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 Informàtics Sabirmedical S.L. Barcelona – Spain); Caballero López, Jesús (Servei de Medicina Intensiva SODIR
 Research Group Hospital Univ. Vall d'Hebrón Vall d'Hebrón Institut de Recerca Autono); Ruiz-Sanmartín, Adolf
 (Servei de Medicina Intensiva SODIR Research Group Hospital Univ. Vall d'Hebrón Vall d'Hebrón Institut de
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Apollonio, Francesca (ICEmB@La Sapienza Univ. Rome); Leveque, Philippe (XLIM, CNRS-Univ. of Limoges);
Liberti, Micaela (ICEmB at Sapienza Univ. of Rome)

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Yoshikawa, Kazushi (Dept. of Operative Dentistry, Osaka Dental Univ.); Yasuo, Kenzo (Osaka Dental Univ.);
Yamamoto, Kazuyo (Dept. of Operative Dentistry, Osaka Dental Univ.); Awazu, Kunio (Osaka Univ.)

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15:15-16:45 TuP11.3

Development of a Dental Implant Mobility Measurement System Using an Inductive Sensor **361-364**

Kim, Dae-Seung (Seoul Natl. Univ.); Lee, Woo-Jin (Seoul Natl. Univ.); Choi, Soon-Chul (Seoul Natl. Univ.); Lee, Sam-Sun (Seoul Natl. Univ.); Heo, Min-Suk (Seoul Natl. Univ.); Huh, Kyung-Hoe (Seoul Natl. Univ.); Yi, WonJin* (Seoul Natl. Univ. Sch of Dentistry)

15:15-16:45 TuP11.4

Semi-Supervised Event Detection Using Higher Order Statistics for Multidimensional Time Series Accelerometer Data **365-368**

Min, Cheol-Hong* (Univ. of Minnesota); Tewfik, Ahmed (Univ. of Minnesota)

15:15-16:45 TuP11.5

Direction Sensitive Fall Detection Using a Triaxial Accelerometer and a Barometric Pressure Sensor **369-372**

Tolkiehn, Marie (Imperial College London); Atallah, Louis (Imperial College London); Lo, Benny (Imperial College London); Yang, Guang-Zhong* (Imperial College London)

15:15-16:45 TuP11.6

Rotary Blood Pump Control Using Integrated Inlet Pressure Sensor **373-376**

Cysyk, Joshua* (Penn State College of Medicine); Jhun, Choon-Sik (Penn State College of Medicine); Newswanger, Ray (Penn State College of Medicine); Weiss, William (Penn State College of Medicine); Rosenberg, Gerson (Penn State College of Medicine)

15:15-16:45   TuP12.5

Vibro-Acoustography and B-Mode Integration for 3D Imaging **421-424**

Kamimura, Hermes Arytto (Univ. de São Paulo); Fagundes, Marden Ambrósio (FIGLABS – Pesquisa e Desenvolvimento); Fatemi, Mostafa (Mayo Clinic); Carneiro, Antonio Adilton Oliveira (Univ. de São Paulo)*

15:15-16:45   TuP12.6

Feasibility Evaluation of a Motion Detection System with Face Images for Stereotactic Radiosurgery **425-428**

Yamakawa, Takuya (Hosei Univ.); Ogawa, Koichi (Hosei Univ., Faculty of Science & Eng.); Iyatomi, Hitoshi (Hosei Univ.); Kunieda, Etsuo (Tokai Univ.)*

TuA01: 17:00-18:30   Berkeley Marriott
12.1.1 Student Paper Competition I (Oral Session)
Chair: Ding, Lei *(Univ. of Oklahoma)*
Co-Chair: Yan, Renfei *(Pennsylvania State Univ.)*

17:00-17:15   TuA01.1

Quantification of Cardio-Respiratory Interactions in Healthy Children During Night-Time Sleep Using Joint Symbolic Dynamics .... *

Kabir, Muammar Muhammad (The Univ. of Adelaide); Kohler, Mark (Univ. of South Australia); Abbott, Derek (The Univ. of Adelaide); Baumert, Mathias (The Univ. of Adelaide)*

17:15-17:30   TuA01.2

Noninvasive Reconstruction of the Three-Dimensional Ventricular Activation Sequence During Pacing and Ventricular Tachycardia in the Rabbit Heart .... *

Han, Chengzong (Univ. of Minnesota); Pogwizd, Steven (Univ. of Illinois at Chicago); Killingsworth, Cheryl (Dept. of Medicine, Univ. of Alabama at Birmingham); He, Bin (Univ. of Minnesota)*

17:30-17:45   TuA01.3

Chronic Intracortical Implantation of Saccharose-Coated Flexible Shaft Electrodes into the Cortex of Rats .... *

Hassler, Christina (Univ. of Freiburg); Guy, Julien (Univ. of Goettingen, Ctr. for Anatomy); Nietzschmann, Max (Univ. of Freiburg, Dept. of Microsystems Eng.); Staiger, Jochen (Univ. of Goettingen, Ctr. for Anatomy); Stieglitz, Thomas (Univ. of Freiburg)*

17:45-18:00   TuA01.4

Plasticity Associated Changes in Cortical Somatosensory Evoked Potentials Following Spinal Cord Injury in Rats .... *

Bazley, Faith A. (Johns Hopkins Univ.); All, Angelo (Johns Hopkins Univ.); Thakor, Nitish (Johns Hopkins Univ.); Maybhate, Anil (Johns Hopkins Univ.)*

18:00-18:15   TuA01.5

Low-Complexity R-Peak Detection in ECG Signals: A Preliminary Step towards Ambulatory Fetal Monitoring .... *

Rooijakkers, Michael Johannes (Eindhoven Univ. of Tech.); Rabotti, Chiara (Eindhoven Univ. of Tech.); Bennebroek, Martijn (Philips Research); van Meerbergen, Jef (Philips Research); Mischi, Massimo (Eindhoven Univ. of Tech.)*

TuA07: 17:00-18:30   Arlington Marriott
4.5.3 Multiscale Modelling (Oral Session)
Chair: Akay, Metin *(Univ. of Houston)*
Co-Chair: Reumann, Matthias *(IBM Australia)*

17:00-17:15   TuA07.1

A Computational Approach to Understanding Gastrointestinal Motility in Health and Disease **429-432**

Poh, Yong Cheng (Natl. Univ. of Singapore, NUS Graduate School for Integrative Sciences & Eng.); Buist, Martin Lindsay (Natl. Univ. of Singapore)*

17:15-17:30   TuA07.2

Petascale Computation Performance of Lightweight Multiscale Cardiac Models Using Hybrid Programming Models **433-436**

Pope, Bernard J (Victorian Life Sciences Computation Initiative); Fitch, Blake G (IBM T.J. Watson Research Ctr.); Rice, John J (IBM T. J Watson Research Ctr.); Reumann, Matthias (IBM Australia)*

17:30-17:45 TuA07.3

A Finite Element Approach for Modeling Micro-Structural Discontinuities in the Heart **437-440**

Mendonça Costa, Caroline (Federal Univ. of Juiz de Fora); Campos, Fernando O. (Medical Univ. of Graz); Prassl, Anton J. (Medical Univ. of Graz); Weber dos Santos, Rodrigo (Univ. Federal de Juiz de Fora); Sánchez-Quintana, Damián (Univ. de Extremadura); Hofer, Ernst (Medical Univ. Graz); Plank, Gernot* (Medical Univ. of Graz)

17:45-18:00 TuA07.4

TumorML: Concept and Requirements of an in Silico Cancer Modelling Markup Language **441-444**

Johnson, David* (Univ. of Oxford); Cooper, Jonathan (Univ. of Oxford); McKeever, Steve (Univ. of Oxford)

18:00-18:15 TuA07.5

Modeling of the Nervous System: From Molecular Dynamics and Synaptic Modulation to Neuron Spiking Activity **445-448**

Bouteiller, Jean-Marie Charles* (Univ. of Southern California); Allam, Sushmita (Univ. of Southern California); Hu, Eric (Univ. of Southern California); Greget, Renaud (Rhenovia Pharma); Ambert, Nicolas (Rhenovia Pharma); Keller, Anne Florence (Rhenovia Pharma); Pernot, Fabien (Rhenovia Pharma); Bischoff, Serge (Rhenovia Pharma); Baudry, Michel (Univ. of Southern California); Berger, Theodore (Univ. of Southern California)

18:15-18:30 TuA07.6

Towards Multiscale Systems Modelling of Endocardial to Mesenchymal Transition **449-452**

Abdulla, Tariq* (Loughborough Univ.); Imms, Ryan (Loughborough Univ.); Schleich, Jean-Marc (Hospital Pontchaillou); Summers, Ronald (Loughborough Univ.)

TuA10: 17:00-18:30   Darthmouth Marriott
9.1.5 Clinical Engineering and Rehabilitation (Oral Session)
Chair: Perreault, Eric *(Northwestern Univ.)*
Co-Chair: Sloane, Elliot B. *(Drexel Univ.)*

17:00-17:15 TuA10.1

Automatic Classification of Pathological Gait Patterns Using Ground Reaction Forces and Machine Learning Algorithms **453-457**

Alaqtash, Murad* (The Univ. of Texas at El Paso); Sarkodie-Gyan, Thompson (The Univ. of Texas at El Paso); Yu, Huiying (The Univ. of Texas at El Paso); Fuentes, Olac (The Univ. of Texas at El Paso); Brower, Richard (Texas Tech Univ. Health Science Ctr.); Abdelgawad, Amr (Texas Tech Univ. Health Science Ctr.)

17:15-17:30 TuA10.2

FBG in PVC Foils for Monitoring the Knee Joint Movement During the Rehabilitation Process **458-461**

Rocha, Rui Pedro* (Univ. of Minho); Ferreira da Silva, Alexandre (Univ. of Minho); Carmo, J. P. (Univ. of Minho); Correia, Higino (Univ. of Minho)

17:30-17:45 TuA10.3

Clinical Gait Assessment of Older Adults Using Open Platform Tools **462-465**

Ni Scanaill, Cliodhna* (Intel Labs); Greene, Barry R. (Intel); Doheny, Emer (Intel); O'Donovan, Karol (Shimmer Research); Dishongh, Terrance (intel Corp.); o'Donovan, Alan D. (Health Research & Innovation, Intel); Foran, Tim (St.James's Hospital); Cunningham, Clodagh (St James' Hospital); Kenny, Rose Anne (Trinity College Dublin)

17:45-18:00 TuA10.4

Reliability of Quantitative TUG Measures of Mobility for Use in Falls Risk Assessment **466-469**

McGrath, Denise* (Univ. College Dublin); Greene, Barry R. (Intel); Doheny, Emer (Intel); McKeown, David J. (Univ. College Dublin); Devito, Giuseppe (Univ. College Dublin); Caulfield, Brian (UCD)

18:00-18:15 TuA10.5

Variability of Hand Tremor in Rest and in Posture – A Pilot Study **470-473**

Rahimi, Fariborz* (London Health Sciences Ctr.); Bee, Carina (London Health Sciences Ctr.); South, Angela (Univ. of Western Ontario); Debicki, Derek (Univ. of Western Ontario); Jog, Mandar (Univ. of Western Ontario – London Health Sciences Ctr.)

18:15-18:30   TuA10.6
Classification of Lying Position Using Load Cells under the Bed **474-477**
Beattie, Zachary Todd (Oregon Health & Science Univ.); Hagen, Chad (Oregon Health & Science Univ.);
Hayes, Tamara (Oregon Health & Science Univ.)*

TuA13: 17:00-18:30   Salons AB Marriott
3.1.12 Optical and Photonic Sensors and Systems (Oral Session)
Chair: Demirci, Utkan *(Harvard-MIT/HST)*
Co-Chair: De Rossi, Danilo *(Univ. of Pisa)*

17:00-17:15   TuA13.1
Multiplexed, Rapid, Point of Care Platform to Quantify Allergen-Specific IgE **478-481**
Monroe, Margo (Boston Univ.); Reddington, Alexander (Boston Univ.); Cretich, Marina (CNR);
Chiari, Marcella (CNR); Little, Frederic (Boston Univ.); Unlu, Selim (Boston Univ.)*

17:15-17:30   TuA13.2
**Optical Microplates for Photonic High Throughput Screening of
Algal Photosynthesis and Biofuel Production** **482-485**
*Mertiri, Taulant (Wayne State Univ.); Chen, Meng (Wayne State Univ.); Holland, Thomas (Wayne State Univ.);
Basu, Amar* (Wayne State Univ.)*

17:30-17:45   TuA13.3
**Validation of a Device for Fluorescence Sensing of Rare Circulating Cells with
Diffusive Light in an Optical Flow Phantom Model** **486-489**
Zettergren, Eric (Northeastern Univ.); Vickers, Dwayne (Northeastern Univ.); Runnels, Judith (Massachusetts
General Hospital); Lin, Charles (Massachusetts General Hospital); Niedre, Mark (Northeastern Univ.)*

