  
**Study of Contraction Profile of Cardiomyocytes by using a Piezoelectric Membrane** ..... 6472-6475  
 Yang, Chiou-Fong (*National Taiwan University*); Hsu, Yu-Hsiang\* (*National Taiwan University*)
- 13:30-13:45 SaC07.3  
**Initial Bacterial Adhesion Properties of Anodically Oxidized Ti6Al4V** ..... 6476-6480  
 Doll, Patrick W.\* (*Karlsruhe Institute of Technology (KIT), Institute of Microstruc*); Wolf, Monika (*Karlsruhe Institute of Technology (KIT)*); Guttman, Markus (*Karlsruhe Institute of Technology (KIT)*); Thelen, Richard (*Karlsruhe Institute of Technology (KIT)*); Ahrens, Ralf (*Karlsruhe Institute of Technology*); Spindler, Bruno (*Fräszenrum Ortenau GmbH & Co KG*); Guber, Andreas E. (*Karlsruhe Institute of Technology*); Al-Ahmad, Ali (*Universitätsklinikum Freiburg*)

13:45-14:00		SaC07.4
<b>Numerical Simulation of the Electric Field Distribution in an Electrical Stimulation Device for Scaffolds Settled with Cartilaginous Cells</b> .....		
		6481-6484
Weizel, Alina* ( <i>University of Rostock</i> ); Zimmermann, Julius ( <i>University of Rostock</i> ); Riess, Alexander ( <i>University of Rostock</i> ); Krüger, Simone ( <i>University Medicine Rostock</i> ); Bader, Rainer ( <i>University Medicine of Rostock, Dept. of Orthopaedics</i> ); van Rienen, Ursula ( <i>University of Rostock</i> ); Seitz, Hermann ( <i>University of Rostock</i> )		
14:00-14:15		SaC07.5
<b>Electrical Impedance Spectroscopy for Characterization of Prostate PC-3 and DU 145 Cancer Cells</b> .....		
		6485-6489
Silva Teixeira, Viviane* ( <i>Hamburg University of Technology</i> ); Barth, Tobias ( <i>Hamburg University of Technology</i> ); Labitzky, Vera ( <i>University Medical Center Hamburg-Eppendorf (UKE)</i> ); Schumacher, Udo ( <i>University Medical Center Hamburg-Eppendorf (UKE)</i> ); Krautschneider, Wolfgang H. ( <i>Hamburg University of Technology</i> )		
14:15-14:30		SaC07.6
<b>Tissue Phantom to Mimic the Dielectric Properties of Human Muscle within 20 Hz and 100 kHz for Biopotential Sensing Applications</b> .....		
		6490-6493
Yu, Yang ( <i>Institute of Biomedical Technologies, Auckland University of Tec</i> ); Lowe, Andrew ( <i>Auckland University of Technology</i> ); Anand, Gautam* ( <i>Auckland University of Technology</i> ); Kalra, Anubha ( <i>AUT University</i> )		
<b>SaC08: 13:00-14:30</b> <span style="float: right;"><b>M8 – Level 3</b></span>		
<b>Health Informatics – Information Technologies for Healthcare Delivery and Management (Oral Session)</b>		
<b>Chair:</b> Dunn, Jessilyn ( <i>Duke University</i> )		
13:00-13:15		SaC08.1
<b>Secure Processing of Stream Cipher Encrypted Data Issued from IOT: Application to a Connected Knee Prosthesis</b> .....		
		6494-6497
Pistono, Maxime* ( <i>Institut Mines-Telecom; Telecom Bretagne</i> ); Bellaqira, Reda ( <i>Institut Mines-Telecom; Telecom Bretagne</i> ); Coatrieux, Gouenou ( <i>Institut Telecom – Telecom Bretagne – Inserm</i> )		
13:15-13:30		SaC08.2
<b>Privacy-Preserving Artificial Intelligence: Application to Precision Medicine</b> .....		
		6498-6504
Vizitiu, Anamaria* ( <i>Transilvania University of Brasov, Brasov, Romania</i> ); Nita, Cosmin ( <i>Transilvania University of Brasov</i> ); Puiu, Andrei ( <i>Transilvania University of Brasov, Brasov, Romania</i> ); Suciu, Constantin ( <i>Siemens Corporate Technology</i> ); Itu, Lucian ( <i>Transilvania University of Brasov</i> )		
13:30-13:45		SaC08.3
<b>On Anonymizing Medical Microdata with Large-Scale Missing Values – A Case Study with the FAERS Dataset</b> .....		
		6505-6508
Hsiao, Mei-Hui ( <i>National University of Kaohsiung</i> ); Lin, Wen-Yang* ( <i>National University of Kaohsiung</i> ); Hsu, Kuang-Yung ( <i>National University of Kaohsiung</i> ); Shen, Zih-Xun ( <i>National University of Kaohsiung</i> )		
13:45-14:00		SaC08.4
<b>Exploring Users' Willingness to Share their Health and Personal Data under the Prism of the New GDPR: Implications in Healthcare</b> .....		
		6509-6512
Karampela, Maria* ( <i>IT University of Copenhagen</i> ); Ouhbi, Sofia ( <i>UAE University</i> ); Minna, Isomursu ( <i>IT University of Copenhagen</i> )		
14:00-14:15		SaC08.5
<b>A Deep Learning Technique for Imputing Missing Healthcare Data</b> .....		
		6513-6516
Phung, Le Son ( <i>University of Sydney</i> ); Kumar, Ashnil* ( <i>University of Sydney</i> ); Kim, Jinman ( <i>University of Sydney</i> )		
14:15-14:30		SaC08.6
<b>A Mobile Cloud based IoMT Framework for Automated Health Assessment and Management</b> .....		
		6517-6520
C. Nguyen, Dinh* ( <i>Deakin University</i> ); Nguyen, Khoa D. ( <i>Deakin University</i> ); Pathirana, Pubudu N ( <i>Deakin University</i> )		

SaC11: 13:00-14:30 M4 – Level 3  
**Unobtrusive Cardiorespiratory Monitoring** (Oral Session)  
**Chair:** Di Rienzo, Marco (*IRCCS Fondazione Don Carlo Gnocchi*)  
**Co-Chair:** Mukkamala, Ramakrishna (*Michigan State University*)

13:00-13:15 SaC11.1  
**IPhys: An Open Non-Contact Imaging-Based Physiological Measurement Toolbox** ..... 6521-6524  
 McDuff, Daniel Jonathan\* (*Microsoft*); Blackford, Ethan Brian (*Ball Aerospace*)

13:15-13:30 SaC11.2  
**Inter-Beat Interval Estimation from Facial Video based on Reliability of BVP Signals** ..... 6525-6528  
 Maki, Yuichiro\* (*Tokyo Institute of Technology*); Monno, Yusuke (*Tokyo Institute of Technology*); Yoshizaki, Kazunori (*Olympus Corporation*); Tanaka, Masayuki (*National Institute of Advanced Industrial Science & Technology*); Okutomi, Masatoshi (*Tokyo Institute of Technology*)

13:30-13:45 SaC11.3  
**A Vision-Based System for Breathing Disorder Identification: A Deep Learning Perspective** ..... 6529-6532  
 Martinez, Manuel (*Karlsruhe Institute of Technology*); Ahmedt-Aristizabal, David\* (*Queensland University of Technology*); V  th, Tilman (*Karlsruhe Institute of Technology*); Fookes, Clinton (*Queensland University of Technology*); Benz, Andreas (*Universit  t Heidelberg*); Stiefelhagen, Rainer (*Karlsruhe Institute of Technology*)

13:45-14:00 SaC11.4  
**Respiration Extraction from Radar Heart Sound Measurements** ..... 6533-6536  
 Schellenberger, Sven\* (*Brandenburg University of Technology*); Shi, Kilin (*Friedrich-Alexander-Universit  t Erlangen-N  rnberg*); Michler, Fabian (*Friedrich-Alexander-Universit  t Erlangen-N  rnberg*); Lurz, Fabian (*Friedrich-Alexander-Universit  t Erlangen-N  rnberg*); Weigel, Robert (*University of Erlangen Nuremberg*); Koelpin, Alexander (*Chair for Electronics & Sensor Systems, Brandenburg University*)

14:00-14:15 SaC11.5  
**Heart Rate Variability for Driver Sleepiness Classification in Real Road Driving Conditions** ..... 6537-6540  
 Anna, Persson (*Dept. of Biomedical Engineering, Link  ping University*); Jonasson, Hanna (*Dept. of Biomedical Engineering, Link  ping University*); Fredriksson, Ingemar (*Dept. of Biomedical Engineering, Link  ping University*); Wiklund, Urban (*Umea University*); Ahlstr  m, Christer\* (*Swedish National Road & Transport Research Institute (VTI)*)

14:15-14:30 SaC11.6  
**Heart Rate Extraction from Novel Neck Photoplethysmography Signals** ..... 6541-6544  
 Garcia Lopez, Irene (*Imperial College of London*); Sharma, Piyush\* (*Imperial College London*); Rodriguez-Villegas, Esther (*Imperial College London*)

SaC12: 13:00-14:30 M6 – Level 3  
**Fetal and Pediatric Imaging** (Oral Session)  
**Chair:** Signorini, Maria G. (*Politecnico di Milano*)  
**Co-Chair:** Balestra, Gabriella (*Politecnico di Torino*)

13:00-13:15 SaC12.1  
**Fetal Ultrasound Image Segmentation for Measuring Biometric Parameters using Multi-Task Deep Learning** ..... 6545-6548  
 Sobhani-Nia, Zahra (*Isfahan University of Technology, Iran*); Rafiei, Shima (*IUT*); Emami, Ali (*Isfahan University of Technology*); Karimi, Nader (*Isfahan University of Technology*); Najarian, Kayvan (*University of Michigan – Ann Arbor*); Samavi, Shadrokh (*McMaster University*); Soroushmehr, S.M.Reza\* (*University of Michigan, Ann Arbor*)

13:15-13:30 SaC12.2  
**Automated Detection of Fetal Brain Signals with Principal Component Analysis** ..... 6549-6552  
 Moser, Julia\* (*University of T  bingen*); Sippel, Katrin (*University of T  bingen*); Schleger, Franziska (*University of T  bingen*); Preissl, Hubert (*University of T  bingen*)