17:45-18:00   TuA13.4
**Detection of Tip-Enhanced Fluorescence from Loop-Mediated Isothermal
Amplification of Hepatitis B Virus by Two-Photon Microscopy** **490-493**
*Wei, Shih-Chung (Natl. Taiwan Univ.); Chuang, Tsung-Liang (Natl. Taiwan Univ.); Lu, Hui-Hsin (Natl. Taiwan
Univ.); Chang, Chia-Chen (Natl. Taiwan Univ.); Wang, Da-Shin (Natl. Taiwan Univ.); Sung, Kung-Bin (Natl.
Taiwan Univ.); Lin, Chii-Wann* (Natl. Taiwan Univ.)*

18:00-18:15   TuA13.5
Robust Video-Oculography for Non-Invasive Autonomic Nerve Quantification **494-497**
Kiyama, Masaru (Hosei Univ.); Iyatomi, Hitoshi (Hosei Univ.);
Ogawa, Koichi (Hosei Univ., Faculty of Science & Eng.)*

18:15-18:30   TuA13.6
**A 1µM Diameter Tip Fiber-Based Surface Plasmon Resonance System for
Single Unit Optical Neural Recording** **498-500**
Moon, Hyowon (Seoul Natl. Univ.); Kim, Shin Ae (Seoul Natl. Univ.); Jun, Sang Beom (Natl. Inst. of
Health/Natl. Inst. of Alcohol Abuse & Alcoholism); Lee, Jesun (Seoul Natl. Univ.); Oh, Uhtaek (Seoul Natl.
Univ.); Kim, Sung June (Seoul Natl. Univ.)*

TuA14: 17:00-18:30   Salons CD Marriott
3.1.14 New Sensing Techniques (Oral Session)
Chair: Nielsen, Poul *(The Univ. of Auckland)*
Co-Chair: Sethu, Palaniappan *(Univ. of Louisville)*

17:00-17:15   TuA14.1
**Passive Monitoring Using a Combination of Focused and Phased Array Radiometry:
A Simulation Study** **501-504**
Farantatos, Panagiotis (Natl. Technical Univ. of Athens); Karanasiou, Irene (Inst. of Communication &
Computer Systems, Natl. Technical Univ. of Athens); Uzunoglu, Nikolaos (Natl. Technical Univ. of Athens)*

17:15-17:30   TuA14.2
Time-Domain Ultra-Wideband Synthetic Imager (TUSI) in Silicon **505-511**
Arbabian, Amin* (UC Berkeley); Niknejad, Ali (UC Berkeley)

17:30-17:45   TuA14.3

Flexible Sensor for Blood Pressure Measurement **512-515**

Sepulveda, Alexandra* (Inst. for Polymers & Nanocomposites/I3N, Univ. of Minho); Pontes, António (Inst. for Polymers & Nanocomposites/I3N, Univ. of Minho); Viana, Júlio (Inst. for Polymers & Nanocomposites/I3N, Univ. of Minho); Guzman de Villoria, Roberto (Dept. of Aeronautics & Astronautics, Massachusetts Inst. of Tech.); Fachin, Fabio (Dept. of Aeronautics & Astronautics, Massachusetts Inst. of Tech.); Wardle, Brian (Dept. of Aeronautics & Astronautics, Massachusetts Inst. of Tech.); Rocha, Luís (Inst. for Polymers & Nanocomposites/I3N, Univ. of Minho)

17:45-18:00   TuA14.4

Pulse Arrival Time Estimation from the Impedance Plethysmogram Obtained with a Handheld Device 516-519

Gomez-Clapers, Joan* (Univ. Politècnica de Catalunya); Casanella, Ramon (Univ. Politècnica de Catalunya); Pallas-Areny, Ramon (Univ. Politecnica de Catalunya)

18:00-18:15   TuA14.5

A Vapor Pressure Thermometer for Use in Muscle Microcalorimetry **520-523**

Johnston, Callum Michael* (The Univ. of Auckland); Nielsen, Poul (The Univ. of Auckland); Hunter, Ian (Massachusetts Inst. of Tech.); Taberner, Andrew (The Univ. of Auckland)

18:15-18:30   TuA14.6

Shape Visualization Method of Flexible Colonoscopy Using Non Visual
Sensor Network for Monitoring of Operation **524-527**

Lee, Jaewoo* (Waseda Univ.); Ishii, Hiroyuki (Waseda Univ.); Takanishi, Atsuo (Waseda Univ.)

TuA15: 17:00-18:30   Salon F-G Marriott
2.4.15 Xray Microscope Imaging of Biomolecules (Minisymposium)
Chair: Makowski, Lee *(Northeastern Univ.)*
Co-Chair: Laine, Andrew *(Columbia Univ.)*

17:00-17:15   TuA15.1

X-Ray Coherent Diffraction Imaging of Cellulose Fibrils in Situ **528-530**

Lal, Jyotsana* (Argonne Natl. Lab); Harder, Ross (Argonne Natl. Lab.); Makowski, Lee (Northeastern Univ.)

17:15-17:30   TuA15.2

Phase Contrast X-Ray Imaging for the Study of Small Animal Form and Function .... *****
Lee, Wah-Keat* (Argonne Natl. Lab.)

17:30-17:45   TuA15.3

X-Ray Fluorescence Imaging and Spectroscopy with Synchrotron Radiation .... *****
Dale, Darren* (Cornell Univ.); Bilderback, Donald (Cornell Univ.); Woll, Arthur (Cornell Univ.)

TuA16: 17:00-18:30   Salon HI Marriott
2.1.1 MRI RF Coils and Sequences (Oral Session)
Chair: Bonmassar, Giorgio *(Harvard Medical School)*
Co-Chair: Liu, Feng *(The Univ. of Queensland)*

17:00-17:15   TuA16.1

An Improved Real-Time Cine Late Gadolinium Enhancement (LGE) Imaging Method at 3T **531-534**

Kadbi, Mo* (Univ. of Louisville); Kotys, Melanie (Philips Healthcare); Alshaher, Motaz (Univ. of Louisville Hospital); Fischer, Stefan (Philips Healthcare); Amini, Amir (Univ. of Louisville)

17:15-17:30   TuA16.2

Orthogonal CSPAMM (OCSPAMM) MR Tagging for Imaging Ventricular Wall Motion **535-538**

Wang, Hui* (Univ. of Louisville); Kadbi, Mo (Univ. of Louisville); Kotys, Melanie (Philips Healthcare); Ersoy, Mehmet (Cleveland State Univ.); Chatzimavroudis, George (Cleveland State Univ.); Setser, Randolph (Cleveland Clinic); Alshaher, Motaz (Univ. of Louisville Hospital); Fischer, Stefan (Philips Healthcare); Amini, Amir (Univ. of Louisville)

17:30-17:45　　TuA16.3

A Theoretical Study for the Inverse Design of an Ellipsoidal Phased-Array Breast Coil **539-542**

Li, Yu* (The Univ. of Queensland); Liu, Feng (The Univ. of Queensland); Weber, Ewald (The Univ. of
Queensland); LI, Mingyan (Univ. of Queensland); Xu, Wenlong (China Jiliang Univ.);
Crozier, Stuart (The Univ. of Queensland)

17:45-18:00　　TuA16.4

A Comparison Study of Different RF Shields for an 8-Element Transceive Small Animal Array at 9.4T **543-546**

Jin, Jin (The Univ. of Queensland); Li, Yu* (The Univ. of Queensland); Liu, Feng (The Univ. of Queensland);
Weber, Ewald (The Univ. of Queensland); Crozier, Stuart (The Univ. of Queensland)

18:00-18:15　　TuA16.5

Analysis of RF Transmit Performance for a 7T Dual Row Multi-Channel MRI Loop Array **547-553**

Kozlov, Mikhail* (Max Planck Inst. for Human Cognitive & Brain Sciences);
Turner, Robert (Max Planck Inst. for Human Cognitive & Brain Sciences)

18:15-18:30　　TuA16.6

**Highly Adaptive RF Excitation Scheme Based on Conformal Resonant CRLH Metamaterial Ring
Antennas for 7-Tesla Traveling-Wave Magnetic Resonance Imaging** **554-558**

Erni, Daniel* (General & Theoretical Elec. Eng. (ATE), Univ. of Duisburg-Essen); Liebig, Thorsten (General &
Theoretical Elec. Eng. (ATE), Univ. of Duisburg-Essen); Rennings, Andreas (General & Theoretical Elec. Eng.
(ATE), Univ. of Duisburg-Essen); Koster, Norbert H. L. (General & Theoretical Elec. Eng. (ATE), Univ. of
Duisburg-Essen); Froehlich, Juerg (Swiss Federal Inst. of Tech. Zurich (ETH))

TuA17: 17:00-18:30	Salon JK Marriott
2.2.5 Ultrasound Vascular Imaging (Oral Session)	
Chair: Konofagou, Elisa (Columbia Univ.)	
Co-Chair: Baselli, Giuseppe (Pol. di Milano)	

17:00-17:15　　TuA17.1

**Affine Optical Flow Combined with Multiscale Image Analysis for Motion Estimation of the
Arterial Wall from B-Mode Ultrasound** **559-562**

Gastounioti, Aimilia* (Natl. Technical Univ. of Athens); Tsiaparas, Nikos (Natl. Technical Univ. of Athens);
Golemati, Spyretta (Natl. Kapodistrian Univ. of Athens); Stoitsis, John (Inst. of Communication);
Nikita, Konstantina (Natl. Technical Univ. of Athens)

17:15-17:30　　TuA17.2

**Two-Dimensional Flow Study in a Stenotic Artery Phantom Using
Ultrasonic Particle Image Velocimetry** **563-566**

Qian, Ming* (Shenzhen Inst. of Advanced Tech., Chinese Acad. of Sciences); Song, Ruibo (Shenzhen Inst. of
Advanced Tech.); Niu, Lili (Shenzhen Inst. of Advanced Tech., Chinese Acad. of Sciences);
Zheng, Hairong (Shenzhen Inst of Advanced Tech)

17:30-17:45　　TuA17.3

**In-Vivo PULSE Wave Imaging for Arterial Stiffness Measurement
Under Normal and Pathological Conditions** **567-570**

Li, Ronny* (Columbia Univ.); Luo, Jianwen (Columbia Univ.); Balaram, Sandhya (St. Luke's – Roosevelt
Hospital); Chaudhry, Farooq (St. Luke's-Roosevelt Hospital Ctr.); Lantis, John (St. Luke's-Roosevelt Hospital
Ctr.); Shahmirzadi, Danial (Columbia Univ.); Konofagou, Elisa (Columbia Univ.)

17:45-18:00　　TuA17.4

**Automated Detection of the Carotid Artery Wall in Longitudinal B-Mode Images Using
Active Contours Initialized by the Hough Transform** **571-574**

Matsakou, Aikaterini (Natl. Technical Univ. of Athens); Golemati, Spyretta* (Natl. Kapodistrian Univ. of Athens);
Stoitsis, John (Inst. of Communication); Nikita, Konstantina (Natl. Technical Univ. of Athens)

18:00-18:15　　TuA17.5

Carotid Automated Ultrasound Double Line Extraction System (CADLES) via Edge-Flow **575-578**

Meiburger, Kristen Mariko (Politecnico di Torino); Molinari, Filippo* (Politecnico di Torino);
Zeng, Guang (Mayo Clinic); Saba, Luca (Policlinico Univ.); Suri, Jasjit (Biomedical Technologies)

Wednesday, 31 August 2011

08:30-08:45   WeA02.3

Repeatability Analysis of Rollover Recognition in Changing Myoelectric Electrode Condition **619-623**

Ando, Takeshi* (Waseda Univ.); Fujie, Masakatsu G. (Waseda Univ.)

08:45-09:00   WeA02.4

Experimental Evaluation of a Portable Powered Ankle-Foot Orthosis **624-627**

Shorter, Kenneth* (Univ. of Illinois); Li, Yifan (Univ. of Illinois); Morris, Emily (Univ. of Illinois);
Kogler, Geza (Georgia Tech); Hsiao-Wecksler, Elizabeth (Univ. of Illinois)

09:00-09:15   WeA02.5

Proportional EMG Control for Upper-Limb Powered Exoskeletons **628-631**

Lenzi, Tommaso* (Scuola Superiore Sant'Anna); De Rossi, Stefano Marco Maria (Scuola Superiore Sant'Anna);
Vitiello, Nicola (Scuola Superiore Sant'Anna); Carrozza, Maria Chiara (Scuola Superiore Sant'Anna)

09:15-09:30   WeA02.6

Strip-Driven Devices for the Spatial Motion Guidance of Human Joints **632-635**

Sancisi, Nicola* (Univ. of Bologna); Parenti-Castelli, Vincenzo (Univ. of Bologna)

WeA03: 08:00-09:30   Essex Ballroom South Westin
6.1.24 Microelectrode Technology (Oral Session)
Chair: Gluckman, Bruce J. *(Pennsylvania State Univ.)*
Co-Chair: Joshi, Bharat *(Univ. of North Carolina at Charlotte)*

08:00-08:15   WeA03.1

Advancements in Electrode Design and Laser Techniques for Fabricating
Micro-Electrode Arrays as Part of a Retinal Prosthesis **636-639**

Dodds, Christopher William Douglas* (Univ. of New South Wales); Schuettler, Martin (Univ. of Freiburg);
Guenther, Thomas (The Univ. of New South Wales); Lovell, Nigel (Univ. of New South Wales);
Suaning, Gregg (The Univ. of New South Wales)

08:15-08:30   WeA03.2

Mechanical Characterization of Neural Electrodes Based on PDMS-Parylene
C-PDMS Sandwiched System **640-643**

Henle, Christian* (Univ. of Freiburg); Hassler, Christina (Univ. of Freiburg); Kohler, Fabian (Univ. of Freiburg,
IMTEK, Dept. of MicroSystems Eng.); Schuettler, Martin (Univ. of Freiburg); Stieglitz, Thomas (Univ. of Freiburg)

08:30-08:45   WeA03.3

Chronic Intracortical Implantation of Saccharose-Coated Flexible Shaft
Electrodes into the Cortex of Rats **644-647**

Hassler, Christina* (Univ. of Freiburg); Guy, Julien (Univ. of Goettingen, Ctr. for Anatomy);
Nietzschmann, Max (Univ. of Freiburg, Dept. of Microsystems Eng.); Staiger, Jochen (Univ. of
Goettingen, Ctr. for Anatomy); Stieglitz, Thomas (Univ. of Freiburg)

08:45-09:00   WeA03.4

An Experimental Approach towards the Development of an
in Vitro Cortical-Thalamic Co-Culture Model **648-651**

Kanagasabapathi, Thirukumaran T.* (Philips Research Laboratories Eindhoven); Massobrio, Paolo (Univ. of
Genova); Tedesco, Mariateresa (Univ. of Genova); Martinoia, Sergio (Univ. of Genova); Wadman, Wytse J (Ctr.
for NeuroScience, Swammerdam Inst. for Life Sciences, Univ. of Amsterdam); Decré, Michel (Philips Research)

09:00-09:15   WeA03.5

Reconfigurable Fault-Tolerant Multielectrode Array for Dependable Monitoring of the Human Brain **652-655**

Acharya, Ipsita (Univ. of North Carolina at Charlotte); Joshi, Bharat* (Univ. of North Carolina at Charlotte);
Lanning, Bruce (ITN Energy Systems, Inc.); Zaveri, Hitten (Yale Univ.)

09:15-09:30   WeA03.6

Micro-Reaction Chamber Electrodes for Neural Stimulation and Recording **656-659**

Shanmugasundaram, Balaji* (The Pennsylvania State Univ., Univ. Park);
Gluckman, Bruce J. (Pennsylvania State Univ.)

6.5.16 Deep Brain Stimulation: New Technical Developments and Perspectives (Oral Session)
Chair: Graupe, Daniel *(Univ. of Illinois at Chicago)*
Co-Chair: McIntyre, Cameron *(Cleveland Clinic Foundation)*

08:00-08:15   WeA05.1
Development of an Implantable Microstimulation System for Chronic DBS in Rodents **660-662**
  Harnack, Daniel* (Charité-Univ.smedizin Berlin, Germany)

08:15-08:30   WeA05.2
The Translational Value of the MPTP Non-Human Primate Model of
Parkinsonism for Deep Brain Stimulation Research **663-666**
  Meissner, Wassilios G.* (CNRS 5293, Univ. Bordeaux 2)

08:30-08:45   WeA05.3
Search for the Optimal Strength of Coordinated Reset Stimulation **667-670**
  Tass, Peter Alexander* (Research Ctr. Juelich)

08:45-09:00   WeA05.4
Advancing Neuromodulation Using a Dynamic Control Framework **671-674**
  Denison, Timothy* (Medtronic)

09:00-09:15   WeA05.5
Improving Postural Stability via Computational Modeling Approach to
Deep Brain Stimulation Programming **675-676**
  McIntyre, Cameron* (Cleveland Clinic Foundation)

09:15-09:30   WeA05.6
Emerging Techniques for Elucidating Mechanism of Action of Deep Brain Stimulation **677-680**
  Lee, Kendall* (Mayo Clinic)

12.1.2 Student Paper Competition II (Oral Session)
Chair: Ding, Lei *(Univ. of Oklahoma)*
Co-Chair: Yan, Renfei *(Pennsylvania State Univ.)*

08:00-08:15   WeA07.1
A SU-8-Based Compact Implantable Wireless Pressure Sensor for
Intraocular Pressure Sensing Application .... *****
  Xue, Ning* (Univ. of Texas at Dallas); Chang, Sung Pil (Inha Univ.); Lee, Jeong-Bong (Univ. of Texas at Dallas)

08:15-08:30   WeA07.2
Voxel-Based, Parallel Simulation of Light in Skin Tissue for the
Reconstruction of Subsurface Skin Lesion Volumes .... *****
  D'Alessandro, Brian* (New Jersey Inst. of Tech.); Dhawan, Atam (New Jersey Inst. of Tech.)

08:30-08:45   WeA07.3
Microfluidics-Mediated Isothermal Detection of Enzyme Activity at the Single Molecule Level .... *****
  Juul, Sissel (Aarhus Univ., Duke Univ.); Ho, Yi-Ping (Duke Univ.); Stougaard, Magnus (Aarhus Univ. Hospital);
  Koch, Jørn (Aarhus Univ. Hospital); Andersen, Félicie F. (Aarhus Univ.); Leong, Kam W. (Duke Univ.);
  Knudsen, Birgitta R. (Aarhus Univ.)*

08:45-09:00   WeA07.4
Four-Dimensional MR Cardiovascular Imaging: Method and Applications .... *****
  Christodoulou, Anthony (Univ. of Illinois at Urbana-Champaign); Zhao, Bo (Univ. of Illinois at Urbana-
  Champaign); Zhang, Haosen (Pittsburgh NMR Ctr. for Biomedical Research); Ho, Chien (Carnegie Mellon
  Univ.); Liang, Zhi-Pei (Univ. of Illinois at Urbana-Champaign)*

09:00-09:15   WeA07.5

Towards a Movement Quantification System Capable of Automatic Evaluation of Upper Limb Motor Function after Neurological Injury .... *

Bento, Virgílio* (Univ. of Aveiro); Tedim Cruz, Vítor (Hospital São Sebastião, Santa Mariada Feira, Portugal); Ribeiro, David (Univ. of Aveiro); Cunha, João Paulo Silva (Univ. of Aveiro)

WeA11: 08:00-09:30   Wellesley Marriott
5.4.11 Blood Pressure Regulation and Heart Rate Variability (Oral Session)
Chair: Dumont, Guy *(Univ. of British Columbia)*
Co-Chair: Khoo, Michael *(Univ. of Southern California)*

08:00-08:15   WeA11.1

Correlation of Heart Rate Variability and Circadian Markers in Humans 681-684

Boudreau, Philippe* (McGill Univ.); Dumont, Guy (Univ. of British Columbia); Ng Ying Kin, N.M.K (McGill Univ.); Walker, Claire-Dominique (McGill Univ.); Boivin, Diane (McGill Univ.)

08:15-08:30   WeA11.2

Heart Rate Variability Effect on the Myocyte Action Potential Duration Restitution: Insights from Switched Systems Theory 685-688

Dvir, Hila* (Tel-Aviv Univ.); Zlochiver, Sharon (Tel-Aviv Univ.)

08:30-08:45   WeA11.3

Consideration on Step Duration to Assess Open-Loop Static Characteristics of the Carotid Sinus Baroreflex in Rats 689-692

Kawada, Toru* (Nat. Cerebral & Cardiovascular Ctr. Res Inst); Sata, Yusuke (Natl. Cerebral & Cardiovascular Ctr.); Shimizu, Shuji (Natl. Cerebral & Cardiovascular Ctr. Research Inst.); Kamiya, Atsunori (Natl. Cardiovascular Ctr. Research Inst.); Sunagawa, Kenji (Kyushu Univ.); Sugimachi, Masaru (Natl Cardio Ctr. Research Inst)

08:45-09:00   WeA11.4

Changes in Blood Volume Pulse During Exercise Recovery in Activity-Based Therapy for Spinal Cord Injury 693-696

Tran, Yvonne* (Univ. of Tech., Sydney); Thuraisingham, Ranjit Arulnayagam (Univ. of Tech. Sydney); Craig, Ashley (Univ. of Tech., Sydney); Tomlinson, Erika (Univ. of Melbourne/Univ. of Tech. Sydney); Davis, Glen (Univ. of Sydney); Middleton, James (The Univ. of Sydney); Nguyen, Hung T. (Univ. of Tech., Sydney)

09:00-09:15   WeA11.5

Artificial Baroreflex System Restores Volume Tolerance in the Absence of Native Baroreflex 697-699

Hosokawa, Kazuya* (Kyushu Univ. Graduate School of Medical Sciences); Funakoshi, Kouta (Kyushu Univ. Hospital); Tanaka, Atsushi (Kyushu Univ. Graduate School of Medical Sciences, Japan); Sakamoto, Takafumi (Kyushu Univ.); Onitsuka, Ken (Kyushu Univ.); Sakamoto, Kazuo (Kyushu Univ.); Tobushi, Tomoyuki (Kyushu Univ.); Fujino, Takeo (Kyushu Univ.); Saku, Keita (Kyushu Univ.); Murayama, Yoshinori (Kyushu Univ.); Ide, Tomomi (Kyushu Univ.); Sunagawa, Kenji (Kyushu Univ.)

09:15-09:30   WeA11.6

A Systematic Approach to Local Stability Analysis of Cardiovascular Baroreflex 700-703

Ataee, Pedram* (Univ. of British Columbia); Hahn, Jin-Oh (Univ. of British Columbia); Dumont, Guy (Univ. of British Columbia); Boyce, W. Thomas (College for Interdisciplinary Studies & Faculty of Medicine, Univ. of British Columbia)

WeA13: 08:00-09:30   Arlington Marriott
4.5.1 Algorithms and Techniques for Systems Modelling (Oral Session)
Chair: Kahya, Yasemin P. *(Bogazici Univ.)*
Co-Chair: Genc, Sahika *(General Electric Global Res. Ctr.)*

08:00-08:15   WeA13.1

Comparison of Continuous and Discrete Stochastic Ion Channel Models 704-707

Dangerfield, Ciara Ellen* (Univ. of Oxford); Kay, David (Oxford Univ.); Burrage, Kevin (Univ. of Oxford)

08:15-08:30   WeA13.2

3-D Modeling of Nitric Oxide Emission and Vasodilation Induced by CA3 Hippocampal Neurons 708-711

Nejati, Alireza* (Univ. of Auckland); Unsworth, Charles Peter (Univ. of Auckland)

08:30-08:45   WeA13.3

Prediction of Mean Arterial Blood Pressure with Linear Stochastic Models **712-715**

Genc, Sahika* (General Electric Global Research Ctr.)

08:45-09:00   WeA13.4

A Feedback Control Model of Cortisol Secretion **716-719**

Faghih, Rose T.* (MIT); Savla, Ketan (MIT); Dahleh, Munther (MIT);
Brown, Emery N (MGH-Harvard Medical School-MIT)

09:00-09:15   WeA13.5

3D Tracking of Mating Events in Wild Swarms of the Malaria Mosquito Anopheles Gambiae **720-723**

Butail, Sachit* (Univ. of Maryland); Manoukis, Nicholas Chirivas (US Pacific Basin Agricultural Research Ctr.,
USDA-ARS); Moussa, Diallo (MRTC/FMPOS); Yaro, Alpha Seydou (Malaria Research & Training Ctr., Univ. of
Mali, Bamako); Dao, Adama (Malaria Research & Training Ctr., Univ. of Mali, Bamako); Traore, Cheick (Malaria
Research & Training Ctr., Univ. of Mali, Bamako); Ribeiro, Jose (Natl. Inst. of Allergy & Infectious Diseases);
Lehmann, Tovi (NIAID/NIH); Paley, Derek (Univ. of Maryland)

09:15-09:30   WeA13.6

GPGPU Accelerated Cardiac Arrhythmia Simulations **724-727**

Wang, Wei* (Univ. of Delaware); Huang, Howie (George Washington Univ.); Kay, Matthew (The George
Washington Univ.); Cavazos, John (Univ. of Delaware)

WeA16: 08:00-09:30   Darthmouth Marriott
9.1.16 Cell Membrane Electroporation and Electroporation Based Therapies (Oral Session)
Chair: Miklavcic, Damijan *(Univ. of Ljubljana)*
Co-Chair: Davalos, Rafael *(Virginia Tech.)*

08:00-08:15   WeA16.1

Electrochemotherapy of Solid Tumors – Preclinical and Clinical Experience **728-731**

Sersa, Gregor* (Inst. of Oncology Ljubljana); Cemazar, Maja (Inst. of Oncology Ljubljana);
Snoj, Marko (Inst. of Oncology Ljubljana)

08:15-08:30   WeA16.2

Intracellular Electroporation Site Distributions: Modeling Examples for Nspef and IRE Pulse Waveforms **732-735**

Gowrishankar, Thiruvallur (Massachusetts Inst. of Tech.); Esser, Axel (Massachusetts Inst. of Tech.);
Smith, Kyle (Massachusetts Inst. of Tech.); Son, Reuben (MIT); Weaver, James* (Massachusetts Inst. of Tech.)

08:30-08:45   WeA16.3

Electroporation Based Gene Therapy – From the Bench to the Bedside **736-738**

Heller, Richard* (Old Dominion Univ.); Shirley, Shawna (Old Dominion Univ.); Guo, Siqi (Old Dominon Univ.);
Donate, Amy (Old Dominion Univ.); Heller, Loree (Old Dominion Univ.)