13:30-13:45	SaC12.3
<b>Evaluation of Cortical Segmentation Pipelines on Clinical Neonatal MRI Data</b> .....	6553-6556
Tor-Díez, Carlos ( <i>IMT Atlantique</i> ); Pham, Chi-Hieu ( <i>Télécom Bretagne</i> ); Meunier, Hélène ( <i>Service de Médecine Néonatale et Réanimation Pédiatrique, CHU de</i> ); Faisan, Sylvain ( <i>ICube, Strasbourg University</i> ); Bloch, Isabelle ( <i>Télécom ParisTech – CNRS UMR 5141 LTCI</i> ); Bednarek, Nathalie ( <i>Service de Médecine Néonatale et Réanimation Pédiatrique, CHU de</i> ); Passat, Nicolas* ( <i>Reims University</i> ); Rousseau, François ( <i>Telecom Bretagne</i> )	
13:45-14:00	SaC12.4
<b>Pediatric Brain Tissue Segmentation from MRI using Clustering: A Preliminary Study</b> .....	6557-6560
Rosati, Samanta ( <i>Politecnico di Torino</i> ); Toselli, Benedetta ( <i>University of Genova</i> ); Fato, Marco Massimo ( <i>University of Genoa</i> ); Tortora, Domenico ( <i>IRCCS Istituto Giannina Gaslini</i> ); Severino, Maria Savina ( <i>IRCCS Istituto Giannina Gaslini</i> ); Rossi, Andrea ( <i>IRCCS Istituto Giannina Gaslini</i> ); Balestra, Gabriella* ( <i>Politecnico di Torino</i> )	
14:00-14:15	SaC12.5
<b>Fully Automatic Pediatric Echocardiography Segmentation using Deep Convolutional Networks based on BiSeNet</b> .....	6561-6564
Hu, Yujin ( <i>School of Biomedical Engineering, Health Science Center, Shenzhen</i> ); Guo, Libao ( <i>Shenzhen University</i> ); Lei, Baiying ( <i>Shenzhen University</i> ); Mao, Muyi ( <i>Shenzhen Children Hospital</i> ); Jin, Zelong ( <i>Shenzhen Children Hospital</i> ); Elazab, Ahmed ( <i>Shenzhen University</i> ); Xia, Bei ( <i>Shenzhen Children Hospital, Hospital of Shantou University</i> ); Wang, Tianfu* ( <i>Shenzhen University</i> )	
14:15-14:30	SaC12.6
<b>A Video Database of Neonatal Facial Expression based on Painful Clinical Procedures</b> .....	6565-6568
Chen, Shuohui* ( <i>Zhejiang University</i> ); Luo, Feixiang ( <i>Zhejiang University</i> ); Chen, Xiaofei ( <i>Zhejiang University</i> ); Yan, Jiayi ( <i>Hangzhou Proton Technology Co., Ltd.</i> ); Zhong, Yizhou ( <i>Hangzhou Proton Technology Co., Ltd.</i> ); Pan, Yun ( <i>Zhejiang University</i> )	
SaC13: 13:00-14:30	R2 – Level 3
<b>Non Invasive Monitoring</b> (Oral Session)	
<b>Co-Chair:</b> Bujnowski, Adam ( <i>Gdansk University of Technology</i> )	
13:00-13:15	SaC13.1
<b>Effects of Bio-Impedance Sensor Placement Relative to the Arterial Sites for Capturing Hemodynamic Parameters</b> .....	6569-6573
Ibrahim, Bassem* ( <i>Texas A&amp;M University</i> ); Mrugala, Dariusz ( <i>Texas A&amp;M University</i> ); Jafari, Roozbeh ( <i>Texas A&amp;M University</i> )	
13:15-13:30	SaC13.2
<b>Non-Invasive, Continuous, Pulse Pressure Monitoring Method</b> .....	6574-6577
Kuwahara, Makiko* ( <i>University of Hawaii at Manoa</i> ); Yavari, Ehsan ( <i>University of Hawaii Manoa</i> ); Boric-Lubecke, Olga ( <i>University of Hawaii Manoa</i> )	
13:30-13:45	SaC13.3
<b>UWB Radar for Non-Contact Heart Rate Variability Monitoring and Mental State Classification</b> .....	6578-6582
Han, Yang ( <i>Imperial College London</i> ); Lauteslager, Timo* ( <i>Imperial College London</i> ); Lande, Tor Sverre ( <i>University of Oslo</i> ); Constandinou, Timothy ( <i>Imperial College of Science, Technology &amp; Medicine</i> )	
13:45-14:00	SaC13.4
<b>Electrodes Array for Contactless ECG Measurement of a Bathing Person – A Sensitivity Analysis</b> .....	6583-6586
Osiński, Kamil ( <i>Gdansk University of Technology</i> ); Bujnowski, Adam* ( <i>Gdansk University of Technology</i> ); Przystup, Piotr ( <i>Gdansk University of Technology</i> ); Wtorek, Jerzy ( <i>Gdansk University of Technology</i> )	
14:00-14:15	SaC13.5
<b>Capacitive Coupled Electrodes based Non-Contact ECG Measurement System with Real-Time Wavelet Denoising Algorithm</b> .....	6587-6590
Peng, Shun ( <i>Fudan University</i> ); Bao, Shenjie ( <i>Fudan University</i> ); Chen, Wei* ( <i>Fudan University</i> )	

14:15-14:30 SaC13.6  
**On the use of Non-Contact Capacitive Sensors for the Assessment of Postural Hand Tremor of Individuals with Parkinson's Disease** ..... 6591-6594  
 Oliveira, Fabio Henrique M (*Federal University of Uberlandia*); Rabelo, Amanda (*Universidade Federal de Uberlândia*); Luiz, Luiza Maire (*Universidade Federal de Uberlândia*); Pereira, Adriano A. (*Federal University of Uberlândia*); Vieira, Marcus (*Federal University of Goias*); Andrade, Adriano\* (*Federal University of Uberlândia*)

SaC14: 13:00-14:30 R3 – Level 3  
**Signal Processing and Classification of Electromyographic Signals** (Oral Session)  
**Chair:** Ramakrishnan, Swaminathan (*IIT Madras, India*)  
**Co-Chair:** Nguyen, Hung T. (*Swinburne University of Technology*)

13:00-13:15 SaC14.1  
**Relationship between Offline and Online Metrics in Myoelectric Pattern Recognition Control based on Target Achievement Control Test** ..... 6595-6598  
 Lyu, Bo\* (*Shanghai Jiao Tong University*); Sheng, Xinjun (*Shanghai Jiao Tong University*); Hao, Dehong (*Shanghai Jiao Tong University*); Zhu, Xiangyang (*Shanghai Jiao Tong University*)

13:15-13:30 SaC14.2  
**Exploring Intrinsic Triggers for Functional Facial Electrostimulation based on Intramuscular Electromyography Recordings** ..... 6599-6602  
 Leistritz, Lutz\* (*Jena University Hospital, Friedrich Schiller University Jena*); Poeschl, Christiane (*MED-EL Medical Electronics*); Volk, Gerd Fabian (*Jena University Hospital*)

13:30-13:45 SaC14.3  
**Smoothed Arg Max Extreme Learning Machine: An Alternative to Avoid Classification Ripple in sEMG Signals** ..... 6603-6606  
 Cene, Vinicius H. (*Universidade Federal do Rio Grande do Sul*); Machado, Juliano\* (*Instituto Federal Sul-Riograndense (IFSul)*); Balbinot, Alexandre (*Federal University of Rio Grande do Sul (UFRGS)*)

13:45-14:00 SaC14.4  
**Estimation of Motor Unit Global Firing Rate by Features of EMG in Frequency Domain** ..... 6607-6610  
 Ma, Shihan\* (*Shanghai Jiao Tong University*); Chen, Chen (*Shanghai Jiao Tong University*); Lyu, Bo (*Shanghai Jiao Tong University*); Sheng, Xinjun (*Shanghai Jiao Tong University*); Zhu, Xiangyang (*Shanghai Jiao Tong University*)

14:00-14:15 SaC14.5  
**Exploiting the Intertemporal Structure of the Upper-Limb sEMG: Comparisons between an LSTM Network and Cross-Sectional Myoelectric Pattern Recognition Methods** ..... 6611-6615  
 Olsson, Alexander (*Lund University*); Malesevic, Nebojsa (*Lund University*); Björkman, Anders (*Lund University*); Antfolk, Christian\* (*Lund University*)

14:15-14:30 SaC14.6  
**The Influence of Force Level and Motor Unit Coherence on Nonlinear Surface EMG Features Examined using Model Simulation** ..... 6616-6619  
 McManus, Lara\* (*University College Dublin*); Pereira Botelho, Diego (*University College Dublin*); Flood, Matthew W. (*University College Dublin*); Lowery, Madeleine (*University College Dublin*)

SaC15: 13:00-14:30 M3 – Level 3  
**Ultrasound Imaging (II)** (Oral Session)  
**Chair:** Konofagou, Elisa (*Columbia University*)  
**Co-Chair:** Beg, Mirza Faisal (*Simon Fraser University*)

13:00-13:15 SaC15.1  
**Morphological Characterization of Breast Tumors using Conventional B-Mode Ultrasound Images** ..... 6620-6623  
 El-Azizy, Ahmed R. M. (*Dept. of Biomedical Engineering, Cairo University Faculty o*); Salaheldien, Mohamed (*Dept. of Biomedical Engineering, Cairo University Faculty o*); Rushdi, Muhammad (*Cairo University*); Gewefel, Hanan (*Radiographic Imaging Technology, Faculty of Applied Medical Scie*); Mahmoud, Ahmed M.\* (*Cairo University Faculty of Engineering*)

13:15-13:30	SaC15.2
<b>Quantitative Ultrasound Imaging for the Differentiation between Fresh and Decellularized Mouse Kidneys</b> .....	6624-6627
Alnazer, Israa ( <i>Lebanese University</i> ); Falou, Omar* ( <i>Lebanese University</i> ); Nasr, Remie ( <i>Lebanese University</i> ); Azar, Danielle ( <i>Lebanese American University</i> ); Hysi, Eno ( <i>Ryerson University</i> ); Wirtzfeld, Lauren ( <i>Ryerson University</i> ); Berndt, Elizabeth ( <i>Ryerson University</i> ); Kolios, Michael ( <i>Ryerson University</i> )	
13:30-13:45	SaC15.3
<b>Ultrasound Segmentation using U-Net: Learning from Simulated Data and Testing on Real Data</b> .....	6628-6631
Behboodi, Bahareh* ( <i>Concordia University</i> ); Rivaz, Hassan ( <i>Concordia University</i> )	
13:45-14:00	SaC15.4
<b>Fully Automated Segmentation of Alveolar Bone using Deep Convolutional Neural Networks from Intraoral Ultrasound Images</b> .....	6632-6635
Duong, Dat ( <i>University of Alberta</i> ); Nguyen, Kim-Cuong T ( <i>University of Alberta</i> ); Kaipatur, Neelambar ( <i>University of Alberta</i> ); Lou, Edmond H. ( <i>University of Alberta</i> ); Noga, Michelle ( <i>University of Alberta</i> ); Major, Paul ( <i>University of Alberta</i> ); Punithakumar, Kumaradevan* ( <i>University of Alberta</i> ); Le, Lawrence H ( <i>University of Alberta</i> )	
14:00-14:15	SaC15.5
<b>Automated Diagnosis of Cardiovascular Disease through Measurement of Intima Media Thickness using Deep Neural Networks</b> .....	6636-6639
Chinnappan, Rajasekaran* ( <i>K.S.Rangasamy College of Technology</i> ); Krishnasamy Balasundaram, Jayanthi ( <i>K.S.Rangasamy College of Technology</i> ); Subramaniam, Sudha ( <i>K.S.Rangasamy College of Technology</i> ); Kuchelar, Ramani ( <i>Apollo Hospitals, Chennai</i> )	
14:15-14:30	SaC15.6
<b>A Novel Transcranial Ultrasound Imaging Method with Diverging Wave</b> .....	6640-6643
Du, Bin ( <i>Shenzhen University</i> ); Zheng, Haoteng ( <i>Shenzhen University</i> ); Siyuan, Fang ( <i>Shenzhen University</i> ); Chen, Siping ( <i>Shenzhen University</i> ); Lu, Minhua* ( <i>Shenzhen University</i> ); Mao, Rui ( <i>Shenzhen University</i> )	

SaC16: 13:00-14:30 <b>Wearable Robotic Systems – Prosthetics</b> (Oral Session) <b>Chair:</b> Sanguineti, Vittorio ( <i>University of Genoa</i> )	M5 – Level 3
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13:00-13:15	SaC16.1
<b>A Control Method for Transfemoral Prosthetic Knees based on Thigh Angular Motion</b> .....	6644-6647
Inoue, Koh* ( <i>Kagawa University</i> ); Fukuda, Tetsuya ( <i>Kagawa University</i> ); Wada, Takahiro ( <i>Ritsumeikan University</i> )	
13:15-13:30	SaC16.2
<b>A Dynamic Model of Hand Movements for Proportional Myoelectric Control of a Hand Prosthesis</b> .....	6648-6651
Sanguineti, Vittorio* ( <i>University of Genoa</i> ); Beninati, Giovanna ( <i>University of Genoa</i> )	
13:30-13:45	SaC16.3
<b>Robotic Prosthesis that Maintains Flexion Posture</b> .....	6652-6655
Katsumura, Motoyu* ( <i>Mie University</i> ); Obayashi, Shuya ( <i>Mie University</i> ); Yano, Kenichi ( <i>Mie University</i> ); Hamada, Atsushi ( <i>Imasen Engineering Corporation</i> ); Nakao, Tomoyuki ( <i>Imasen Engineering Corporation</i> ); Torii, Katsuhiko ( <i>Imasen Engineering Corporation</i> )	
13:45-14:00	SaC16.4
<b>Adaptive, Tendon-Driven, Affordable Prostheses for Partial Hand Amputations: On Body-Powered and Motor Driven Implementations</b> .....	6656-6660
Gao, Geng ( <i>The University of Auckland</i> ); Gerez, Lucas ( <i>University of Auckland</i> ); Liarokapis, Minas* ( <i>The University of Auckland</i> )	
14:00-14:15	SaC16.5
<b>Rehand II: Wire-Driven Five-Fingered Electric Prosthetic Hand Utilizing Elasticity of a Cosmetic Glove</b> ..	6661-6664
Odagaki, Narinobu* ( <i>Osaka Institute of Technology</i> ); Yoshikawa, Masahiro ( <i>Osaka Institute of Technology</i> ); Tanaka, Yoshihiro ( <i>Nagoya Institute of Technology</i> ); Kawashima, Noritaka ( <i>Research Institute, National Rehabilitation Center for Persons wi</i> )	