08:45-09:00   WeA16.4

Electrical Conductivity Changes During Irreversible Electroporation Treatment of Brain Cancer **739-742**

Garcia, Paulo, A.* (Virginia Tech – Wake Forest Univ.); Rossmeisl, Jr., John H. (Virginia-Maryland Regional
College of Veterinary Medicine); Davalos, Rafael (Virginia Tech)

09:00-09:15   WeA16.5

Mitochondrial Membrane Permeabilization with Nanosecond Electric Pulses **743-745**

Vernier, P. Thomas* (Univ. of Southern California)

09:15-09:30   WeA16.6

Planar Lipid Bilayers: Observing Pore Creation and Extinction **746-749**

Kramar, Peter* (Univ. of Ljubljana); Maček Lebar, Alenka (Univ. of Ljubljana);
Miklavcic, Damijan (Univ. of Ljubljana)

08:00-08:15   WeA19.1
Variable-Arrival-Time Reaching with the Brain-Machine Interface: Performance
Comparison on Empirically-Derived Movements **750-752**
  Srinivasan, Lakshminarayan*

08:15-08:30   WeA19.2
Emerging Technology for Advancing the Treatment of Epilepsy Using a Dynamic Control Framework **753-756**
  Denison, Timothy* (Medtronic)

08:30-08:45   WeA19.3
Using Point Process Models to Describe Rhythmic Spiking in the
Subthalamic Nucleus of Parkinson's Patients **757-760**
  Eden, Uri* (Boston Univ.); Eskandar, Emad (Massachusetts General Hospital)

08:45-09:00   WeA19.4
Advances in Microphysiological Recordings for Understanding Epilepsy .... *
  Cash, Sydney* (Massachusetts General Hospital); Truccolo, Wilson (Brown Univ.)

09:00-09:15   WeA19.5
Millimeter-Scale Epileptiform Spike Patterns and Their Relationship to Seizures **761-764**
  Chamberlain, Ann* (Univ. of Pennsylvania); Viventi, Jonathan (Univ. of Pennsylvania); Blanco, Justin (Univ. of
  Pennsylvania); Kim, Dae-Hyeong (Univ. of Illinois at Urbana Champaign); Rogers, John (Univ. of Illinois);
  Litt, Brian (Univ. of Pennsylvania)

09:15-09:30   WeA19.6
Anodal Transcranial Direct Current Stimulation Relieves the
Unilateral Bias of a Rat Model of Parkinson's Disease **765-768**
  Li, Yiyan* (Chongqing Univ.); Tian, Xuelong (Dept. of BioEng.,Chongqing Univ.); Yu, Xuehong (Chongqing
  Univ.); Jiang, Weiwei (Chongqing Univ.); Qian, Long (Chongqing Univ.)

08:00-08:15   WeA20.1
Assessment of Sleep Quality in Powernapping **769-772**
  Kooravand Takhtsabzy, Bashaer* (Technical Univ. of Denmark (DTU));
  Thomsen, Carsten Eckhart (Univ. of Copenhagen)

08:15-08:30   WeA20.2
Obstructive Sleep Apnea Prediction During Wakefulness **773-776**
  Montazeripouragha, Amanallah* (Univ. of Manitoba); Moussavi, Zahra (Univ. of Manitoba)

08:30-08:45   WeA20.3
Toward a Taxonomy of Autonomic Sleep Patterns with Electrodermal Activity **777-780**
  Sano, Akane* (MIT); Picard, Rosalind (Massachusetts Inst. of Tech.)

08:45-09:00   WeA20.4
Visual ERP P3 Amplitude and Latency in Standalone and Embedded Visual Processing Task **781-784**
  Korpela, Jussi* (Finnish Inst. of Occupational Health); Huotilainen, Minna (Finnish Inst. of Occupational Health)

WeA21: 08:00-09:30	Salon E Marriott

1.1.22 Empirical Mode Decomposition (Oral Session)
Chair: Ding, Mingzhou (Univ. of Florida)
Co-Chair: Magenes, Giovanni (Univ. of Pavia)

08:00-08:15   WeA22.1

Analysis of Local Field Potential Signals: A Systems Approach **814-817**

Huberdeau, David* (The Johns Hopkins Univ.); Walker, Harrison (Univ. of Alabama at Birmingham); Huang, He (Univ. of Alabama-Birmingham); Montgomery, Erwin (Univ. of Alabama at Birmingham); Sarma, Sridevi V. (Johns Hopkins Univ.)

08:15-08:30   WeA22.2

Hearing Level Equalized Otoacoustic Emissions Acquired by Swept-Tones: Intensity Characteristics **818-821**

Mihajloski, Todor* (Univ. of Miami); Lachowska, Magdalena (Medical Univ. of Warsaw); Bennett, Christopher (Univ. of Miami); Ozdamar, Ozcan (Univ. of Miami)

08:30-08:45   WeA22.3

Circadian Rest-Activity Rhythm for Maintenance of Body Shape **822-825**

Kume, Shinya (Ritsumeikan Univ.); Hagiwara, Hiroshi* (Ritsumeikan Univ.)

08:45-09:00   WeA22.4

A Data-Driven Modeling Approach to Stochastic Computation for Low-Energy Biomedical Devices **826-829**

Lee, Kyong Ho* (Princeton Univ.); Jang, Kuk Jin (Princeton Univ.); Shoeb, Ali (Massachusetts Inst. of Tech.); Verma, Naveen (Princeton Univ.)

09:00-09:15   WeA22.5

Auditory Evoked Responses to Binaural Beat Illusion: Stimulus Generation and the Derivation of the Binaural Interaction Component (BIC) **830-833**

Ozdamar, Ozcan* (Univ. of Miami); Bohorquez, Jorge (Univ. of Miami); Mihajloski, Todor (Univ. of Miami); Yavuz, Erdem (Intelligent Hearing Systems); Lachowska, Magdalena (Medical Univ. of Warsaw)

09:15-09:30   WeA22.6

Extraction of Deep Brain Stimulation (DBS) Source in SEEG Using EMD and ICA **834-837**

Hofmanis, Janis* (INPL, CRAN); Salido-Ruiz, Ricardo (CRAN, Nancy Univ.); Louis-Dorr, Valerie (Nancy-Univ.); Caspary, Olivier (INPL, CRAN); Ranta, Radu (Nancy-Univ.)

WeA23: 08:00-09:30   Salon G Marriott
10.8.26 Health Informatics: eHealth Solutions for Cardiovascular Risk Screening I (Minisymposium)
Chair: Poon, Carmen CY *(The Chinese Univ. of Hong Kong)*
Co-Chair: Armentano, Ricardo Luis *(Favaloro Univ.)*

08:00-08:15   WeA23.1

An Innovative Home Care Model Using Mobile Phones and Internet Demonstrates Improved Utilization Rate of Cardiac Rehabilitation Programs .... *****

Karunanithi, Mohanraj* (CSIRO ICT Ctr.); Varnfield, Marlien (Australian e-Health Research Ctr. (AEHRC)); Ding, Hang (CSIRO); Garcia, Elsa (AEHRC)

08:15-08:30   WeA23.2

Patient Specific Cardiovascular Risk Assessment and Treatment Decision Support Based on Multiscale Modelling and Medical Guidelines **838-841**

Exarchos, Themis P.* (Unit of Medical Tech & Intelligent Info); Goletsis, Yorgos (Univ. of Ioannina); Stefanou, Kostas (FORTH-BRI); Fotiou, Evangelos (d.d. Synergy Hellas); Fotiadis, Dimitrios I. (Univ. of Ioannina); Parodi, Oberdan (CNR Clinical Physiology Inst. – Milan)

08:30-08:45   WeA23.3

Uruguay Ehealth Initiative: Preliminary Studies Regarding an Integrated Approach to Evaluate Vascular Age and Preclinical Atherosclerosis (CUiiDARTE Project) **842-845**

Armentano, Ricardo Luis* (Favaloro Univ.); Bia, Daniel (School of Medicine, Republic Univ.); Zócalo, Yanina (School of Medicine, Republic Univ.); Torrado, Juan (School of Medicine, Republic Univ.); Farro, Ignacio (School of Medicine, Republic Univ.); Farro, Federico (Univ. de la República, School of Medicine); Florio, Lucía (CUiiDARTE); Olascoaga, Alicia (Lab Clínico); Alallon, Walter (Hospital de Clínicas); Negreira, Carlos (Univ. de la República Uruguay); Lluberas, Ricardo (Depto. Cardiología)

08:45-09:00   WeA23.4

**Development of Wearable Technologies for Myocardial Infarction and Stroke
Screening and Intervention within Nations (MISSIoN)** .... *

Poon, Carmen CY* (The Chinese Univ. of Hong Kong); Zhang, Yuan-Ting (The Chinese Univ. of Hong Kong)

WeA24: 08:00-09:30   Salon HI Marriott

10.2.2 Wireless Health Technologies and Body Sensor Networks Technologies (Oral Session)
Chair: Penders, Julien *(imec)*
Co-Chair: Lubecke, Victor *(Univ. of Hawaii Manoa)*

08:00-08:15   WeA24.1

ZigBee-Based Wireless Multi-Sensor System for Physical Activity Assessment **846-849**

Mo, Lingfei (Univ. of Connecticut); Liu, Shaopeng (Univ. of Connecticut); Gao, Robert X. (Univ. of
Connecticut); John, Dinesh (Univ. of Massachusetts Amherst); Staudenmayer, John (Univ. of Massachusetts,
Amherst); Freedson, Patty (Univ. of Massachusetts Amherst)*

08:15-08:30   WeA24.2

Diagnostic Grade Wireless ECG Monitoring **850-855**

Garudadri, Harinath (Qualcomm); Chi, Yuejie (Dept. of Elec. Eng., Princeton Univ., Princeton, NJ);
Baker, Steve (Welch Allyn); Majumdar, Somdeb (Qualcomm Inc.); Baheti, Pawan (Qualcomm);
Ballard, Dan (Welch Allyn)*

08:30-08:45   WeA24.3

PERCEPT: Indoor Navigation for the Blind and Visually Impaired **856-859**

Ganz, Aura (Univ. of Massachusetts, Amherst); Schafer, James (Univ. of Massachusetts Amherst);
Gandhi, Siddhesh (Univ. of Massachusetts, Amherst); Singh, Tushar (Univ. of Massachusetts Amherst);
Wilson, Carole (Executive Office of Health & Human Services)*

08:45-09:00   WeA24.4

Scalable Patients Tracking Framework for Mass Casualty Incidents **860-863**

Ganz, Aura (Univ. of Massachusetts, Amherst); Schafer, James (Univ. of Massachusetts Amherst); Yu, Xunyi
(Univ. of Massachusetts); Lord, Graydon (Office of Homeland Security, The George Washington Univ.)*

09:00-09:15   WeA24.5

CHRONIOUS: A Wearable Platform for Monitoring and Management of Patients with Chronic Disease **864-867**

*Bellos, Christos (FORTH BRI Foundation for Research & Tech. – Hellas, Biomedical Research);
Papadopoulos, Athanasios* (Foundation for Research & Tech.); Rosso, Roberto (Tesan S.p.A.);
Fotiadis, Dimitrios I. (Univ. of Ioannina)*

09:15-09:30   WeA24.6

**Biometric and Mobile Gait Analysis for Early Diagnosis and Therapy
Monitoring in Parkinson's Disease** **868-871**

Barth, Jens (Univ. Hospital Erlangen); Klucken, Jochen (Univ. Hospital Erlangen); Kugler, Patrick (Univ. of
Erlangen-Nuremberg); Kammerer, Thomas (ASTRUM IT GmbH); Steidl, Ralph (ASTRUM IT GmbH); Winkler,
Juergen (Univ. Hospital Erlangen); Hornegger, Joachim (Friedrich-Alexander Univ. Erlangen-Nuremberg);
Eskofier, Björn (Univ. of Erlangen-Nuremberg)*

WeA25: 08:00-09:30   Salon JK Marriott

10.1.17 Closing the Loop in PHS Telemonitoring Systems: How Far Have We Gone? (Oral Session)
Chair: Saranummi, Niilo *(VTT Tech. Res. Centre)*
Co-Chair: Reiter, Harald *(Philips)*

08:00-08:15   WeA25.1

Fusion of Risk Assessment Models with Application to Coronary Artery Disease Patients **872-875**

Paredes, Simão (Instituto Superior de Engenharia de Coimbra); Rocha, Teresa (Inst Superior de Eng de
Coimbra); de Carvalho, Paulo (Univ. of Coimbra); Henriques, Jorge (Univ. of Coimbra – NIF 501617582);
Rasteiro, Deolinda (Instituto Politécnico de Coimbra, Departamento de Física e Matemática, Coimbra);
Morais, João (Hospital de Santo André, Leiria); Ferreira, Jorge (Cardiology Dept., Santa Cruz Hospital,
Lisbon, Portugal); Mendes, Miguel (Cardiology Dept., Santa Cruz Hospital, Lisbon, Portugal)*

08:15-08:30   WeA25.2

**Cardiac Status Assessment with a Multi-Signal Device for Improved
Home-Based Congestive Heart Failure Management** **876-879**
    Muehlsteff, Jens (Philips); de Carvalho, Paulo (Univ. of Coimbra); Henriques, Jorge (Univ. of Coimbra – NIF
    501617582); Paiva, Rui Pedro (Univ. of Coimbra); Reiter, Harald (Philips)*

08:30-08:45   WeA25.3

Personalized Behavior Change Support for Disease Prevention **880-883**
    Kaipainen, Kirsikka (VTT Technical Research Ctr. of Finland); Honka, Anita (VTT Technical Research Ctr. of
    Finland); Saranummi, Niilo (VTT Technical Research Ctr.)*

08:45-09:00   WeA25.4

**Risk Assessment and Patient Stratification Using Implantable Medical Devices.
The Funding for Personal Health Programs** **884-887**
    Guillen, Alejandra (Medtronic Spain); Colas, Javier (Medtronic Iberica); Gutiérrez, Germán (Medtronic Ibérica)*

09:00-09:15   WeA25.5

**Novel Approaches for Medication Compliance and Effectiveness Analysis and
Support in Cardiovascular Disease Patients** **888-891**
    *Chouvarda, Ioanna (Aristotle Univ.); Gkontra, Polyxeni (Aristotle Univ. of Thessaloniki, Lab of Medical
    Informatics); Athina, Kokonozi (Aristotle Univ. of Thessaloniki); Semertzidis, Pangiotis (Aristotle Univ. of
    Thessaloniki, 2nd Internal Medicine Dept., Ippokrateion Hospital, Hippokration Hospital);
    Caffarel, Jennifer (Philips Research); Maglaveras, Nikolaos* (Aristotle Univ. of Thessaloniki)*

09:15-09:30   WeA25.6

Towards Closed-Loop Personal Health Systems in Cardiology: The HeartCycle Approach **892-895**
    Maglaveras, Nikolaos (Aristotle Univ. of Thessaloniki); Reiter, Harald (Philips)*

WeA27: 09:30-11:00   Provincetown Marriott
4.2.1 Systems in Synthetic Biology I (Minisymposium)
Chair: Tidor, Bruce *(Massachusetts Inst. of Tech.)*
Co-Chair: Weiss, Ron *(MIT)*

09:30-10:00   WeA27.1
Synthetic Biology: From Parts to Modules to Therapeutic Systems .... *****
    Weiss, Ron (MIT)*

10:00-10:30   WeA27.2
Designing Biological Systems for Therapeutics and Sustainability .... *****
    Silver, Pamela A. (Dept. of Systems Biology, Harvard Medical School)*

10:30-11:00   WeA27.3
Synthetic Design of Molecular Therapeutics with Multifactorial Systems Goals .... *****
    Tidor, Bruce (Massachusetts Inst. of Tech.)*

WeP11: 09:30-11:00   America Ballroom Westin
4.5.8 Models of Tissues and Organs (Poster Session)

09:30-11:00   WeP11.1
**Validation of a Preterm Infant Cardiovascular System Model under Baroreflex
Control with Heart Rate and Blood Pressure Data** **896-899**
    Jennekens, Ward (Máxima Medical Ctr.); Dat, Marco (Eindhoven Univ. of Tech.); Bovendeerd, Peter
    (Eindhoven Univ. of Tech.); Wijn, Pieter (Máxima Medical Ctr.); Andriessen, Peter (Máxima Medical Ctr.)*

09:30-11:00   WeP11.2
A Simulation Framework for Estimating Wall Stress Distribution of Abdominal Aortic Aneurysm **900-903**
    Zhang, Jing (Inst. for Infocomm Research); Qin, Jing (Natl. Univ. of Singapore); Huang, Weimin (Inst. for
    Infocomm Research, Agency for Science Tech. & Research); Yang, Tao (Inst. of Infocomm Research);
    Pang, Wai Man (Univ. of Aizu); Venkatesh, Sudhakar K (Dept. of Diagnostic Radiology, Natl. Univ. of
    Singapore); Chang, Stephen KY (Natl. Univ. of Singapore)*

09:30-11:00   WeP11.3
Balloon Type Elasticity Sensing for Left Ventricle of Small Laboratory Animal **904-907**
  Ishii, Ryohei* (Osaka Univ.); Higashimori, Mitsuru (Osaka Univ.); Tadakuma, Kenjiro (Osaka Univ.);
  Kaneko, Makoto (Osaka Univ.); Tamaki, Shunsuke (Osaka Univ.); Sakata, Yasushi (Osaka Univ.);
  Yamamoto, Kazuhiro (Osaka)

09:30-11:00   WeP11.4
Continuum Model of Light Response in the Retina **908-911**
  Yin, Shijie (Univ. of New South Wales); Lovell, Nigel (Univ. of New South Wales); Suaning, Gregg (The Univ. of
  New South Wales); Dokos, Socrates* (Univ. of New South Wales)

09:30-11:00   WeP11.5
Parameter Exploration of Staircase-Shape Extracellular Stimulation for
Targeted Stimulation of Myelinated Axon **912-915**
  Ueno, Ayako* (Tohoku Univ.); Karashima, Akihiro (Tohoku Univ.); Nakao, Mitsuyuki (Tohoku Univ.);
  Katayama, Norihiro (Tohoku Univ.)

09:30-11:00   WeP11.6
Evaluation of a Resectable Ultrasound Liver Phantom for Testing of Surgical Navigation Systems **916-919**
  Shevchenko, Nikita* (Technische Univ. Muenchen); Schwaiger, Johannes (Technical Univ. of Munich);
  Markert, Mathias (Technical Univ. Munich); Flatz, Wilhelm (Institut für Klinische Radiologie – Klinikum der Univ.
  München); Lueth, Tim (Technical Univ. of Munich)

09:30-11:00   WeP11.7
Preliminary Design of a SIMO Fuzzy Controller for Steering Microparticles Inside
Blood Vessels by Using a Magnetic Resonance Imaging System **920-923**
  Peng, Ke (Ecole Polytechnique de Montreal); Martel, Sylvain* (Ecole Polytechnique de Montreal)

WeP12: 09:30-11:00   America Ballroom Westin
4.6.4 Algorithms and Computational Tools for Proteomics (Poster Session)

09:30-11:00   WeP12.1
Design of Multiple Sequence Alignment Algorithms on Parallel, Distributed Memory Supercomputers **924-927**
  Church, Philip Clayton* (Deakin Univ.); Goscinski, Andrzej (Deakin Univ., Science & Tech.); Holt, Kathryn (Univ.
  of Melbourne, Microbiology & Immunology); Inouye, Michael (Walter & Eliza Hall Inst. of Medical Research);
  Ghoting, Amol (IBM T.J. Watson Research Ctr.); Makarychev, Konstantin (IBM T.J. Watson Research Ctr.);
  Reumann, Matthias (IBM Australia)

09:30-11:00   WeP12.2
ABS: Sequence Alignment by Scanning **928-931**
  Bonny, Talal (King Abdullah Univ. of Science & Tech.);
  Salama, Khaled N* (King Abdullah Univ. of Science & Tech.)

09:30-11:00   WeP12.3
Analyzing mRNA and microRNA Co-Expression Profiles to Identify Pathways and
Their Potential Regulators in ER+ and ER- Breast Tumors **932-935**
  Roqueiro, Damian* (Univ. of Illinois at Chicago); Huang, Lei (Univ. of Illinois at Chicago);
  Dai, Yang (Univ. of Illinois at Chicago)

09:30-11:00   WeP12.4
Gene Expression Analysis with Integrated Fuzzy C-Means and Pathway Analysis **936-939**
  Zhang, Mingrui* (Winona State Univ.); Yang, Ping (Mayo Clinic)

09:30-11:00   WeP12.5
A General CellML Simulation Code Generator Using ODE Solving Scheme Description **940-944**
  Amano, Akira* (Ritsumeikan Univ.); Soejima, Naoki (Ritsumeikan Univ., Dept. of Informatics);
  Shimayoshi, Takao (ASTEM Research Inst. of Kyoto); Kuwabara, Hiroaki (Ritsumeikan Univ., Dept. of
  Informatics); Kunieda, Yoshitoshi (Ritsumeikan Univ., Dept. of Informatics)

09:30-11:00 WeP12.6

**Prediction of Protein Subcellular Localization Based on Variable-Length Motifs
Detection and Dissimilarity Based Classification** **945-948**

Arango, Gustavo (Univ. Nacional de Colombia); Jaramillo Garzón, Jorge Alberto (Univ. Nacional
de Colombia); Röthlisberger, Sarah (Instituto Tecnológico Metropolitano);
Castellanos-Dominguez, Germán* (Univ. Nacional de Colombia)

09:30-11:00 WeP12.7

Evaluating Feature Selection Strategies for High Dimensional, Small Sample Size Datasets **949-952**

Golugula, Abhishek* (Rutgers Univ.); Lee, George (Rutgers Univ.); Madabhushi, Anant (Rutgers Univ.)

WeP13: 09:30-11:00 America Ballroom Westin
5.2.13 ECG Analysis (Poster Session)

09:30-11:00 WeP13.1

Beat to Beat Wavelet Variability in Atrial Fibrillation **953-956**

Filos, Dimitrios (Aristotle Univ. o Thessaloniki); Chouvarda, Ioanna* (Aristotle Univ.);
Dakos, George (Aristotle Univ. o Thessaloniki); Vassilikos, Vassilios (Aristotle Univ. o Thessaloniki);
Maglaveras, Nikolaos (Aristotle Univ. of Thessaloniki)

09:30-11:00 WeP13.2

A Spline Framework for ECG Analysis **957-960**

Guilak, Farzin* (Intel Corp.); McNames, James (Portland State Univ.)

09:30-11:00 WeP13.3

Excitation Specificity of Repolarization Parameters **961-964**

Halamek, Josef* (Inst. of Scientific Instruments); Vondra, Vlastimil (Inst. of Scientific Instruments AS CR);
Jurak, Pavel (Inst of Scientific Instruments Acad.); Viscor, Ivo (Inst. of Scientific Instruments, Czech Acad. of
Sciences); Leinveber, Pavel (St. Anne's Univ. Hospital); Plachy, Martin (St Anne's Univ. Hospital, Brno,)

09:30-11:00 WeP13.4

**Algorithm for Quantitative 3 Dimensional Analysis of ECG Signals Improves Myocardial
Diagnosis Over Cardiologists in Diabetic Patients** **965-968**

Wenzel, Brian* (Home); George, Samuel (NewCardio, Inc); Lakkireddy, Dhanunjaya (Univ. of Kansas
Hospitals); Vanga, Subba Reddy (Univ. of Kansas City Hospitals); Bommana, Sudha Rani (Univ. of Kansas
Hospitals); Gussak, Ihor (NewCardio, Inc); Simic, Goran (NewCardio, Inc); Bojovic, Bosko (NewCardio, Inc);
Ljupco, Hadzievski (NewCardio, Inc); Panescu, Dorin (NewCardio, Inc.)

09:30-11:00 WeP13.5

Wavelet-Based Features for Characterizing Ventricular Arrhythmias in Optimizing Treatment Options **969-972**

Balasundaram, Krishnanand* (Ryerson Univ.); Masse, Stephane (THCFM Lab, Toronto General Hospital); Nair,
Krishnakumar (THFCFM Lab., Toronto General Hosp.); Farid, Talha (THCFM Lab, Toronto General Hospital);
Nanthakumar, Kumaraswamy (THCFM Lab, Toronto General Hospital); Umapathy, Karthikeyan (Ryerson Univ.)

09:30-11:00 WeP13.6

A Vectorcardiogram-Based Classification System for the Detection of Myocardial Infarction **973-976**

Huang, Chih-Sheng (Natl. Chiao Tung Univ.); Ko, Li-Wei* (Natl. Chiao-Tung Univ.); Lu, Shao-Wei (Natl. Chiao
Tung Univ.); Chen, Shi-An (Natl. Chiao Tung Univ.); Lin, Chin-Teng (Natl. Chiao-Tung Univ.)

09:30-11:00 WeP13.7

Baseline Wander Estimation and Removal by Quadratic Variation Reduction **977-980**

Fasano, Antonio (Univ. Campus Bio-Medico di Roma); Villani, Valeria* (Univ. Campus Bio-Medico di Roma);
Vollero, Luca (Univ. Campus Bio-Medico di Roma)

09:30-11:00 WeP13.8

Denoising and Harmonic Artifacts Rejection for ECG P-Waves by Quadratic Variation Reduction **981-984**

Fasano, Antonio (Univ. Campus Bio-Medico di Roma); Villani, Valeria* (Univ. Campus Bio-Medico di Roma);
Vollero, Luca (Univ. Campus Bio-Medico di Roma)

09:30-11:00   WeP13.9

Use of Genetic Algorithm for Selection of Regularization Parameters in Multiple Constraint Inverse ECG Problem **985-988**

Mazloumi Gavgani, Alireza (Middle East Technical Univ.-Turkey);
Serinagaoglu Dogrusoz, Yesim* (Middle East Technical Univ.)