14:15-14:30 SaC16.6  
**Compact and Lightweight Transradial Electric Prosthesis for Children with Forearm Deficiency** ..... 6665-6668  
 Kobayashi, Toya\* (*Osaka Institute of Technology*); Yoshikawa, Masahiro (*Osaka Institute of Technology*);  
 Ogawa, Kazunori (*Daiya Industry Co., Ltd.*); Ohmatsu, Satoko (*Research Institute of National Rehabilitation  
 Center for the Dis*); Kawashima, Noritaka (*Research Institute, National Rehabilitation Center for Persons wi*)

SaC17: 13:00-14:30	R12 – Level 3
<b>Signal Processing and Classification of Phonocardiographic Signals</b> (Oral Session)	

13:00-13:15 SaC17.1  
**Using Soft Attention Mechanisms to Classify Heart Sounds** ..... 6669-6672  
 Oliveira, Jorge (*Instituto de Telecomunicações, Faculdade de Ciências da Universi*); Nogueira, Diogo Marcelo  
 (*INESC TEC*); Ramos, Cleber (*University of Porto*); Renna, Francesco (*Instituto de Telecomunicações e  
 Faculdade de Ciências da Univers*); Ferreira, Carlos (*LIAAD – INESC TEC*); Coimbra, Miguel\* (*Instituto de  
 Telecomunicações / Universidade do Porto*)

13:15-13:30 SaC17.2  
**Fully-Automated Diagnosis of Aortic Stenosis using Phonocardiogram-Based Features** ..... 6673-6676  
 Saraf, Kanav\* (*University of California Los Angeles*); Baek, Christopher Inhwan (*Sensydia Corporation*); Wasko,  
 Michael (*Sensydia Corporation*); Zhang, Xu (*University of California, Los Angeles*); Zheng, Yi (*Sensydia  
 Corporation*); Borgstrom, Per Henrik (*Sensydia Corporation*); Mahajan, Aman (*University of Pittsburgh*); Kaiser,  
 William (*University of California, Los Angeles*)

13:30-13:45 SaC17.3  
**Segmentation of Radar-Recorded Heart Sound Signals using Bidirectional LSTM Networks** ..... 6677-6680  
 Shi, Kilin\* (*Friedrich-Alexander-Universität Erlangen-Nürnberg*); Schellenberger, Sven (*Brandenburg University  
 of Technology*); Weber, Leon (*Humboldt-Universität zu Berlin*); Wiedemann, Jan Philipp (*Friedrich-Alexander-  
 Universität Erlangen-Nürnberg*); Michler, Fabian (*Friedrich-Alexander-Universität Erlangen-Nürnberg*);  
 Steigleder, Tobias (*Universitätsklinikum Erlangen*); Malessa, Anke (*Universitätsklinikum Erlangen*); Lurz, Fabian  
 (*Friedrich-Alexander-Universität Erlangen-Nürnberg*); Ostgathe, Christoph (*Universitätsklinikum Erlangen*);  
 Weigel, Robert (*University of Erlangen Nuremberg*); Koelpin, Alexander (*Chair for Electronics & Sensor  
 Systems, Brandenburg University*)

13:45-14:00 SaC17.4  
**Improved Segmentation with Dynamic Threshold Adjustment for Phonocardiography Recordings** ..... 6681-6684  
 Ozkan, Ibrahim\* (*Hacettepe University*); Yilmaz, Atila (*Hacettepe University*); Celebi, Gulsen (*ESEN System  
 Integration*)

14:00-14:15 SaC17.5  
**An Approach for Automatic Identification of Fundamental and Additional Sounds from Cardiac  
 Sounds Recordings** ..... 6685-6688  
 Dwivedi, Amit Krishna\* (*Imperial College London*); Rodriguez-Villegas, Esther (*Imperial College London*)

14:15-14:30 SaC17.6  
**Multi-Source Signal Processing in Phonocardiography: Comparison among Signal Selection and  
 Signal Enhancement Techniques** ..... 6689-6692  
 Giordano, Noemi (*Politecnico di Torino*); Knaflitz, Marco\* (*Politecnico di Torino*)

SaC18: 13:00-14:30	R13 – Level 3
<b>Wearable Sleep Monitoring</b> (Oral Session)	
<b>Co-Chair:</b> Kidmose, Preben ( <i>Aarhus University, Denmark</i> )	

13:00-13:15 SaC18.1  
**A Graphene-Based Sleep Mask for Comfortable Wearable Eye Tracking** ..... 6693-6696  
 Beach, Christopher\* (*University of Manchester*); Karim, Nazmul (*University of Manchester*); Casson, Alexander  
 James (*The University of Manchester*)

13:15-13:30 SaC18.2  
**Discrimination of Sleep Spindles in Ear-EEG** ..... 6697-6700  
 Mikkelsen, Kaare (*University of Aarhus*); Kappel, Simon Lind (*University of Moratuwa*); Hemmsen, Martin  
 Christian (*T&W Engineering*); Rank, Mike Lind (*Widex A/S*); Kidmose, Preben\* (*Aarhus University, Denmark*)

13:30-13:45		SaC18.3
<b>Detection of Sleep and Wake States based on the Combined use of Actigraphy and Ballistocardiography</b> .....	6701-6704	
Jaworski, Dominic* ( <i>Simon Fraser University</i> ); M. Roshan, Yaser ( <i>CannSight Technologies</i> ); Tae, Chul-Gyu ( <i>Bigmotion Technologies</i> ); Park, Edward J. ( <i>Simon Fraser University</i> )		
13:45-14:00		SaC18.4
<b>Novel Active ECG Electrode and Membrane Pressure Sensor-Based Unconstrained Cardiorespiratory System for Sleep Monitoring</b> .....	6705-6709	
Wang, Zeyu ( <i>Fudan University</i> ); Chen, Chen ( <i>Fudan University</i> ); Tao, Linkai ( <i>Eindhoven University of Technology</i> ); Yuan, Wei ( <i>Printable Electronics Research Centre, Suzhou Institute of Nanot</i> ); Li, Wei ( <i>Fudan University</i> ); Sun, Chenglu ( <i>Fudan University</i> ); Chen, Wei* ( <i>Fudan University</i> )		
14:00-14:15		SaC18.5
<b>Can we Monitor Breathing during Sleep via Wi-Fi on Smartphone?</b> .....	6710-6713	
Tataraidze, Alexander* ( <i>Huawei Technologies Co. Ltd.</i> ); Pikhletsy, Mikhail ( <i>Huawei Technologies</i> ); Olesyuk, Roman ( <i>Huawei Technologies Co., Ltd.</i> )		
14:15-14:30		SaC18.10
<b>Adaptive Accelerometry Derived Respiration: Comparison with Respiratory Inductance Plethysmography during Sleep</b> .....	6714-6717	
Bricout, Aurélien* ( <i>Université Grenoble Alpes</i> ); Fontecave-Jallon, Julie ( <i>Univ. Grenoble Alpes, CNRS, CHU Grenoble Alpes, Grenoble INP</i> ); Colas, Damien ( <i>Holi</i> ); Gerard, Gregoire ( <i>Holi</i> ); Pepin, Jean-Louis ( <i>Grenoble University Hospital</i> ); Gumery, Pierre-Yves ( <i>Université Grenoble Alpes</i> )		
<b>SaC19: 13:00-14:30</b>		<b>R4 – Level 3</b>
<b>Image Segmentation with Neural Networks (I) (Oral Session)</b>		
<b>Chair:</b> Cardoso, Jaime S. ( <i>INESC TEC and University of Porto</i> )		
13:00-13:15		SaC19.1
<b>Automated Placenta Segmentation with a Convolutional Neural Network Weighted by Acoustic Shadow Detection</b> .....	6718-6723	
Hu, Ricky* ( <i>University of British Columbia</i> ); Singla, Rohit ( <i>University of British Columbia</i> ); Yan, Ryan ( <i>University of British Columbia</i> ); Mayer, Chantal ( <i>University of British Columbia</i> ); Rohling, Robert ( <i>University of British Columbia</i> )		
13:15-13:30		SaC19.2
<b>Using Synthetic Training Data for Deep Learning-Based GBM Segmentation</b> .....	6724-6729	
Lindner, Lydia ( <i>Graz University of Technology</i> ); Narnhofer, Dominik ( <i>Graz University of Technology</i> ); Weber, Maximilian* ( <i>TU Graz</i> ); Gsaxner, Christina ( <i>TU Graz</i> ); Kolodziej, Malgorzata ( <i>UKGM Giessen</i> ); Egger, Jan ( <i>Graz University of Technology</i> )		
13:30-13:45		SaC19.3
<b>Delineation of Ischemic Core and Penumbra Volumes from MRI using MSNet Architecture</b> .....	6730-6733	
Gupta, Akshat ( <i>IIT Kharagpur</i> ); Vupputuri, Anusha* ( <i>Indian Institute of Technology Kharagpur</i> ); Ghosh, Nirmalya ( <i>Indian Institute of Technology (IIT), Kharagpur</i> )		
13:45-14:00		SaC19.4
<b>Quality-Based Regularization for Iterative Deep Image Segmentation</b> .....	6734-6737	
Rebelo, José ( <i>INESC TEC &amp; University of Porto</i> ); Fernandes, Kelwin ( <i>INESC TEC &amp; University of Porto</i> ); Cardoso, Jaime S.* ( <i>INESC TEC &amp; University of Porto</i> )		
14:00-14:15		SaC19.5
<b>Cascaded Multi-Scale Convolutional Encoder-Decoders for Breast Mass Segmentation in High-Resolution Mammograms</b> .....	6738-6741	
Yan, Yutong ( <i>IMT Atlantique, LaTIM</i> ); Conze, Pierre-Henri* ( <i>IMT Atlantique, LaTIM</i> ); Decenciere, Etienne ( <i>MINES ParisTech, PSL Research University</i> ); Lamard, Mathieu ( <i>Université de Bretagne Occidentale</i> ); Quellec, Gwenole ( <i>Inserm</i> ); Cochener, Béatrice ( <i>CHU Morvan</i> ); Coatrieux, Gouenou ( <i>Institut Telecom – Telecom Bretagne – Inserm</i> )		

14:15-14:30 SaC19.6  
**Deep Neural Network based Polyp Segmentation in Colonoscopy Images using a Combination of Color Spaces** ..... 6742-6745  
 Bagheri, Mahnoosh (*Isfahan University of Technology, Iran*); Mohrekesh, Majid (*Isfahan University of Technology*); Tehrani, Milad (*Isfahan University of Technology, Iran*); Najarian, Kayvan (*University of Michigan – Ann Arbor*); Karimi, Nader (*Isfahan University of Technology*); Samavi, Shadrokh (*McMaster University*); Soroushmehr, S.M.Reza\* (*University of Michigan, Ann Arbor*)

SaD01: 14:30-16:00 Hall A6+A7 – Level 1  
**Brain-Computer Interface (IV) (Oral Session)**

14:30-14:45 SaD01.1  
**Investigating Sex Differences in Classification of Five Emotions from EEG and Eye Movement Signals** . 6746-6749  
 Bao, Lan-Qing\* (*East China University of Science & Technology*); Qiu, Jieli (*Shanghai Jiao Tong University*); Tang, Hao (*Shanghai Jiao Tong University*); Zheng, Wei-Long (*Shanghai Jiao Tong University*); Lu, Bao-Liang (*Shanghai Jiao Tong University*)

14:45-15:00 SaD01.2  
**The Effect of Vibrotactile Feedback on ErrP-Based Adaptive Classification of Motor Imagery** ..... 6750-6753  
 Schiatti, Lucia\* (*Istituto Italiano di Tecnologia*); Barresi, Giacinto (*Istituto Italiano di Tecnologia*); Tessadori, Jacopo (*IIT – Italian Institute of Technology*); King, Louis Charles (*Istituto Italiano di Tecnologia*); Mattos, Leonardo (*Istituto Italiano di Tecnologia*)

15:00-15:15 SaD01.3  
**A Novel Feature Extraction Framework for Four Class Motor Imagery Classification using Log Determinant Regularized Riemannian Manifold** ..... 6754-6757  
 Bandaru, Jagadish\* (*Indian Institute of Technology Hyderabad*); P, Rajalakshmi (*Indian Institute of Technology Hyderabad*)

15:15-15:30 SaD01.4  
**Influence of User Tasks on EEG-Based Classification Performance in a Hazard Detection Paradigm** ..... 6758-6761  
 Kolkhorst, Henrich\* (*University of Freiburg*); Kärkkäinen, Saku (*University of Freiburg*); Raheim, Amund Fallner (*University of Freiburg*); Burgard, Wolfram (*University of Freiburg*); Tangermann, Michael (*University of Freiburg*)

15:30-15:45 SaD01.5  
**Cortical Activations and BCI Performances at Different Speeds of Visual and Proprioceptive Stimulation** ..... 6762-6765  
 Wang, Mengya (*Tianjin University*); Chen, Long (*Tianjin University*); Wang, Zhongpeng (*Tianjin University*); Zhang, Lei (*Tianjin University*); Gu, Xiaosong (*Tianjin University*); Ming, Dong\* (*Tianjin University*)

15:45-16:00 SaD01.6  
**Comparison of Classifiers for the Transfer Learning of Affective Auditory P300-Based BCIs** ..... 6766-6769  
 Onishi, Akinari\* (*Chiba University*); Nakagawa, Seiji (*Chiba University*)

SaD02: 14:30-16:00 Hall A8 – Level 1  
**Signal Processing and Classification of Heart Rate Variability: Applications (Oral Session)**  
**Chair:** Laguna, Pablo (*Zaragoza University and CIBER-BBN*)  
**Co-Chair:** Voss, Andreas (*University of Applied Sciences Jena*)

14:30-14:45 SaD02.1  
**Heart Rate Variability Analysis to Predict Onset of Ventricular Tachyarrhythmias in Implantable Cardioverter Defibrillators** ..... 6770-6775  
 Parsi, Ashkan\* (*National University of Ireland Galway*); O'Loughlin, Declan (*National University of Ireland Galway*); Glavin, Martin (*National University of Ireland*); Jones, Edward (*National University of Ireland Galway*)

14:45-15:00 SaD02.2  
**Pre-Ictal Time Assessment using Heart Rate Variability Features in Drug-Resistant Epilepsy Patients** ... 6776-6779  
 Leal, Adriana (*University of Coimbra*); Pinto, Mauro (*University of Coimbra*); Henriques, Jorge (*University of Coimbra*); Ruano, M. Graça (*FCT, University of Algarve & CISUC-University of Coimbra*); de Carvalho, Paulo\* (*University of Coimbra*); Teixeira, César (*University of Coimbra*)

15:00-15:15	SaD02.3
<b>Effect of EKG Sampling Rate on Heart Rate Variability Analysis</b> .....	6780-6783
Govindan, Rathinaswamy* ( <i>Children's National Health System</i> ); Massaro, An ( <i>Children's National Health System</i> ); Kota, Srinivas ( <i>UT Southwestern Medical Center</i> ); Grabowski, Reagan ( <i>Children's National Health System</i> ); Wilson, James ( <i>University of Arkansas at Little Rock</i> ); DuPlessis, Adre ( <i>Children's National Medical Center</i> )	
15:15-15:30	SaD02.4
<b>Heart Rate Variability at Bedtime Predicts Subsequent Sleep Features</b> .....	6784-6788
Tramonti Fantozzi, Maria Paola* ( <i>Università di Pisa</i> ); Artoni, Fiorenzo ( <i>Center for Neuroprosthetics, Institute of Bioengineering, School</i> ); Faraguna, Ugo ( <i>Dept. of Translational Research &amp; of New Surgical &amp; Med</i> )	
15:30-15:45	SaD02.5
<b>Multivariable Relationships between Autonomic Nervous System Related Indices in Hyperbaric Environments</b> .....	6789-6793
Pérez Martínez, Cristina* ( <i>University of Zaragoza</i> ); Peláez Coca, María Dolores ( <i>Centro Universitario de la Defensa</i> ); Hernando, Alberto ( <i>BSICoS Group, CIBER-BBN</i> ); Gil, Eduardo ( <i>Zaragoza University &amp; CIBER-BBN</i> ); Sanchez, Carlos ( <i>Defense University Centre, University of Zaragoza</i> )	
15:45-16:00	SaD02.6
<b>Risk Detection in Patients with Obstructive Sleep Apnea Syndrome based on Cardiovascular Time Series Analysis</b> .....	6794-6797
Schulz, Steffen ( <i>University of Applied Sciences Jena</i> ); Ritter, Julia ( <i>University Hospital Jena, Dept. of Otorhinolaryngology, Jen</i> ); Schneider, Gerlind ( <i>Jena University Hospital, Dept. of Otorhinolaryngology</i> ); Guntinas-Lichius, Orlando ( <i>University Hospital Jena, Dept. of Otorhinolaryngology, Jen</i> ); Voss, Andreas* ( <i>University of Applied Sciences Jena</i> )	

SaD03: 14:30-16:00	Hall A3 – Level 1
<b>MRI-RF and New Imaging Technologies</b> (Oral Session)	
<b>Chair:</b> Rispoli, Joseph Vincent ( <i>Purdue University</i> )	
<b>Co-Chair:</b> Cheng, Jing ( <i>Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences</i> )	

14:30-14:45	SaD03.1
<b>Stitching Stretchable Radiofrequency Coils for MRI: A Conductive Thread and Athletic Fabric Approach</b> .....	6798-6801
Vincent, Jana* ( <i>Purdue University</i> ); Rispoli, Joseph Vincent ( <i>Purdue University</i> )	
14:45-15:00	SaD03.2
<b>Dual-Tuned Removable Common-Mode Current Trap for Magnetic Resonance Imaging and Spectroscopy</b> .....	6802-6805
Enriquez, Angel ( <i>Purdue University</i> ); Vincent, Jana* ( <i>Purdue University</i> ); Rispoli, Joseph Vincent ( <i>Purdue University</i> )	
15:00-15:15	SaD03.3
<b>Feasibility of using a 1T Extremity Scanner with a Four-Element Array to Detect 31P in the Human Calf</b> .....	6806-6809
Carrell, Travis* ( <i>Texas A&amp;M University</i> ); Gu, Minyu ( <i>Texas A&amp;M University</i> ); McDougall, Mary ( <i>Texas A&amp;M University</i> ); Wright, Steven M. ( <i>Texas A&amp;M University</i> )	
15:15-15:30	SaD03.4
<b>Metasurface Resonator for 1.5 T MRI based on BaTiO3 Host Material</b> .....	6810-6813
Koutsoupidou, Maria ( <i>King's College London</i> ); Saha, Shimul C. ( <i>MediWise, Medical Wireless Sensing Ltd.</i> ); Pricci, Roberto L. ( <i>MediWise, Medical Wireless Sensing Ltd.</i> ); Cano-Garcia, Helena* ( <i>King's College London, Medical Wireless Sensing Ltd.</i> ); Palikaras, George ( <i>MediWise, Medical Wireless Sensing Ltd.</i> ); Kosmas, Panagiotis ( <i>Kings College London</i> ); Kallos, Efthymios ( <i>MediWise, Medical Wireless Sensing Ltd.</i> )	
15:30-15:45	SaD03.5
<b>Radio-Frequency Coil Array for Improved Concurrent Transcranial Magnetic Stimulation and Functional Magnetic Resonance Imaging</b> .....	6814-6817
Mathieu, William ( <i>McGill University</i> ); Popovich, Milica* ( <i>McGill University</i> ); Farivar, Reza ( <i>McGill University</i> )	

15:45-16:00 SaD03.6  
**Accelerating MR Imaging via Deep Chambolle-Pock Network** ..... 6818-6821  
 Wang, Haifeng (*Shenzhen Institutes of Advanced Technology, Chinese Academy of S*); Cheng, Jing (*Shenzhen Institutes of Advanced Technology, Chinese Academy of S*); Jia, Sen (*Shenzhen Institutes of Advanced Technology, Chinese Academy of S*); Qiu, Zhilang (*Shenzhen Institutes of Advanced Technology, Chinese Academy of S*); Shi, Caiyun (*Shenzhen Institutes of Advanced Technology, Lauterbur Research C*); Zou, Lixian (*Shenzhen Institutes of Advanced Technology, Chinese Academy of S*); Su, Shi (*Shenzhen Institutes of Advanced Technology, Chinese Academy of S*); Chang, Yuchou (*University of Houston – Downtown*); Zhu, Yanjie (*Shenzhen Institutes of Advanced Technology, Chinese Academy of S*); Ying, Leslie (*The State University of New York at Buffalo*); Liang, Dong\* (*Shenzhen Institutes of Advanced Technology*)

SaD04: 14:30-16:00	Hall A1 – Level 1
<b>Cardiovascular Monitoring</b> (Oral Session)	
<b>Co-Chair:</b> McDuff, Daniel Jonathan ( <i>Microsoft</i> )	

14:30-14:45 SaD04.1  
**Identification and Tracking of Physiological Parameters from Skin using Video Photoplethysmography** ..... 6822-6825  
 Barbieri, Riccardo\* (*Politecnico di Milano*); Levi, Riccardo (*Politecnico di Milano*); Negro, Matteo (*Politecnico di Milano, Milan, Italy*); Ficarelli, Luca (*Politecnico di Milano*); Cerina, Luca (*Politecnico of Milan*); Mainardi, Luca (*Politecnico di Milano*)

14:45-15:00 SaD04.2  
**Continuous Tracking of Changes in Systolic Blood Pressure using BCG and ECG** ..... 6826-6829  
 He, Shan\* (*University of Ottawa*); Dajani, Hilmi (*University of Ottawa*); Meade, Robert (*University of Ottawa*); Kenny, Glen Patrick (*University of Ottawa*); Bolic, Miodrag (*University of Ottawa*)

15:00-15:15 SaD04.3  
**Using Non-Contact Imaging Photoplethysmography to Recover Diurnal Patterns in Heart Rate** ..... 6830-6833  
 McDuff, Daniel Jonathan\* (*Microsoft*)

15:15-15:30 SaD04.4  
**Cuff-Less Blood Pressure Monitoring with a 3-Axis Accelerometer** ..... 6834-6837  
 Chang, Eric (*UC San Diego*); Cheng, Chung-Kuan (*University of California, San Diego*); Gupta, Anushka (*UC San Diego*); Hsu, Po-Han (*National Taipei University*); Hsu, Po-Ya\* (*UC San Diego*); Liu, Hsin-Li (*Central Taiwan University of Science & Technology*); Moffitt, Amanda (*UC San Diego*); Ren, Alissa (*UC San Diego*); Tsaur, Irene (*UC San Diego*); Wang, Samuel (*UC San Diego*)

15:30-15:45 SaD04.5  
**The Cuffless Blood Pressure Measurement with Multi-Dimension Regression Model based on Characteristics of Pulse Waveform** ..... 6838-6841  
 Liu, Shing-Hong\* (*Chaoyang University of Technology, Taichung, Taiwan, ROC*); Wang, Jia-Jung (*I-Shou University*); Tan, Tan-Hsu (*National Taipei University of Technology*); Huang, Yung-Fa (*Chaoyang University of Technology*)

15:45-16:00 SaD04.6  
**A Wireless Wearable Sensor Patch for the Real-Time Estimation of Continuous Beat-to-Beat Blood Pressure** ..... 6842-6845  
 Qiu, Chunkai\* (*Monash University*); Wu, Taiyang (*Monash University*); Redouté, Jean-Michel (*Monash University*); Yuce, Mehmet (*Monash University*)

SaD05: 14:30-16:00	Hall A2 – Level 1
<b>Signal Processing and Classification of Movement-Related Signals</b> (Oral Session)	