09:30-11:00   WeP13.10

Home-Based Mobile Cardio-Pulmonary Rehabilitation Consultant System **989-992**

Lu, Shao-Wei (Natl. Chiao Tung Univ.); Wu, Bo-Yuan (Natl. Chiao Tung Univ.); Ko, Li-Wei* (Natl. Chiao-Tung Univ.)

09:30-11:00   WeP13.11

Predicting the Optimal Position and Direction of a Ubiquitous ECG Using a Multi-Scale Model of Cardiac Electrophysiology **993-996**

Shim, Eun Bo* (Kangwon Natl. Univ.); Shin, Kunsoo (Samsung Advanced Inst of Tech);
Ko, Byung-Hoon (Samsung Advanced Inst. of Tech.); Bae, Sang Kon (Samsung Advanced Inst of Tech)

09:30-11:00   WeP13.12

Numerical Simulation of Motion-Induced Dynamic Noise in a Ubiquitous ECG Application **997-1000**

Shim, Eun Bo* (Kangwon Natl. Univ.); Shin, Kunsoo (Samsung Advanced Inst of Tech);
Ko, Byung-Hoon (Samsung Advanced Inst. of Tech.); Bae, Sang Kon (Samsung Advanced Inst of Tech)

WeP14:   09:30-11:00   America Ballroom Westin
5.6.18 Respiratory Engineering (Poster Session)

09:30-11:00   WeP14.1

Breath Gas Analysis for Estimating Physiological Processes using Anesthetic Monitoring as a Prototypic Example **1001-1004**

King, Julian* (Austrian Acad. of Sciences); Unterkofler, Karl (Vorarlberg Univ. of Applied Sciences);
Teschl, Gerald (Faculty of Mathematics of the Univ. of Vienna); Amann, Anton (Innsbruck Medical Univ.);
Teschl, Susanne (Univ. of Applied Sciences Technikum Wien)

09:30-11:00   WeP14.2

Robust Online Adaptive Neural Network Control for the Regulation of Treadmill Exercises **1005-1008**

Nguyen, Tuan Nghia* (Univ. of Tech., Sydney); Nguyen, Hung T. (Univ. of Tech., Sydney);
Su, Steven Weidong (Univ. of Tech., Sydney); Celler, Branko George (Univ. of New South Wales)

09:30-11:00   WeP14.3

A Convenient Pulmonary Volume and Flow Detection System **1009-1012**

Sim, Myeong Heon* (Yonsei Univ.); Kim, Minyong (Yonsei Univ.); Jeong, Incheol (Seoul Natl. Univ. Hospital);
Yoon, Chan-Sol (Yonsei Univ.); Yoon, Hyungro (Yonsei Univ.)

09:30-11:00   WeP14.4

Inverse Modeling Supports Quantification of Pressure and Time Depending Effects in ARDS Patients .. **1013-1016**

Schranz, Christoph* (Furtwangen Univ.); Moeller, Knut (Furtwangen Univ.)

09:30-11:00   WeP14.5

Effectiveness of Interval Training Compared with Endurance Training in Cardiac Rehabilitation **1017-1020**

Hanada, Satoru* (Chiba Univ.); Sekine, Masaki (Chiba Univ.); Tamura, Toshiyo (Chiba Univ.);
Shinchi, Tomokazu (Fujimoto Central Hospital); Fujimoto, Toshiro (Fujimoto Hayasuzu Hospital)

WeP15:   09:30-11:00   America Ballroom Westin
5.6.19 Cardiorespiratory Modeling (Poster Session)

09:30-11:00   WeP15.1

Effect of Deep Breathing on Extracted Oxygen and Cerebral Hemoglobin Levels **1021-1024**

Kennedy, Patrick (Dartmouth College); Zarbock, Christopher (Dartmouth College); Burke, Broc (Dartmouth College); Diamond, Solomon G.* (Dartmouth College)

09:30-11:00   WeP15.2

Effect of Inflow on Computational Fluid Dynamic Simulation of Cerebral Bifurcation Aneurysms **1025-1028**

Farnoush, Azadeh* (Macquarie Univ.); Qian, Yi (Macquarie Univ.); Avolio, Alberto (Macquarie Univ.)

09:30-11:00   WeP15.3

Modeling the Adaptive Pathophysiology of Essential Hypertension **1029-1032**

Wang, Yu* (Univ. of California, San Diego); Winters, Jack (Marquette Univ.)

09:30-11:00   WeP15.4

Automation of an Extracorporeal Support System with Adaptive Fuzzy Controllers **1033-1036**

Mendoza Garcia, Alejandro (Technical Univ. Munich); Sprunk, Nicole (Technical Univ. Munich);
Baumgartner, Benedikt (Technical Univ. Munich); Schreiber, Ulrich (German Heart Ctr.);
Eichhorn, Stefan (German Heart Ctr.); Bauernschmitt, Robert (German Heart Ctr.); Lange, Rüdiger (German
Heart Ctr. Munich); Krane, Markus (German Heart Ctr.); Knoll, Alois (Technical Univ. Munich)*

09:30-11:00   WeP15.5

Modeling of Aquaporin-1 Mediated Transmural Water Transport and the Resulting Oncotic Paradox **1037-1040**

Joshi, Shripad* (City College of CUNY); Rumschitzki, David (City College of the City Univ. of New York)

09:30-11:00   WeP15.6

A Multiple-Input Multiple-Output System for Modeling the Cardiac Dynamics **1041-1044**

Monzon, Jorge E. (Univ. Nacional del Nordeste); Alvarez Picaza, Carlos (Univ. Nacional del Nordeste);
Pisarello, Maria Ines (Univ. Nacional del Nordeste)*

WeP16: 09:30-11:00   America Ballroom Westin

6.4.50 Sensory Neuroprostheses (Poster Session)

09:30-11:00   WeP16.1

A PDA Platform for Offline Processing and Streaming of Stimuli for Cochlear Implant Research **1045-1048**

Ali, Hussnain (Univ. of Texas at Dallas); Lobo, Arthur (Univ. of Texas at Dallas);
Loizou, Philipos (Univ. of Texas at Dallas)*

09:30-11:00   WeP16.2

Current Steering and Current Focusing with a High-Density Intracochlear Electrode Array **1049-1052**

Bhatti, Pamela* (Georgia Inst. of Tech.); Falcone, Jessica (Georgia Inst. of Tech.)

09:30-11:00   WeP16.3

Responses of Starburst Amacrine Cells to Prosthetic Stimulation of the Retina **1053-1056**

Tsai, David (Univ. of New South Wales); Morley, John William (Univ. of Western Sydney);
Suaning, Gregg (The Univ. of New South Wales); Lovell, Nigel (Univ. of New South Wales)*

09:30-11:00   WeP16.4

Selective Co-Stimulation of Pudendal Afferents Enhances Reflex Bladder Activation **1057-1060**

McGee, Meredith* (Duke Univ.); Yoo, Paul (Duke Univ.); Grill, Warren (Duke Univ.)

09:30-11:00   WeP16.5

Vibrotactile Feedback Aids EMG Control of Object Manipulation **1061-1064**

Stepp, Cara (Boston Univ.); Chang, Chelsey (Chih-Chi) (Univ. of Washington);
Malhotra, Mark (Univ. of Washington); Matsuoka, Yoky (Univ. of Washington)*

09:30-11:00   WeP16.6

**Sensory Cortical Re-Mapping Following Upper-Limb Amputation and
Subsequent Targeted Reinnervation: A Case Report** **1065-1068**

Yao, Jun (Northwestern Univ.); Carmona, Carolina (Northwestern Univ.); Chen, Albert (Northwestern Univ.);
Kuiken, Todd (Rehabilitation Inst. of Chicago); Dewald, Julius P. A. (Northwestern Univ.)*

09:30-11:00   WeP16.7

Optimizing Microstimulation Using a Reinforcement Learning Framework **1069-1072**

Brockmeier, Austin (Univ. of Florida); Choi, John Stephen (SUNY Downstate Medical Ctr.);
DiStasio, Marcello (SUNY Downstate Medical Ctr.); Francis, Joseph Thachil (SUNY Downstate Medical Ctr.);
Principe, Jose (Univ. of Florida)*

09:30-11:00   WeP16.8

3D Hybrid Electrode Structure As Implantable Interface for a Vestibular Neural Prosthesis in Humans .. 1073-1076
Hoffmann, Klaus-Peter* (Fraunhofer Institut); Poppendieck, Wigand (Fraunhofer Institut für Biomedizinische Technik); Tätzner, Simon (Fraunhofer IBMT); DiGiovanna, Jack (ETH Zurich); Kos, Izabel (ENT Dept., Geneva Univ. Hospital); Guinand, Nils (Univ. of Geneva); Guyot, Jean-Philippe (ENT Dept., Geneva Univ. Hospital); Micera, Silvestro (École Polytechnique Fédérale de Lausanne)

09:30-11:00   WeP16.9

High Frequency Electric Stimulation of Retinal Neurons Elicits Physiological Signaling Patterns 1077-1080
Fried, Shelley* (Massachusetts General Hospital/Harvard Medical School); Cai, Changsi (Shanghai Jiao-Tong Univ.); Ren, Qiushi (Shanghai Jiaotong Univ.)

09:30-11:00   WeP16.10

Physiological Response of Mouse Retinal Ganglion Cells to Electrical Stimulation: Effect of Soma Size 1081-1084
Cho, Alice* (Univ. of Southern California); Sampath, Alapakkam (Univ. of Southern California, Keck School of Medicine); Weiland, James (Univ. of Southern California)

09:30-11:00   WeP16.11

Laser-Micromachined, Chip-Scaled Ceramic Carriers for Implantable Neurostimulators 1085-1088
Guenther, Thomas* (The Univ. of New South Wales); Mintri, Apoorv (Univ. of New South Wales); Jung, Louis Hyunsuk (Univ. of New South Wales); Lehmann, Torsten (Univ. of New South Wales); Lovell, Nigel (Univ. of New South Wales); Suaning, Gregg (The Univ. of New South Wales)

09:30-11:00   WeP16.12

Standard ERG Equipment Can Be Used to Monitor Functionality of Retinal Implants 1089-1092
Bosse, Brandon* (Univ. of New South Wales); Wilke, Robert (Univ. of New South Wales); Zrenner, Eberhart (Univ. of Tuebingen)

09:30-11:00   WeP16.13

Comparison of Basal Oscillatory Rhythm of Retinal Activities in Rd1 and Rd10 Mice 1093-1096
Goo, Yong Sook* (Chungbuk Nati Univ. School of Medicine); Ahn, Kun No (Chungbuk Natl. Univ.); Song, Yeong jun (Chungbuk Natl. Univ.); Ryu, Sangbaek (Yonsei Univ.); Kim, Kyung Hwan (Yonsei Univ.)

09:30-11:00   WeP16.14

Eye-Surface Conformable Telemetric Structure for Polymer-Based Retinal Prosthesis 1097-1100
Jeong, Joonsoo* (Seoul Natl. Univ.); Lee, Seung Woo (Seoul Natl. Univ.); Min, Kyou Sik (Seoul Natl. Univ.); Bae, So Hyun (Seoul Natl. Univ.); Kim, Sung June (Seoul Natl. Univ.)

09:30-11:00   WeP16.15

Multi-Command SSVEP-Based BCI System via Single Flickering Frequency Half-Field Stimulation Pattern 1101-1104
Punsawad, Yunyong* (Mahidol Univ.); Wongsawat, Y. (Mahidol Univ.)

WeP17: 09:30-11:00   America Ballroom Westin
9.3.13 Diagnostic Devices and Instrumentation (Poster Session)

09:30-11:00   WeP17.1

New Variable Porosity Flow Diverter (VPOD) Stent Design for Treatment of Cerebrovascular Aneurysms 1105-1108
Suri, Himanshu* (Toshiba Stroke Research Ctr., Univ. at Buffalo); Ionita, Ciprian (SUNY at Buffalo); Rudin, Stephen (Univ. at Buffalo)

09:30-11:00   WeP17.2

Neural Network Based Classifier for Cardio Vascular Diseases Based on Vascular Aging 1109-1112
Krishnasamy Balasundaram, Jayanthi* (K.S. Rangasamy College of Tech.); RSD, Wahida Banu (Government College of Eng., Salem)

09:30-11:00　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　WeP17.3

**Surface EMG and Heartbeat Analysis Preliminary Results in Surgical
Training: Dry Boxes and Live Tissue** 1113-1116

Bartolomeo, Luca* (Waseda Univ.); Lin, Zhuohua (Waseda Univ.); Zecca, Massimiliano (Waseda Univ.);
Sessa, Salvatore (Waseda Univ.); Ishii, Hiroyuki (Waseda Univ.); Uemura, Munenori (Kyushu Univ.);
Xu, Hao (Kyushu Univ.); Tomikawa, Morimasa (Kyushu Univ. Hospital); Hashizume, Makoto (Kyushu Univ.);
Takanishi, Atsuo (Waseda Univ.)

09:30-11:00　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　WeP17.4

**Progress on Multimodal Molecular / Anatomical Intravascular Imaging of Coronary Vessels
Combining Near Infrared Fluorescence and Ultrasound** 1117-1120

Mallas, Georgios* (Northeastern Univ. & Massachusetts General Hospital, Boston, MA);
Rosenthal, Amir (Technical Univ. of Munich); Calfon, Marcella (Massachusetts General Hospital);
Razansky, Nika (Technical Univ. of Munich); Mauskapf, Adam (Massachusetts General Hospital);
Jaffer, Farouc Amin (Massachusetts General Hospital/Harvard Medical School);
Brooks, Dana (Northeastern Univ.); Ntziachristos, Vasilis (Harvard Univ. HMS/MGH)

WeP18: 09:30-11:00　　　　　　　　　　　　　　　　　　　　America Ballroom Westin
9.8.14 Gait and Rehabilitation (Poster Session)

09:30-11:00　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　WeP18.1

**Haptic Interface Protocol for FEM-Based Deformable Model and Effects on
Fineness of Force Feedback and Perceived Hardness** 1121-1124

Kuroda, Yoshihiro* (Osaka Univ.); Okumura, Yosuke (Osaka Univ.); Kamada, Kyousuke (Asahikawa Medical
Univ.); Imura, Masataka (Osaka Univ.); Oshiro, Osamu (Osaka Univ.)

09:30-11:00　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　WeP18.2

**Estimation of Traversed Distance in Level Walking Using a Single Inertial
Measurement Unit Attached to the Waist** 1125-1128

Kose, Alper (Univ. of Sassari); Cereatti, Andrea (Univ. of Sassari); Della Croce, Ugo* (Univ. of Sassari)

09:30-11:00　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　WeP18.3

**A Method for Selecting an Efficient Diagnostic Protocol for Classification of
Perceptive and Cognitive Impairments in Neurological Patients** 1129-1132

Rana, Kunjan (Boston Univ.); Caldwell, Benvy (School of Public Health, Boston Univ.); Vaina, Lucia* (Brain &
Vision Research Lab, Boston Univ. Dept. of Biomedical Eng., Boston, MA & Harvard Medical School, Ma)

09:30-11:00　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　WeP18.4

**Animal Assisted Therapy for Persons with Disabilities Based on Canine Tail
Language Interpretation via Fuzzy Emotional Behavior Model** 1133-1136

Phanwanich, Warangkhana* (Mahidol Univ.); Kumdee, Orrawan (Mahidol Univ.);
Ritthipravat, Panrasee (Mahidol Univ.); Wongsawat, Y. (Mahidol Univ.)

09:30-11:00　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　WeP18.5

Assessment and Follow-Up of Muscle Injuries in Athletes by Bioimpedance: Preliminary Results 1137-1140

Nescolarde, Lexa (Technical Univ. of Catalonia (UPC)); Yanguas, Xavier (Medical Service, Futbol Club
Barcelona); Medina, Daniel (Medical Service, Futbol Club Barcelona); Rodas, Gil (Medical Service,
Futbol Club Barcelona); Rosell-Ferrer, Javier* (Technical Univ. of Catalonia)

09:30-11:00　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　WeP18.6

Magnetic Stimulation for Fracture Consolidation – Clinical Study 1141-1144

Moncada, Maria Elena* (Instituto Tecnológico Metropolitano); Martinez, Alfredo (Univ. del Valle);
Sarmiento, Consuelo (Fundación Clínica Valle del Lili)

WeP19: 09:30-11:00　　　　　　　　　　　　　　　　　　　　America Ballroom Westin
9.9.11 Neural Stimulation (Poster Session)

09:30-11:00　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　WeP19.1

**Neural Adaptation and Perceptual Learning Using a Portable Real-Time
Cochlear Implant Simulator in Natural Environments** 1145-1148

Smalt, Christopher* (Purdue Univ.); Talavage, Thomas (Purdue Univ.); Pisoni, David (Indiana Univ.);
Svirsky, Mario (NYU School of Medicine)

09:30-11:00   WeP19.2
High Frequency Oscillations Evoked by Peripheral Magnetic Stimulation **1149-1152**
  Biller, Sebastian (Ilmenau Univ. of Tech.); Simon, Lea (Ilmenau Univ. of Tech.); Fiedler, Patrique (Ilmenau
  Univ. of Tech., Inst. of Biomedical Eng. & Informatics); Strohmeier, Daniel (Ilmenau Univ. of Tech., Inst. of
  Biomedical Eng. & Informatics); Haueisen, Jens (Technical Univ. Ilmenau)*

09:30-11:00   WeP19.3
Nerve Block Using a Navigation System and Ultrasound Imaging for Regional Anesthesia **1153-1156**
  Shi, Jiaxi (Technical Univ. Munich); Schwaiger, Johannes (Technical Univ. of Munich);
  Lueth, Tim (Technical Univ. of Munich)*

09:30-11:00   WeP19.4
Methods for Assessment of Effects of Habitual Exercise on the
Autonomic Nervous Function Using Plethysmogram **1157-1160**
  Yoshizawa, Makoto (Tohoku Univ.); Yambe, Tomoyuki (Tohoku Univ.); Sugita, Norihiro (Tohoku Univ.);
  Sugai, Telma Keiko (Tohoku Univ.); Abe, Makoto (Tohoku Univ.)*

WeP110: 09:30-11:00   America Ballroom Westin
10.1.2 Advances in Personal, Pervasive, Preventive, and Participatory Health Systems (Poster Session)

09:30-11:00   WeP110.1
ISO/IEEE 11073 PHD Message Generation Toolkit to Standardize Healthcare Device **1161-1164**
  *Lim, Joon-Ho (Elec.& Telecom Research Inst.); Park, Chan-Yong (Elec.& Telecommunications Research Inst.);
  Park, Soo-Jun (Elec. & Telecomm Research Inst); Lee, Kyu-Chul* (Chungnam Natl. Univ.)*

09:30-11:00   WeP110.2
An Automated Medication Adherence Tool **1165-1168**
  Maulucci, Ruth (MOCO, inc.); Somerville, Daniel (MOCO)*

09:30-11:00   WeP110.3
A User Centered Design Approach for Patient Interfaces to a Diabetes IT Platform **1169-1172**
  Fico, Giuseppe (Technical Univ. of Madrid); Fioravanti, Alessio (Technical Univ. of Madrid);
  Arredondo, María Teresa (Technical Univ. of Madrid); Leuteritz, Jan-Paul (Univ. Stuttgart IAT);
  Guillen, Alejandra (Medtronic Spain); Duarte, Fernandez (Medtronic, Madrid, Spain)*

09:30-11:00   WeP110.4
A Chair-Type Interface for Long-Term and Ambient Vital Sensing **1173-1176**
  Shimokakimoto, Tomoya (Univ. of Tsukuba); Suzuki, Kenji (Univ. of Tsukuba)*

09:30-11:00   WeP110.5
Rapid Trend Detection for an Ambulatory Monitoring System **1177-1180**
  Fu, Yongji (Becton Dickinson Technologies)*

09:30-11:00   WeP110.6
Iheartlift: A Closed Loop System with Bio-Feedback That Uses Music Tempo
Variability to Improve Heart Rate Variability **1181-1184**
  Ho, Thomas Chee Tat (Inst. for Infocomm Research); Chen, Xiang (Inst. for Infocomm Research)*

WeP111: 09:30-11:00   America Ballroom Westin
10.1.10 Clinical Engineering and Laboratory Measurements (Poster Session)

09:30-11:00   WeP111.1
Improving the Drug Dispensing Process at the National Institute of
Respiratory Diseases by Applying the Six Sigma Methodology **1185-1188**
  Pimentel-Aguilar, Ana Bertha (INER: Instituto Nacional de Enfermedades Respiratorias); Aguilar Adaya,
  Mariana Karen (Univ. Autonoma Metropolitana); Sanchez Castillo, Eric Ianmael (Univ. Autónoma
  Metropolitana); Ortiz-Posadas, Martha R. (Univ. Autónoma Metropolitana)*

09:30-11:00   WeP111.2

A Novel Mainstream Capnometer System for Non-Intubated Pediatric Patients Requiring Oxygen Administration **1189-1192**

Takatori, Fumihiko (Nihon Kohden Corp.); Yamamori, Shinji (Nihon Kohden Corp.); Inoue, Masayuki (Nihon Kohden Corp.); Abe, Seiki (Nagano Children's Hospital); Miyasaka, Katsuyuki (St. Luke's College of Nursing)*

09:30-11:00   WeP111.3

DigiScope – Unobtrusive Collection and Annotating of Auscultations in Real Hospital Environments **1193-1196**

Pereira, Daniel (Faculty of Medicine, Univ. of Porto); Hedayioglu, Fabio (Instituto de Telecomunicações); Correia, Ricardo (Health Information & Decision Sciences Dept. (CIDES) & the Ctr. for Research in Health Technologies & Information S); Silva, Tiago (Instituto de Engenharia de Sistemas e Computadores – Porto (INESC-Porto) & the Ctr. for Research in Advanced Computing Syste); Dutra, Inês (Instituto de Engenharia de Sistemas e Computadores – Porto (INESC-Porto) & the Ctr. for Research in Advanced Computing Syste); Almeida, Filipa (Health Information & Decision Sciences Dept. (CIDES) & the Ctr. for Research in Health Technologies & Information S); Mattos, Sandra (UCMF – Unidade de Cardiologia e Medicina Fetal); Coimbra, Miguel (Instituto de Telecomunicações/Univ. do Porto)*

09:30-11:00   WeP111.4

An Alignment Procedure for Ambulatory Measurements of Lower Limb Kinematic Using Magneto-Inertial Sensors **1197-1200**

Taffoni, Fabrizio (Campus Bio-Medico Univ.); Piervirgili, Gianluca (Univ. Campus Bio-Medico di Roma); Formica, Domenico (Campus Bio-Medico Univ.); Guglielmelli, Eugenio (Campus Bio-Medico Univ.)*

09:30-11:00   WeP111.5

Respiratory Rate Estimation Using Respiratory Sinus Arrhythmia from Photoplethysmography **1201-1204**

Karlen, Walter (UBC); Brouse, Christopher (Univ. of British Columbia); Cooke, Erin (British Columbia's Children's Hospital); Ansermino, J. Mark (British Columbia's Children's Hospital); Dumont, Guy (Univ. of British Columbia)*

09:30-11:00   WeP111.6

Gas Prewarming for Improving Performances of Heated Humidifiers in Neonatal Ventilation **1205-1208**

Schena, Emiliano (Univ. of Rome Campus Bio-Medico); De Paolis, Elvira (Univ. Campus Bio-Medico of Rome); Silvestri, Sergio (Univ. Campus Bio-Medico)*

09:30-11:00   WeP111.7

A Multi Agent System Model for Evaluating Quality Service of Clinical Engineering Department **1209-1212**

Gaetano, Laura (Politecnico di Torino); Balestra, Gabriella (Politecnico di Torino)*

09:30-11:00   WeP111.8

A Methodology to Guarantee Technology Continuity in Health Structures **1213-1216**

Miniati, Roberto (Univ. di Firenze); Dori, Fabrizio (Univ. di Firenze); Iadanza, Ernesto (Univ. degli Studi di Firenze); Scatizzi, Lapo (Univ. of Florence); Niccolini, Fabrizio (AOU Careggi – Univ. Florence Hospital); Sarti, Alessandro (AOU Careggi – Univ. Florence Hospital)*

09:30-11:00   WeP111.9

In-Vivo Performance Evaluation of the Innovamedica Pneumatic Ventricular Assist Device **1217-1220**

Sacristan, Emilio (Univ. Autónoma Metropolitana); Tuzun, Egemen (Texas A&M); Winkler, Jo Anna (Texas Heart Inst.); Contreras, Ana L. (UAM-Iztapalapa); Cohn, William E. (Texas Heart Inst.)*

09:30-11:00   WeP111.10

Intensive Care Unit Availability Indexed to Patient Complexity **1221-1224**

Pino, Esteban J (Univ. de Concepcion); Pereira, Rodrigo Andres (Clinica Univ. Concepcion)*

09:30-11:00   WeP111.11

Biphasic Transdermal Iontophoretic Drug Delivery Platform **1225-1228**

McLaughlin, Glen (InCube Labs); Arastu, Huma (InCube Labs); Harris, Joel (InCube Labs); Hashim, Mir (InCube Labs); Korupolu, Radhika (InCube Labs); Mangogna, Andrew (InCube Labs); Patel, Sanjay (InCube Labs); Ong, Chang (InCube Labs); Vaidyanathan, Rekha (InCube Labs); Wang, Lu (InCube Labs); Williams, Timothy (InCube Labs); Imran, Mir (InCube Labs)*

09:30-11:00   WeP111.12

NIRS Study of Cerebral Oxygenation and Hemodynamics in Neonate at Birth **1229-1232**

Hou, Xinlin (First Hospital of Peking Univ.); Ding, Haiyan (Tsinghua Univ.); Zhou, Congle (Peking Univ. First Hospital); Teng, Yichao (School of Medicine, Tsinghua Univ.); Zhang, Dandan* (Beijing Normal Univ.)