14:30-14:45 SaD05.1  
**Automated Evaluation of Upper Limb Motor Impairment in Patient with Cerebellar Ataxia** ..... 6846-6849  
 Tran, Ha\* (*Deakin University*); Pathirana, Pubudu N (*Deakin University*); Horne, Malcolm (*Florey Institute of Neuroscience & Mental Health*); Power, Laura (*Royal Victorian Eye & Ear Hospital*); Szmulewicz, David (*Victorian Eye & Ear Hospital*)



14:45-15:00	SaD05.2
<b>Quantitative Assessment of Cerebellar Ataxia, through Automated Limb-Coordination Tests</b> .....	6850-6853
Krishna, Ragil* ( <i>Deakin University</i> ); Pathirana, Pubudu N ( <i>Deakin University</i> ); Horne, Malcolm ( <i>Florey Institute of Neuroscience &amp; Mental Health</i> ); Power, Laura ( <i>Royal Victorian Eye &amp; Ear Hospital</i> ); Szmulewicz, David ( <i>Victorian Eye &amp; Ear Hospital</i> )	
15:00-15:15	SaD05.3
<b>Estimating Center of Mass Trajectory in Quiet Standing: A Review</b> .....	6854-6859
Nicolaï, Alice* ( <i>CMLA, ENS Paris Saclay, CNRS</i> ); Audiffren, Julien ( <i>CMLA, ENS Paris Saclay, CNRS</i> )	
15:15-15:30	SaD05.4
<b>Relationship between Medial Gastrocnemius Muscle Stiffness and the Angle between the Rearfoot and Floor</b> .....	6860-6863
Uchiyama, Takanori* ( <i>Keio University</i> ); Hamada, Eiki ( <i>Keio University</i> )	
15:30-15:45	SaD05.5
<b>Gesture Classification using LSTM Recurrent Neural Networks</b> .....	6864-6867
Cifuentes Quintero, Jenny Alexandra* ( <i>Universidad de La Salle</i> ); Boulanger, Pierre ( <i>University of Alberta</i> ); Pham, Minh Tu ( <i>Institut National des Sciences Appliquées (INSA de Lyon)</i> ); Prieto, Flavio ( <i>Universidad Nacional de Colombia</i> ); Moreau, Richard ( <i>INSA-Lyon</i> )	
15:45-16:00	SaD05.6
<b>Cortical Reactive Balance Responses to Unexpected Slippages while Walking: A Pilot Study</b> .....	6868-6871
Mezzina, Giovanni* ( <i>Politecnico di Bari</i> ); Aprigliano, Federica ( <i>The BioRobotics Institute of Scuola Superiore Sant'Anna, Pisa</i> ); Micera, Silvestro ( <i>Scuola Superiore Sant'Anna</i> ); Monaco, Vito ( <i>Scuola Superiore Sant'Anna, Pisa</i> ); De Venuto, Daniela ( <i>Politecnico di Bari</i> )	

SaD06: 14:30-16:00	Hall A5 – Level 1
<b>Neural Stimulation (IV)</b> (Oral Session)	

14:30-14:45	SaD06.1
<b>A Simulation Study of Light Propagation in the Spinal Cord for Optogenetic Surface Stimulation</b> .....	6872-6875
Chang, Shih-Yin* ( <i>The University of Tokyo</i> ); Nishikawa, Satoshi ( <i>The University of Tokyo</i> ); Sekino, Masaki ( <i>The University of Tokyo</i> ); Onodera, Hiroshi ( <i>University of Tokyo Graduate School of Engineering</i> ); Kuniyoshi, Yasuo ( <i>University of Tokyo</i> )	
14:45-15:00	SaD06.2
<b>A Distributed Wireless Network of Implantable Sub-Mm Cortical Microstimulators for Brain-Computer Interfaces</b> .....	6876-6879
Laiwalla, Farah ( <i>Brown University</i> ); Lee, Jihun ( <i>Brown University</i> ); Lee, Ah-Hyoung ( <i>Seoul National University</i> ); Mok, Ethan ( <i>Brown University</i> ); Leung, Vincent ( <i>Qualcomm Institute</i> ); Shellhammer, Steven ( <i>Qualcomm</i> ); Song, Yoon-Kyu ( <i>Seoul National University</i> ); Larson, Lawrence ( <i>Brown University</i> ); Nurmikko, Arto* ( <i>Brown University</i> )	
15:00-15:15	SaD06.3
<b>Sinusoidal Stimulation on Afferent Fibers Can Selectively Activate Different Types of Neurons in Rat Hippocampus</b> .....	6880-6883
Wang, Zhaoxiang ( <i>Zhejiang University</i> ); Feng, Zhouyan* ( <i>Zhejiang University</i> ); Hu, Hanhan ( <i>Zhejiang University</i> ); Yuan, Yue ( <i>Zhejiang University</i> )	
15:15-15:30	SaD06.4
<b>Excitation Comparison between Multi-Site Stimulation using Network-Based tDCS and Focal Stimulation using High-definition tDCS</b> .....	6884-6887
Chen, Cheng* ( <i>The Chinese University of Hong Kong</i> ); Fang, Yuqi ( <i>Chinese University of Hong Kong</i> ); Wang, Xin ( <i>The Chinese University of Hong Kong</i> ); Bao, Shi-Chun ( <i>The Chinese University of Hong Kong</i> ); Tang, Zhiqiang ( <i>The Chinese University of Hong Kong</i> ); Tong, Kai Yu, Raymond ( <i>The Chinese University of Hong Kong</i> )	
15:30-15:45	SaD06.5
<b>Extracellular and Intracellular Fluid Shifts on the Onset of Transcutaneous Auricular Vagus Nerve Stimulation</b> .....	6888-6891
Ülgen, Yekta* ( <i>Bahcesehir University</i> ); Solmaz, Hakan ( <i>Bahcesehir University</i> ); Tunç, Burcu ( <i>Bahcesehir University</i> ); Buyuksarac, Bora ( <i>Bogazici University</i> )	

15:45-16:00 SaD06.6  
**Investigation of Architectures for Models of Neural Responses to Electrical Brain Stimulation** ..... 6892-6895  
 Steinhardt, Cynthia\* (*Johns Hopkins University*); Sacré, Pierre (*University of Liège*); Inati, Sara (*National Institute of Health*); Sarma, Sridevi V. (*Johns Hopkins University*); Zaghloul, Kareem (*National Institute of Health*)

SaD07: 14:30-16:00 Hall A4 – Level 1  
**Physiological Systems Modeling** (Oral Session)  
 Co-Chair: Wessel, Niels (*Humboldt-Universität zu Berlin*)

14:30-14:45 SaD07.1  
**A System Theoretic Investigation of Cortisol Dysregulation in Fibromyalgia Patients with Chronic Fatigue** ..... 6896-6901  
 Pednekar, Divesh Deepak\* (*University of Houston*); Amin, Md. Rafiul (*University of Houston*); Fekri Azgomi, Hamid (*University of Houston*); Aschbacher, Kirstin (*University of California, San Francisco*); Crofford, Leslie J. (*Vanderbilt University*); Faghih, Rose T. (*University of Houston*)

14:45-15:00 SaD07.2  
**A Systematic Method for Preprocessing and Analyzing Electrodermal Activity** ..... 6902-6905  
 Subramanian, Sandya\* (*Massachusetts Institute of Technology*); Barbieri, Riccardo (*Politecnico di Milano*); Brown, Emery N (*MGH-Harvard Medical School-MIT*)

15:00-15:15 SaD07.3  
**A Convolutional Neural Network-Based Model of Neural Pathways in the Retina** ..... 6906-6909  
 Zamani, Yasin (*University of Utah*); Nategh, Neda\* (*University of Utah*)

15:15-15:30 SaD07.4  
**Assessment of Children Exposure Variability to Near-Field Sources using Stochastic Dosimetry** ..... 6910-6913  
 Bonato, Marta\* (*IEIIT Institute of Electronics, Computers & Telecommunication*); Chiaramello, Emma (*IEIIT Institute of Electronics, Computers & Telecommunication*); Fiocchi, Serena (*Consiglio Nazionale delle Ricerche CNR*); Tognola, Gabriella (*CNR IEIIT – Istituto di Elettronica e di Ingegneria dell’Informa*); Parazzini, Marta (*Consiglio Nazionale delle Ricerche*); Ravazzani, Paolo (*Consiglio Nazionale delle Ricerche CNR*)

15:30-15:45 SaD07.5  
**A Bayesian Framework to Identify Type 1 Diabetes Physiological Models using Easily Accessible Patient Data** ..... 6914-6917  
 Cappon, Giacomo\* (*University of Padova*); Facchinetti, Andrea (*University of Padova*); Sparacino, Giovanni (*University of Padova*); Del Favero, Simone (*University of Padova, Padova, Italy*)

15:45-16:00 SaD07.6  
**EOG-Based Gaze Angle Estimation using a Battery Model of the Eye** ..... 6918-6921  
 Barbara, Nathaniel\* (*University of Malta*); Camilleri, Tracey (*University of Malta*); Camilleri, Kenneth Patrick (*University of Malta*)

SaD08: 14:30-16:00 M8 – Level 3  
**Health Informatics – Mobile Health** (Oral Session)

14:30-14:45 SaD08.1  
**Developing a Smartphone Application to Support Smoking Behavior Change through Social Comparison** ..... 6922-6925  
 Maramis, Christos (*Aristotle University of Thessaloniki*); Mylonopoulou, Vasiliki (*University of Oulu*); Stibe, Agnis (*ESLSCA Business School Paris*); Minna, Isomursu (*IT University of Copenhagen*); Chouvarda, Ioanna\* (*Aristotle University*)

14:45-15:00 SaD08.2  
**Detection and Classification of Multidirectional Steps for Motor-Cognitive Training in Older Adults using Shoe-Mounted Inertial Sensors** ..... 6926-6929  
 Guimarães, Vânia\* (*Fraunhofer Portugal AICOS*); Sousa, Inês (*Fraunhofer Portugal AICOS*); Correia, Miguel (*Universidade do Porto, Faculdade de Engenharia*)

15:00-15:15 SaD08.3  
**Monitoring and Prediction of Mood in Elderly People during Daily Life Activities** ..... 6930-6934  
Bautista-Salinas, Daniel (*The Hamlyn Centre for Robotic Surgery, Imperial College London*); Roca-González, Joaquín (*Universidad Politécnica de Cartagena – UPCT*); Méndez, Inmaculada (*Universidad de Murcia*); Martínez Mozos, Oscar\* (*Technical University of Cartagena*)

15:15-15:30 SaD08.4  
**Inferring Respiratory Minute Volume from Wrist Motion** ..... 6935-6938  
Alam, Ridwan\* (*University of Virginia*); Peden, David (*University of North Carolina at Chapel Hill*); Ghaemmaghami, Benjamin (*University of Virginia*); Lach, John (*University of Virginia*)

15:30-15:45 SaD08.5  
**Assessment of In-Meal Eating Behaviour using Fuzzy SVM** ..... 6939-6942  
Sarafis, Ioannis\* (*Aristotle University of Thessaloniki*); Diou, Christos (*Aristotle University of Thessaloniki*); Ioakimidis, Ioannis (*Karolinska Institute, NVS, Division of Applied Neuroendocrinology*); Delopoulos, Anastasios (*Aristotle University of Thessaloniki*)

15:45-16:00 SaD08.6  
**Health-E Minds: A Participatory Personalised and Gamified mHealth Platform to Support Healthy Living Behaviours for People with Mental Illness** ..... 6943-6947  
Varnfield, Marlien\* (*CSIRO*); Rajesh, Kausthubram (*CSIRO*); Redd, Christian Brandt (*Commonwealth Scientific & Industrial Research Organisation*); Gibson, Simon (*CSIRO*); Gwillim, Lisa (*Queensland Health*); Polkinghorne, Stuart (*Queensland Health*)

SaD09: 14:30-16:00 M1 – Level 3  
**Models of Tissue, Organs, and Devices** (Oral Session)  
**Co-Chair:** Fotiadis, Dimitrios I. (*University of Ioannina*)

14:30-14:45 SaD09.1  
**The Geometric Effects on the Stress of Arterial Atherosclerotic Plaques: A Computational Study** ..... 6948-6951  
Liu, Haipeng (*Anglia Ruskin University*); Leung, Thomas (*The Chinese University of Hong Kong*); Wong, Adrian (*The Chinese University of Hong Kong*); Chen, Fei (*Southern University of Science & Technology*); Zheng, Dingchang\* (*Anglia Ruskin University*)

14:45-15:00 SaD09.2  
**Computational Modelling of the Effect of Infarct Stiffness on Regional Myocardial Mechanics** ..... 6952-6955  
Leong, Chen Onn\* (*University of Malaya*); Leong, Chin Neng (*University of Malaya*); Al Abed, Amr (*University of New South Wales*); Ahmad Bakir, Azam (*The University of New South Wales*); Liew, Yih Miin (*University of Malaya*); Dokos, Socrates (*University of New South Wales*); Lim, Einly (*University of Malaya*)

15:00-15:15 SaD09.3  
**Functional Requirements of a Mathematical Model of Muscle Contraction** ..... 6956-6959  
Palladino, Joseph\* (*Trinity College*)

15:15-15:30 SaD09.4  
**Numerical Evaluation of the Mechanical Environment of a Fractured Long Bone for Osteoporotic and Non-Osteoporotic Subjects** ..... 6960-6963  
Potsika, Vassiliki (*Unit of Medical Technology & Intelligent Information Systems,*); Tachos, Nikolaos (*Unit of Medical Technology & Intelligent Information Systems,*); Pakos, Emilios (*Laboratory of Biomechanics, School of Medicine, University of Io*); Fotiadis, Dimitrios I.\* (*University of Ioannina*)

15:30-15:45 SaD09.5  
**Incorporating Pathology-Induced Heterogeneities in a Patient-Specific Biomechanical Model of the Lung for Accurate Tumor Motion Estimation** ..... 6964-6967  
Jafari, Parya\* (*Western University*); Hoover, Douglas (*London Health Sciences Centre*); Yaremko, Brian (*London Regional Cancer Program*); Parraga, Grace (*Robarts Research Institute*); Samani, Abbas (*Western University*); Sadeghi-Naini, Ali (*York University*)

15:45-16:00 SaD09.6  
**Fast Simulation of Stent Deployment with Plastic Beam Elements** ..... 6968-6974  
Krewcun, Camille\* (*Institut Pascal*); Sarry, Laurent (*Université d'Auvergne*); Combaret, Nicolas (*Institut Pascal*); Pery, Emilie (*Université d'Auvergne*)

SaD10: 14:30-16:00 M2 – Level 3  
**Therapeutic and Diagnostic Modeling** (Oral Session)  
**Chair:** Makarov, Sergey (*Electrical and Computer Engineering, Worcester Polytechnic Institute*)

14:30-14:45 SaD10.1  
**Multi-Modal Framework for Image-Guided Trans-Oral Surgery with Intraoperative Imaging and Deformation Modeling** ..... 6975-6978  
Wu, Xiaotian\* (*Thayer School of Engineering at Dartmouth College*); Sánchez, Antonio (*University of British Columbia*); Kahng, Peter (*Geisel School of Medicine*); Rees, Christiaan (*Geisel School of Medicine*); Ponukumati, Aravind (*Geisel School of Medicine*); Eisen, Eric (*Dartmouth-Hitchcock Medical Center*); Pastel, David (*Dartmouth-Hitchcock Medical Center*); Borgard, Heather (*University of British Columbia*); Lloyd, John E. (*The University of British Columbia*); Fels, Sidney (*The University of British Columbia*); Paydarfar, Joseph (*Dartmouth-Hitchcock Medical Center*); Halter, Ryan (*Dartmouth College*)

14:45-15:00 SaD10.2  
**A New 3D Printed Applicator with Radioactive Gel for Conformal Brachytherapy of Superficial Skin Tumor** ..... 6979-6982  
Pashazadeh, Ali\* (*Otto-von-Guericke-University of Magdeburg, Germany*); Castro, Nathan (*George Washington University*); Boese, Axel (*Dept. of Medical Engineering, Otto-von-Guericke-University*); Hutmacher, Dietmar W. (*Queensland University of Technology*); Friebe, Michael (*Otto-von-Guericke-University*)

15:00-15:15 SaD10.3  
**Optimizing Configurations for 7-DoF Robotic Ultrasound Guidance in Radiotherapy of the Prostate** ..... 6983-6986  
Schlüter, Matthias\* (*Hamburg University of Technology*); Fürweger, Christoph (*Europäisches Cyberknife Zentrum München-Großhadern*); Schlaefer, Alexander (*Hamburg University of Technology*)

15:15-15:30 SaD10.4  
**Evaluation of Laser-Induced Plasma Ablation Focusing on the Difference in Pulse Duration** ..... 6987-6990  
Akimoto, Kohei\* (*Tokyo University of Science*); Tsuichihara, Satoki (*Tokyo University of Science*); Takamatsu, Toshihiro (*Tokyo University of Science*); Soga, Kohei (*Tokyo University of Science*); Yokota, Hideo (*RIKEN Center for Advanced Photonics*); Ito, Masaaki (*National Cancer Center Hospital East*); Gotoda, Naoto (*National Cancer Center Hospital East*); Takemura, Hiroshi (*Tokyo University of Science*)

15:30-15:45 SaD10.5  
**Development and Preliminary Evaluation of a Novel Adaptive Staircase Procedure for Automated Speech-in-Noise Testing** ..... 6991-6994  
Zanet, Marco (*Politecnico di Milano*); Polo, Edoardo Maria (*Politecnico di Milano*); Rocco, Giulia (*Politecnico di Milano*); Paglialonga, Alessia\* (*CNR National Research Council of Italy*); Barbieri, Riccardo (*Politecnico di Milano*)

15:45-16:00 SaD10.6  
**Enhancing Tumor Treating Fields Therapy with Skull-Remodeling Surgery. The Role of Finite Element Methods in Surgery Planning and Treatment Evaluation** ..... 6995-6997  
Korshoej, Anders R. (*Aarhus University Hospital*); Bicalho Saturnino, Guilherme (*Technical University of Denmark*); Mikic, Nikola (*Aarhus University Hospital, Dept. of Neurosurgery*); Thielscher, Axel (*Copenhagen University Hospital Hvidovre, Denmark & Biomedical En*); Bomzon, Ze'ev\* (*Novocure*)

SaD11: 14:30-16:00 M4 – Level 3  
**Vascular Mechanics and Hemodynamics – Vascular Disease** (Oral Session)  
**Chair:** Fotiadis, Dimitrios I. (*University of Ioannina*)  
**Co-Chair:** Kerkhof, Peter LM (*VU University Medical Center*)

14:30-14:45 SaD11.1  
**Site Specific Prediction of Atherosclerotic Plaque Progression using Computational Biomechanics and Machine Learning** ..... 6998-7001  
Kigka, Vassiliki (*University of Ioannina*); Sakellarios, Antonis\* (*Forth-Biomedical Research Institute*); Tsompou, Panagiota (*Unit of Medical Technology & Intelligent Information Systems,*); Kyriakidis, Savvas (*Institute of Molecular Biology & Biotechnology, FORTH*); Siogkas, Panagiotis (*Forth-IMBB*); Andrikos, Ioannis (*University of Ioannina*); Michalis, Lampros (*University of Ioannina*); Fotiadis, Dimitrios I. (*University of Ioannina*)

14:45-15:00	SaD11.2
<b>Predictive Models of Coronary Artery Disease based on Computational Modeling: The SMARTool System</b> .....	7002-7005
Sakellarios, Antonis* ( <i>Forth-Biomedical Research Institute</i> ); Tsompou, Panagiota ( <i>Unit of Medical Technology &amp; Intelligent Information Systems</i> ,); Siogkas, Panagiotis ( <i>Forth-IMBB</i> ); Kigka, Vassiliki ( <i>University of Ioannina</i> ); Andrikos, Ioannis ( <i>University of Ioannina</i> ); Tachos, Nikolaos ( <i>Unit of Medical Technology &amp; Intelligent Information Systems</i> ,); Georga, Eleni I. ( <i>University of Ioannina</i> ); Kyriakidis, Savvas ( <i>Institute of Molecular Biology &amp; Biotechnology, FORTH</i> ); Rocchiccioli, Silvia ( <i>Institute of Clinical Physiology, National Research Council, Pis</i> ); Pelosi, Gualtiero ( <i>Institute of Clinical Physiology, National Research Council</i> ); Fotiadis, Dimitrios I. ( <i>University of Ioannina</i> )	
15:00-15:15	SaD11.3
<b>Sex-Specific Interpretation of Coronary Flow Reserve and Fractional Flow Reserve Metrics, Including their Companions</b> .....	7006-7009
Kerkhof, Peter LM* ( <i>VU University Medical Center</i> ); Osto, Elena ( <i>Dept. Clinical Chemistry, University of Zurich</i> ); Tona, Francesco ( <i>University of Padova</i> ); Heyndrickx, Guy R. ( <i>Cardiovascular Center, OLV Clinic, Aalst</i> ); Handy, Neal ( <i>Dept. Emergency Medicine, Drexel University College of Medicine</i> ,)	
15:15-15:30	SaD11.4
<b>Recognition of Endovascular Manipulations using Recurrent Neural Networks</b> .....	7010-7013
Li, Rui-Qi ( <i>Institute of Automation, Chinese Academy of Sciences</i> ); Zhou, Xiaohu ( <i>Institute of Automation, Chinese Academy of Sciences</i> ); Bian, Gui-Bin ( <i>Institute of Automation, Chinese Academy of Sciences</i> ); Xie, Xiao-Liang ( <i>Chinese Academy of Sciences</i> ); Hou, Zeng-Guang* ( <i>Institute of Automation, Chinese Academy of Sciences</i> )	
15:30-15:45	SaD11.5
<b>Model-Free Cardiorespiratory Motion Prediction from X-Ray Angiography Sequence with LSTM Network</b> .....	7014-7018
Azizmohammadi, Fariba* ( <i>Ecole de Technologie Superieure</i> ); Martin, Rémi ( <i>Ecole de Technologie Superieure</i> ); Miró, Joaquim ( <i>Dept. of Pediatrics, CHU Sainte-Justine</i> ); Duong, Luc ( <i>Ecole de Technologie Superieure</i> )	
15:45-16:00	SaD11.6
<b>Three Dimensional Fluid Structure Interaction Analysis of Carotid Artery Models with Different Calcification Patterns</b> .....	7019-7022
Mahmoud, Aya H. ( <i>Cairo University, Faculty of Engineering</i> ); Hassan, Noha ( <i>Biomedical Engineering Dept., Cairo University</i> ); Mahmoud, Ahmed M.* ( <i>Cairo University Faculty of Engineering</i> )	

SaD12: 14:30-16:00	M6 – Level 3
<b>Digital Pathology</b> (Oral Session)	
<b>Chair:</b> Maglogiannis, Ilias ( <i>University of Piraeus</i> )	
<b>Co-Chair:</b> Ramakrishnan, Swaminathan ( <i>IIT Madras, India</i> )	

14:30-14:45	SaD12.1
<b>Breast Cancer Image Classification via Multi-Level Dual-Network Features and Sparse Multi-Relation Regularized Learning</b> .....	7023-7026
Wang, Yongjun ( <i>Shenzhen University</i> ); Huang, Fanglin ( <i>Shenzhen University</i> ); Zhang, Yongtao ( <i>Shenzhen University</i> ); Zhang, Rugang ( <i>Shenzhen University</i> ); Lei, Baiying ( <i>Shenzhen University</i> ); Wang, Tianfu* ( <i>Shenzhen University</i> )	
14:45-15:00	SaD12.2
<b>WBCaps: A Capsule Architecture-Based Classification Model Designed for White Blood Cells Identification</b> .....	7027-7030
Liu, Yan ( <i>Sichuan University</i> ); Fu, Ying ( <i>Chengdu University of Information Technology</i> ); Chen, Pu* ( <i>Zhongshan Hospital Fudan University</i> )	
15:00-15:15	SaD12.3
<b>Classification of Elastic and Collagen Fibers in H&amp;E Stained Hyperspectral Images</b> .....	7031-7035
Septiana, Lina* ( <i>Tokyo Institute of Technology, Krida Wacana Christian University</i> ); Suzuki, Hiroyuki ( <i>Tokyo Institute of Technology</i> ); Ishikawa, Masahiro ( <i>Saitama Medical University</i> ); Obi, Takashi ( <i>Tokyo Institute of Technology</i> ); Kobayashi, Naoki ( <i>Saitama Medical University</i> ); Ohyama, Nagaaki ( <i>Tokyo Institute of Technology</i> ); Erning, Wihardjo ( <i>Krida Wacana Christian University</i> ); Andiani, Dini ( <i>Indonesian Institute of Sciences</i> )	

15:15-15:30 SaD12.4  
**Creating Visual Vocabularies for the Retrieval and Classification of Histopathology Images** ..... 7036-7039  
Kallipolitis, Athanasios (*University of Piraeus*); Maglogiannis, Ilias\* (*University of Piraeus*)

15:30-15:45 SaD12.5  
**Binary Grey Wolf Optimizer based Feature Selection for Nucleolar and Centromere Staining Pattern Classification in Indirect Immunofluorescence Images** ..... 7040-7043  
Devanathan, Kanchana\* (*Indian Institute of Technology Madras*); Ganapathy, Nagarajan (*Indian Institute of Technology Madras*); Ramakrishnan, Swaminathan (*IIT Madras, India*)

15:45-16:00 SaD12.6  
**Automated Pap Smear Cervical Cancer Screening using Deep Learning** ..... 7044-7048  
Sompawong, Nitiwat (*Thammasat University*); Mopan, Jintapatee (*Thammasat University*); Pooprasert, Pakinee (*Cardiff University School of Medicine*); Himakhun, Wanwisa (*Thammasat University*); Suwannarurk, Komsun (*Thammasat University*); Ngamvirojcharoen, Jarun (*Sertis, Co., Ltd.*); Vachiramom, Tee (*Sertis, Co., Ltd.*); Tantibundhit, Charturong\* (*Thammasat University*)

SaD13: 14:30-16:00 R2 – Level 3  
**Novel Methods for Physiological Monitoring** (Oral Session)  
**Co-Chair:** Chung, Wan-Young (*Pukyong National University*)

14:30-14:45 SaD13.1  
**An Earbud-Type Wearable (A Hearable) with Vital Parameter Sensors for Early Detection and Prevention of Heat-Stroke** ..... 7049-7055  
Matsumoto, Keiji\* (*IBM Research Tokyo*); Temiz, Yuksel (*IBM Research-Zurich*); Taghavi, Hamidreza (*Sonion*); Cornelius, Elrick Lennaert (*Sonion – In-Ear Technology Dev. & Man. Partner*); Mori, Hiroyuki (*IBM Research Tokyo, IBM Japan Ltd.*); Michel, Bruno (*IBM Research – Zurich*)

14:45-15:00 SaD13.2  
**Stress and Anxiety Measurement "In-the-Wild" using Quality-Aware Multi-Scale HRV Features** ..... 7056-7059  
Tiwari, Abhishek\* (*Institut National de la Recherche Scientifique*); Narayanan, Shrikanth (*University of Southern California*); Falk, Tiago (*Institut National de la Recherche Scientifique*)

15:00-15:15 SaD13.3  
**Estimation of the Blood Pressure Waveform using Electrocardiography** ..... 7060-7063  
Landry, Cederick\* (*University of Waterloo*); D. Peterson, Sean (*University of Waterloo*); Arami, Arash (*University of Waterloo*)

15:15-15:30 SaD13.4  
**An Ultrasonically Powered Wireless System for in-Vivo Gastric Slow-Wave Recording** ..... 7064-7067  
Meng, Miao (*The Pennsylvania State University*); Graybill, Philip (*Penn State University*); Ramos, Raddy (*NYIT College of Osteopathic Medicine*); Javan-Khoshkholgh, Amir (*New York Institute of Technology*); Farajidavar, Aydin (*New York Institute of Technology*); Kiani, Mehdi\* (*Pennsylvania State University*)

15:30-15:45 SaD13.5  
**Insights into Oscillometry: An Experimental Study for Improvement of Cuff-Based Blood Pressure Measurement Technology** ..... 7068-7071  
Bogatu, Laura\* (*Philips Research, Eindhoven University of Technology*); Bresch, Erik (*Philips*); Muehlsteff, Jens (*Philips*); Smink, Jouke (*Philips*); Woerlee, Pierre (*TUe Eindhoven*)

15:45-16:00 SaD13.6  
**Compressive Sensing of Cuff-Less Biosensor for Energy-Efficient Blood Pressure Monitoring** ..... 7072-7075  
Rachim, Vega Pradana (*Pukyong National University*); Chung, Wan-Young\* (*Pukyong National University*)

SaD14: 14:30-16:00 R3 – Level 3  
**Signal Processing and Classification of Electrophysiological Signals** (Oral Session)  
**Chair:** Nguyen, Hung T. (*Swinburne University of Technology*)

- 14:30-14:45 SaD14.1  
**A Hidden Semi-Markov Model for Estimating Burst Suppression EEG** ..... 7076-7079  
 Chakravarty, Sourish\* (*Massachusetts Institute of Technology*); Baum, Taylor Elise (*The Pennsylvania State University*); An, Jingzhi (*MIT*); Kahali, Pegah (*Picower Institute for Learning & Memory*); Brown, Emery N (*MGH-Harvard Medical School-MIT*)
- 14:45-15:00 SaD14.2  
**Sigmoid Wake Probability Model for High-Resolution Detection of Drowsiness using Electroencephalogram** ..... 7080-7083  
 Hassan, Ahnaf Rashik (*North South University, Dhaka, Bangladesh*); Kabir, Muammar Muhammad (*Toronto Rehabilitation Institute, University Health Network*); Keshavarz, Behrang (*Toronto Rehab, Ryerson University*); Taati, Babak\* (*Toronto Rehabilitation Institute & University of Toronto*); Yadollahi, Azadeh (*University of Toronto*)
- 15:00-15:15 SaD14.3  
**Automatically Identified Micro-Scale Sharp-Wave Transients in the Early-Latent Phase of Hypoxic-Ischemic EEG from Preterm Fetal Sheep Reveal Timing Relationship to Subcortical Neuronal Survival** . 7084-7087  
 Abbasi, Hamid\* (*University of Auckland*); Bennet, Laura (*The University of Auckland*); Gunn, Alistair Jan (*University of Auckland*); Unsworth, Charles Peter (*University of Auckland*)
- 15:15-15:30 SaD14.4  
**A Hybrid Physiological Approach of Emotional Reaction Detection using Combined FCM and SVM Classifier** ..... 7088-7091  
 Guo, Kairui (*University of Technology, Sydney*); Yu, Hairong\* (*University of Technology, Sydney*); Chai, Rifai (*Swinburne University of Technology*); Nguyen, Hung T. (*Swinburne University of Technology*); Su, Steven Weidong (*University of Technology, Sydney*)
- 15:30-15:45 SaD14.5  
**Mixed-Norm based Broad Learning System for EEG Classification** ..... 7092-7095  
 Zheng, Yunfei\* (*Xi'an Jiao Tong University*); Qin, Xuemei (*Xi'an Jiao Tong University*); Xi, Zhengkai (*Xi'an Jiao Tong University*); Chen, Badong (*Xi'an Jiao Tong University*)
- 15:45-16:00 SaD14.6  
**Wavelet P-Leader Non-Gaussian Multiscale Expansions for EEG Series: An Exploratory Study on Cold-Pressor Test** ..... 7096-7099  
 Catrambone, Vincenzo\* (*Università di Pisa*); Valenza, Gaetano (*University of Pisa*); Scilingo, Enzo Pasquale (*University of Pisa*); Vanello, Nicola (*University of Pisa*); Wendt, Herwig (*CNRS, University of Toulouse*); Barbieri, Riccardo (*Politecnico di Milano*); Abry, Patrice (*ENS Lyon, CNRS*)

SaD15: 14:30-16:00 M3 – Level 3  
**Ultrasound Imaging – Reconstruction, Modeling and Simulation** (Oral Session)  
**Co-Chair:** Gao, Fei (*ShanghaiTech University*)

- 14:30-14:45 SaD15.1  
**Finite Element Breast Simulation for Sonography Image Registration** ..... 7100-7106  
 Esslinger, Dominik (*University of Stuttgart*); Bacher, Neal (*University of Stuttgart*); Rapp, Philipp (*University of Stuttgart*); Preibsch, Heike (*Dept. of Diagnostic & Interventional Radiology, Eberhard-*); Tarín, Cristina\* (*University of Stuttgart*); Sawodny, Oliver (*Institute for System Dynamics, University of Stuttgart*); Brucker, Sara (*University Hospital Tübingen*); Hahn, Markus (*Dept. of Women's Health, Research Centre for Women's Health*)
- 14:45-15:00 SaD15.2  
**Quantitative Quasi-Static Ultrasound Elastography using Reference Layer: Ex-Vivo Study** ..... 7107-7110  
 Selladurai, Sathiyamoorthy (*IIT MADRAS*); Thittai, Arun Kumar\* (*IIT MADRAS*)

15:15-15:30 SaD15.4  
**Novel Ultrasound Texture based Similarity Metric using Autoregressive Modelling** ..... 7111-7114  
Balakrishnan, Sathish\* (*Otto von Guericke University Magdeburg*); Illanes, Alfredo (*Otto-von-Guericke University of Magdeburg*); Friebe, Michael (*Otto-von-Guericke-University*)

15:30-15:45 SaD15.5  
**Reconstruct the Photoacoustic Image based on Deep Learning with Multi-Frequency Ring-Shape Transducer Array** ..... 7115-7118  
Lan, Hengrong\* (*ShanghaiTech University*); Yang, Changchun (*ShanghaiTech University*); Jiang, Daohuai (*ShanghaiTech University*); Gao, Fei (*ShanghaiTech University*)

15:45-16:00 SaD15.6  
**Adjustable Handheld Probe Design for Photoacoustic Imaging: Experimental Validation** ..... 7119-7122  
Zhao, Yongjian\* (*School of Information Science & Technology, ShanghaiTech Unive*); Yu, Shaohui (*ShanghaiTech University*); Tao, Ben (*Tongji University*); Gao, Fei (*ShanghaiTech University*)

SaD16: 14:30-16:00 M5 – Level 3  
**Wearable Sensors and Systems (Oral Session)**  
**Chair:** Di Rienzo, Marco (*IRCCS Fondazione Don Carlo Gnocchi*)  
**Co-Chair:** Redd, Christian Brandt (*Commonwealth Scientific and Industrial Research Organization*)

14:30-14:45 SaD16.1  
**The Effect of Expertise on Gaze Behaviour in Laparoscopic Cholecystectomy** ..... 7123-7127  
Gunawardena, Nishan\* (*Johannes Kepler University*); Matscheko, Michael (*Institute of Pervasive Computing, Johannes Kepler University*); Bernhard, Anzengruber (*Institute of Pervasive Computing, Johannes Kepler University*); Alois, Ferscha (*Institute of Pervasive Computing, Johannes Kepler University*); Schobesberger, Martin (*Institute of Pervasive Computing, Johannes Kepler University*); Shamiyeh, Andreas (*2nd Surgical Dept., Kepler University Clinic, Linz*); Klugsberger, Bettina (*2nd Surgical Dept., Kepler University Clinic, Linz*); Solleder, Peter (*Karl Storz SE & Co. KG*)

14:45-15:00 SaD16.2  
**Bone Conduction Headphones for Force Feedback in Robotic Surgery** ..... 7128-7133  
Mikic, Marko\* (*University of Toronto, CIGITI, Hospital for Sick Children*); Francis, Peter (*University of Toronto*); Looi, Thomas (*CIGITI, Hospital for Sick Children*); Gerstle, J. Ted (*University of Toronto, Hospital for Sick Children, CIGITI*); Drake, James (*University of Toronto, CIGITI, Hospital for Sick Children*)

15:00-15:15 SaD16.3  
**Development of a Wearable Sensor Network for Quantification of Infant General Movements for the Diagnosis of Cerebral Palsy** ..... 7134-7139  
Redd, Christian Brandt\* (*Commonwealth Scientific & Industrial Research Organisation*); Barber, Lee (*Central Queensland University*); Boyd, Roslyn (*University of Queensland*); Varnfield, Marlien (*CSIRO*); Karunanithi, Mohanraj (*CSIRO Digital Productivity Flagship*)

15:15-15:30 SaD16.4  
**Measurement of Three-Dimensional Force Applied to Elastic Suture Training Pads for Laparoscopic Suturing** ..... 7140-7144  
Fukuda, Kohei\* (*Osaka University*); Kawasetsu, Takumi (*Osaka University*); Ishihara, Hisashi (*Osaka University*); Horii, Takato (*The University of Electro-Communications*); Nakamura, Ryoichi (*Chiba University*); Kawahira, Hiroshi (*Jichi Medical University*); Asada, Minoru (*Osaka University*)

15:30-15:45 SaD16.5  
**Orientation-Based Food Image Capture for Head Mounted Egocentric Camera** ..... 7145-7148  
Hassan, Mohamed (*University of Alabama*); Sazonov, Edward\* (*University of Alabama*)

15:45-16:00 SaD16.6  
**The Ambulatory Eye Shield Head Tracking Device with Real-Time Feedback for Gas Filled Eye Patients** ..... 7149-7152  
Thanawattano, Chusak\* (*National Science & Technology Development Agency*); Buekban, Chatchai (*National Science & Technology Development Agency*); Dumnin, Songphon (*National Electronics & Computer Technology Center*); Limsuknirun, Wannasiri (*Chulalongkorn University & King Chulalongkorn Memorial Hospita*); Waradisai, Adisai (*Chulalongkorn University*); Pongsachareonnont, Pear (*Chulalongkorn University & King Chulalongkorn Memorial Hospita*)



SaD17: 14:30-16:00 R12 – Level 3  
**Time-Frequency Analysis of Biosignals (Oral Session)**

- 14:30-14:45 SaD17.1  
**Automatic Cough Detection in Acoustic Signal using Spectral Features** ..... 7153-7156  
 Pramono, Renard Xaviero Adhi\* (*Imperial College London*); Imtiaz, Syed Anas (*Imperial College London*);  
 Rodriguez-Villegas, Esther (*Imperial College London*)
- 14:45-15:00 SaD17.2  
**Detection of Monophasic Slow-Wave Activation Phase using Wavelet Decomposition** ..... 7157-7160  
 Han, Baozeng (*The University of Auckland*); Cheng, Leo K (*The University of Auckland*); Angeli, Timothy Robert  
 (*Auckland Bioengineering Institute, University of Auckland*); Paskaranandavadivel, Niranchan\* (*The University  
 of Auckland*)
- 15:00-15:15 SaD17.3  
**Feature Space Reduction for Single Trial EEG Classification based on Wavelet Decomposition** ..... 7161-7164  
 Shahtalebi, Soroosh (*Concordia University*); Mohammadi, Arash\* (*Concordia University*)
- 15:15-15:30 SaD17.4  
**Order Frequency Spectral Correlation based Cyclo-Nonstationary Analysis of Surface EMG Signals in  
 Biceps Brachii Muscles** ..... 7165-7168  
 Sam Jeeva Raj, Edward Jero\* (*Indian Institute of Technology Madras*); Ramakrishnan, Swaminathan (*IIT  
 Madras, India*)
- 15:30-15:45 SaD17.5  
**Time-Frequency Relevancy Analysis between Local Field Potentials and Lever Pressing Motion of  
 Rats** ..... 7169-7172  
 Huang, Yifan\* (*Hong Kong University of Science & Technology*); Shen, Xiang (*Hong Kong University of Science  
 & Technology*); Wang, Yiwen (*Hong Kong University of Science & Technology*); Chen, Shuhang (*Hong Kong  
 University of Science & Technology*); Zhang, Xiang (*The Hong Kong University of Science & Technology*)
- 15:45-16:00 SaD17.6  
**Automated Tongue-Twister Phrase-Based Screening for Cerebellar Ataxia using Vocal Tract  
 Biomarkers** ..... 7173-7176  
 Kashyap, Bipasha\* (*Deakin University*); Pathirana, Pubudu N (*Deakin University*); Szmulewicz, David (*Victorian  
 Eye & Ear Hospital*); Horne, Malcolm (*Florey Institute of Neuroscience & Mental Health*); Power, Laura (*Royal  
 Victorian Eye & Ear Hospital*)

SaD18: 14:30-16:00 R13 – Level 3  
**Wearable or Portable Devices for Bio-Monitoring (Oral Session)**  
**Chair:** Chen, Jle (*University of Alberta*)  
**Co-Chair:** Leonhardt, Steffen (*RWTH Aachen University*)

- 14:30-14:45 SaD18.1  
**Nocturnal Hypoglycemia Detection using EEG Spectral Moments under Natural Occurrence  
 Conditions** ..... 7177-7180  
 Ngo, Cuong Q.\* (*Swinburne University of Technology*); Chai, Rifai (*Swinburne University of Technology*);  
 Nguyen, Tuan V. (*University of Technology, Sydney, Australia*); Jones, Timothy (*Princess Margaret Hospital for  
 Children*); Nguyen, Hung T. (*Swinburne University of Technology*)
- 14:45-15:00 SaD18.2  
**Development of a Low-Cost, Portable, Pediatric Infection Screening System using Simultaneous  
 Measurement of Multiple Vital Signs** ..... 7181-7184  
 Dagdanpurev, Sumiyakhand\* (*Tokyo Metropolitan University*); Tsogzolmaa, Udval (*Tokyo Metropolitan  
 University*); Sun, Guanghao (*The University of Electro-Communications*); Choimaa, Lodoiravsal (*National  
 University of Mongolia*); Abe, Shigeto (*Takasaka Clinic*); Matsui, Takemi (*Tokyo Metropolitan University*)

15:00-15:15	SaD18.3
<b>Fast Assessment of Glycemic Control based on Continuous Glucose Monitoring Data</b> .....	7185-7188
Mohebbi, Ali* ( <i>Technical University of Denmark</i> ); Tarp, Jens ( <i>Novo Nordisk</i> ); Jensen, Morten Lind ( <i>Novo Nordisk A/S</i> ); Puthusserypady, Sadasivan ( <i>Technical University of Denmark</i> ); Hachmann-Nielsen, Elise ( <i>MD; Novo Nordisk</i> ); Bengtsson, Henrik ( <i>Novo Nordisk A/S</i> ); Morup, Morten ( <i>DTU Compute</i> )	
15:15-15:30	SaD18.4
<b>Implementation of a Virtual Reality Rendered in Portable Devices for Strabismus Treatment based on Conventional Visual Therapy</b> .....	7189-7192
Cepeda-Zapata, Luis Kevin ( <i>Tecnológico de Monterrey</i> ); Romero Soto, Fabian Oswaldo ( <i>Instituto Tecnológico de Estudios Superiores de Monterrey</i> ); Diaz-de-Leon, Victor Abdiel ( <i>Tecnológico de Monterrey</i> ); Roa, Jessica Lorena ( <i>Tecnológico de Monterrey</i> ); Naal-Ruiz, Norberto Emmanuel ( <i>Tecnológico de Monterrey</i> ); Ibarra Zarate, David Isaac ( <i>ITESM</i> ); Alonso-Valerdi, Luz Maria* ( <i>Tecnológico de Monterrey</i> )	
15:30-15:45	SaD18.5
<b>Detection of Sleep Apnea using Sonar Smartphone Technology</b> .....	7193-7196
Lyon, Graeme* ( <i>ResMed Inc.</i> ); Tiron, Roxana ( <i>ResMed Inc.</i> ); Zaffaroni, Alberto Antonio ( <i>ResMed Inc.</i> ); Osman, Ahmed ( <i>ResMed Inc.</i> ); Kilroy, Hannah ( <i>ResMed</i> ); Lederer, Katharina ( <i>Advanced Sleep Research Berlin</i> ); Fietze, Ingo ( <i>Charité-Universitaetsmedizin Berlin</i> ); Penzel, Thomas ( <i>Charité Universitätsmedizin Berlin</i> )	
15:45-16:00	SaD18.6
<b>Removing Subject Dependencies on Non-Invasive Blood Glucose Measurement using Hybrid Techniques</b> .....	7197-7200
Pathirage, Kasun Dushmantha* ( <i>University of Moratuwa</i> ); Roopasinghe, Pubudu ( <i>University of Moratuwa</i> ); Sooriyaarachchi, Jinani Janahansi ( <i>University of Moratuwa</i> ); Weththasinghe, Rasangika ( <i>University of Moratuwa</i> ); Nanayakkara, Nuwan Dayananda ( <i>University of Moratuwa</i> )	
SaD19: 14:30-16:00	R4 – Level 3
<b>Image Segmentation with Neural Networks (II)</b> (Oral Session)	
Chair: Korbicz, Józef ( <i>University of Zielona Góra</i> )	
14:30-14:45	SaD19.1
<b>Polyp Segmentation using Generative Adversarial Network</b> .....	7201-7204
J M, Poorneshwaran* ( <i>Healthcare Technology Innovation Centre (HTIC), Indian Institute</i> ); Sukumar, Santhosh Kumar ( <i>Healthcare Technology Innovation Centre, IIT Madras</i> ); Ram, Keerthi ( <i>IIT Madras</i> ); Joseph, Jayaraj ( <i>HTIC, Indian Institute of Technology Madras</i> ); Sivaprakasam, Mohanasankar ( <i>Indian Institute of Technology Madras</i> )	
14:45-15:00	SaD19.2
<b>U-NetPlus: A Modified Encoder-Decoder U-Net Architecture for Semantic and Instance Segmentation of Surgical Instruments from Laparoscopic Images</b> .....	7205-7211
Hasan, S. M. Kamrul* ( <i>Rochester Institute of Technology</i> ); Linte, Cristian A. ( <i>Rochester Institute of Technology</i> )	
15:00-15:15	SaD19.3
<b>Feedback-Based Self-Improving CNN Algorithm for Breast Cancer Lymph Node Metastasis Detection in Real Clinical Environment</b> .....	7212-7215
Sadeghi, Maryam* ( <i>Otto-von-Guericke University, Institute of Medical Technology, I</i> ); Maldonado, Ivan ( <i>OVGU, INKA</i> ); Abele, Niklas ( <i>Dept. of Pathology, Otto-von-Guericke University Magdeburg,</i> ); Haybaeck, Johannes ( <i>Dept. of Pathology, Otto-von-Guericke University Magdeburg,</i> ); Boese, Axel ( <i>Dept. of Medical Engineering, Otto-von-Guericke-University</i> ); Poudel, Prabal ( <i>Otto-von-Guericke-Universität Magdeburg</i> ); Friebe, Michael ( <i>Otto-von-Guericke-University</i> )	
15:15-15:30	SaD19.4
<b>Refinement of Convolutional Neural Network based Cell Nuclei Detection using Bayesian Inference</b> .....	7216-7222
Kowal, Marek* ( <i>University of Zielona Góra</i> ); Korbicz, Józef ( <i>University of Zielona Góra</i> )	
15:30-15:45	SaD19.5
<b>Psi-Net: Shape and Boundary Aware Joint Multi-Task Deep Network for Medical Image Segmentation</b> ..	7223-7226
Murugesan, Balamurali* ( <i>Indian Institute of Technology Madras</i> ); Sarveswaran, Kaushik ( <i>Healthcare Technology Innovation Centre, IIT Madras Research Par</i> ); M Shankaranarayana, Sharath ( <i>Indian Institute of Technology Madras</i> ); Ram, Keerthi ( <i>IIT Madras</i> ); Joseph, Jayaraj ( <i>HTIC, Indian Institute of Technology Madras</i> ); Sivaprakasam, Mohanasankar ( <i>Indian Institute of Technology Madras</i> )	

15:45-16:00

SaD19.6

**Low Complexity CNN Structure for Automated Bleeding Zone Detection in Wireless Capsule**

**Endoscopy Imaging** ..... 7227-7230

Hajabdollahi, Mohsen (*Isfahan University of Technology*); Esfandiarpour, Reza (*Isfahan University of Technology*); Najarian, Kayvan (*University of Michigan – Ann Arbor*); Karimi, Nader (*Isfahan University of Technology*); Samavi, Shadrokh (*McMaster University*); Soroushmehr, S.M.Reza\* (*University of Michigan, Ann Arbor*)