09:30-11:00   WeP111.13

Design and Accuracy Evaluation of a New Navigated Drill System for Computer Assisted ENT-Surgery ... **1233-1236**

Wenger, Thomas* (Technical Univ. Munich & ERGOSURG GmbH); Nowatschin, Stephan (Technical Univ. Munich); Wittmann, Wolfgang (Technical Univ. Munich & ERGOSURG GmbH); Hurka, Florian (Technical Univ. Munich & ERGOSURG GmbH); Strauss, Gero (Univ. of Leipzig); Lueth, Tim (Technical Univ. of Munich)

09:30-11:00   WeP111.14

Official Measurement Protocol and Accuracy Results for an Optical Surgical Navigation System (NPU) **1237-1240**

Wittmann, Wolfgang* (Technical Univ. Munich & ERGOSURG GmbH); Wenger, Thomas (Technical Univ. Munich & ERGOSURG GmbH); Loewe, Erik (Technical Univ. Munich & ERGOSURG GmbH); Lueth, Tim (Technical Univ. of Munich)

09:30-11:00   WeP111.15

New Approach for Quantitative Measurement of Ultrasonic Cavitation Yields **1241-1244**

Noh, Si Cheol (Intl. Univ. of Korea); Kim, Ju Young (Inje Univ.); Kim, Jin Su (Inje Univ.); Kang, Jung Hun (Inje Univ.); Min, Hong Ki (Univ. of Incheon); Choi, Heung Ho* (Inje Univ.)

09:30-11:00   WeP111.16

Influence of Ventilatory Settings on Indirect Calorimetry in Mechanically Ventilated Patients **1245-1248**

Cecchini, Stefano (Univ. Campus Bio-Medico of Rome); Schena, Emiliano* (Univ. of Rome Campus Bio-Medico); Cuttone, Rosaria (Univ. Campus Bio-Medico of Rome); Carassiti, Massimiliano (Univ. Campus Bio-Medico of Rome); Silvestri, Sergio (Univ. Campus Bio-Medico)

WeB01: 11:15-12:45   St. George AB Westin
8.3.1 Assistive and Cognitive Robotics in Rehabilitation (Oral Session)
Chair: Fujie, Masakatsu G. *(Waseda Univ.)*
Co-Chair: Masia, Lorenzo *(Istituto Italiano Di Tecnologia)*

11:15-11:30   WeB01.1

A Conceptual Cognitive Architecture for Robots to Learn Behaviors from Demonstrations in Robotic Aid Area **1249-1252**

Tan, Huan* (Vanderbilt Univ.)

11:30-11:45   WeB01.2

Algorithm for Selecting Appropriate Transfer Support Equipment Based on the Physical Ability of the User **1253-1258**

Matsushita, Shiho* (Waseda Univ.); Fujie, Masakatsu G. (Waseda Univ.)

11:45-12:00   WeB01.3

Trajectory Planning of a Robot for Lower Limb Rehabilitation **1259-1263**

Obinata, Goro* (Nagoya Univ.); Pei, Yanling (Nagoya Univ.); Stefanov, Dimitar (Coventry Univ.); Kim, Youngwoo (Nagoya Univ.)

12:00-12:15   WeB01.4

Direct Interaction with an Assistive Robot for Individuals with Chronic Stroke **1264-1267**

Markham, Heather (Univ. of Pittsburgh); Kmetz, Brandon (Rose-Hulman Univ.); Brewer, Bambi* (Univ. of Pittsburgh)

12:15-12:30   WeB01.5

Improving the ROM of Wrist Movements in Stroke Patients by Means of a Haptic Wrist Robot **1268-1271**

Squeri, Valentina* (Istituto Italiano di Tecnologia); Masia, Lorenzo (Istituto Italiano Di Tecnologia); Taverna, Laura (Italian Inst. of Tech.); Morasso, Pietro (Univ. of Genova)

12:30-12:45   WeB01.6

Thoracic ROM Measurement System with Visual Bio-Feedback: System Design and Biofeedback Evaluation **1272-1274**

Ando, Takeshi* (Waseda Univ.); Kawamura, Kazuya (Waseda Univ.); Fujitani, Junko (Natl. Ctr. for Global Health & Medicine); Fujie, Masakatsu G. (Waseda Univ.)

8.3.2 Biomechanics and Rehabilitation: Sports and Clinical Evaluation (Oral Session)
Chair: Della Croce, Ugo *(Univ. of Sassari)*
Co-Chair: Erickson, Jon *(Washington & Lee Univ.)*

11:15-11:30   WeB02.1
Generation of Complex Motor Patterns in American Grasshopper via
Current-Controlled Thoracic Electrical Interfacing **1275-1278**

Giampalmo, Susan (Washington & Lee Univ.); Absher, Benjamin (Washington & Lee Univ.); Bourne, W. Tucker
(Washington & Lee Univ.); Steves, Lida (Washington & Lee Univ.); Vodenski, Vassil (Washington & Lee Univ.);
O'Donnell, Peter (Washington & Lee Univ.); Erickson, Jon (Washington & Lee Univ.)*

11:30-11:45   WeB02.2
Time-Frequency Analysis of Human Motion During Rhythmic Exercises **1279-1282**

Vyas, Khushi (Indian Inst. of Science); H N, Vikranth (Indian Inst. of Science);*
S N, Omkar (Indian Inst. of Science)

11:45-12:00   WeB02.3
Throwing Darts Utilizes the Interaction Torque of the Elbow Joint **1283-1286**

Tamei, Tomoya (Nara Inst. of Science & Tech.); Obayashi, Chihiro (Nara Inst. of Science & Tech.);*
Shibata, Tomohiro (Nara Inst. of Science & Tech.)

12:00-12:15   WeB02.4
Arm Motion Analysis of Stroke Patients in Activities of Daily Living Tasks: A Preliminary Study **1287-1291**

Kim, Kyung (Natl. Rehabilitation Ctr.); Park, Dae-Sung (Natl. Rehabilitation Ctr.); Ko, Byung-Woo (Natl.
Rehabilitation Ctr.); Lee, Jeongsu (Natl. Rehabilitation Ctr.); Yang, Seung-Nam (Natl. Rehabilitation Ctr.);
Kim, Jongbae (Natl. Rehabilitation Ctr.); Song, Won-Kyung (Natl. Rehabilitation Ctr.)*

12:15-12:30   WeB02.5
Accuracy and Repeatability of Parameter Estimation Methods from
Ambulatory Data for the Wrist Joint **1292-1296**

Esmaeili Malekabadi, Mohammad (Nanyang Technological Univ.); Moussouni, Sarah (Nanyang Technological*
Univ.); Widjaja, Ferdinan (Nanyang Technological Univ.); Kumudu Chalaka Gamage, Welihena (Nanyang
Technological Univ.); Campolo, Domenico (Nanyang Technological Univ.)

12:30-12:45   WeB02.6
A Motor-Control Training Method for Smoothness and Timing of Voluntary Arm
Movements in a Virtual Tennis Task **1297-1300**

Tanaka, Yoshiyuki (Hiroshima Univ.); Inoue, Haruhito (Hiroshima Univ.);*
Tsuji, Toshio (Hiroshima Univ.); Imamura, Nobuaki (Hiroshima Kokusai Univ.)

6.2.4 Futures in Brain-Machine Interfaces (Minisymposium)
Chair: Carmena, Jose M. *(Univ. of California, Berkeley)*
Co-Chair: Sanchez, Justin C. *(Univ. of Miami)*

11:15-11:30   WeB03.1
Monkey Models for Brain-Machine Interfaces: The Need for Maintaining Diversity **1301-1305**

Nuyujukian, Paul (Stanford Univ.); Fan, Joline M. (Stanford Univ.); Gilja, Vikash (Stanford Univ.);
Kalanithi, Paul (Stanford Univ.); Chestek, Cynthia (Stanford Univ.); Shenoy, Krishna V. (Stanford Univ.)*

11:30-11:45   WeB03.2
BrainGate Pilot Clinical Trials: Progress in Translating Neural Engineering Principles to Clinical Testing .... *

Hochberg, Leigh (VA/Brown U./MGH/Harvard Med. School); Simeral, John (Brown Univ.); Aceros, Juan (Brown*
Univ.); Black, Michael J. (Brown Univ.); Bacher, Daniel (Brown Univ.); Berhanu, Etsub (Massachusetts General
Hospital); Borton, David (Brown Univ.); Cash, Sydney (Massachusetts General Hospital); Feldman, Jessica
(Brown Univ.); Gallivan, Erin (Massachusetts General Hospital); Homer, Mark (Brown Univ.); Jarosiewicz, Beata
(Brown Univ.); King, Brandon (Brown Univ.); Liu, Jie (Brown Univ.); Malik, Wasim Q. (Massachusetts Inst. of
Tech.); Masse, Nicolas (Brown Univ.); Patterson, William (Brown Univ.); Perge, János (Brown Univ.); Rosler,
David (Providence VA Medical Ctr.); Schmansky, Nicholas (Massachusetts General Hospital); Truccolo, Wilson
(Brown Univ.); Yin, Ming (Brown Univ.); Nurmikko, Arto (Brown Univ.); Donoghue, John, (Brown Univ.)

11:45-12:00   **WeB03.3**

Brain-Machine Interfaces in Activities of Daily Living: Innovating a New Roadmap for Experimentation .... *

Mahmoudi, Babak (Univ. of Miami); Pohlmeyer, Eric (Univ. of Miami); Prasad, Abhishek (Univ. of Miami); Sanchez, Justin C. (Univ. of Miami)*

12:00-12:15   **WeB03.4**

Learning Mechanisms Underlying Neuroprosthetic Control .... *

Ganguly, Karunesh (Univ. of California, San Francisco); Orsborn, Amy (Univ. of California Berkeley); Koralek, Aaron (UC Berkeley); Long, John D. (Univ. of California, Berkeley); Dangi, Siddharth (Univ. of California, Berkeley); Schulman, John (UC Berkeley); Gowda, Suraj (EECS, Univ. of California, Berkeley); Moorman, Helene (UC Berkeley); Carmena, Jose M. (Univ. of California, Berkeley)*

WeB05: 11:15-12:45	Essex Ballroom North Westin

6.4.14 Restoring or Augmenting Impaired Sensory Function for Posture and Gait I (Oral Session)
Chair: Sienko, Kathleen H. *(Univ. of Michigan)*
Co-Chair: Loughlin, Patrick *(Univ. of Pittsburgh)*

11:15-11:30   **WeB05.1**

A Balance Control Model Predicts How Vestibular Loss Subjects Benefit from a Vibrotactile Balance Prosthesis 1306-1309

Goodworth, Adam (Univ. of Hartford); Wall, Conrad (Harvard Medical School); Peterka, Robert (Oregon Health & Science Univ.)*

11:30-11:45   **WeB05.2**

Designing Vibrotactile Balance Feedback for Desired Body Sway Reductions 1310-1313

Loughlin, Patrick (Univ. of Pittsburgh); Mahboobin, Arash (Univ. of Pittsburgh); Furman, Joseph (Univ. of Pittsburgh Medical Ctr.)*

11:45-12:00   **WeB05.3**

Improving Impaired Balance Function: Real-Time versus Carry-Over Effects of Prosthetic Feedback 1314-1318

Allum, John HJ (Basel Univ.); Carpenter, Mark (School of Human Kinetics, The Univ. of British Columbia); Horslen, Brian (School of Human Kinetics, The Univ. of British Columbia); Davis, Justin (School of Human Kinetics, The Univ. of British Columbia.); Honegger, Flurin (Dept of ORL, Univ. Hospital Basel); Tang, Kok-Sing (Dept of ORL, Univ. Hospital Basel); Kessler, Paul (Dept of ORL, Buerger Hospital Solothurn)*

12:00-12:15   **WeB05.4**

An Integrated Vestibular-Cochlear Prosthesis for Restoring Balance and Hearing 1319-1322

Lu, Thomas (Univ. of California); Djalilian, Hamid (Univ. of California); Zeng, Fan -Gang (Univ. of California, Irvine); Chen, Hongbin (Nurotron BioTech.); Sun, Xiaoan (Nurotron BioTech.)*

12:15-12:30   **WeB05.5**

Can an Electro-Tactile Vestibular Substitution System Improve Balance in Patients with Unilateral Vestibular Loss under Altered Somatosensory Conditions from the Foot and Ankle? 1323-1326

Vuillerme, Nicolas (FRE 3405, AGIM (AGeing Imaging Modeling), CNRS-UJF-EPHE, Grenoble, France); Hlavackova, Petra (AGIM Lab., CNRS-UJF-EPHE); Franco, Céline (UJF-Grenoble 1/CNRS/TIMC-IMAG UMR 5525 & FRE 3405 AGIM (AGeing Imaging Modeling), CNRS-UJF-EPHE); Diot, Bruno (IDS SA); Demongeot, Jacques (Laboratoire TIMC-IMAG); Payan, Yohan (Laboratoire TIMC-IMAG)*

12:30-12:45   **WeB05.6**

Development and Validation of a Clinic Based Balance Assessment Technology 1327-1330

Walsh, Lorcan (Natl. Univ. of Ireland Maynooth); Greene, Barry R. (Intel); McGrath, Denise (Univ. College Dublin); Burns, Adrian (Intel); Caulfield, Brian (UCD)*

WeB07: 11:15-12:45	Berkeley Marriott

12.1.3 Student Paper Competition III (Oral Session)
Chair: Ding, Lei *(Univ. of Oklahoma)*
Co-Chair: Yan, Renfei *(Pennsylvania State Univ.)*

11:15-11:30   **WeB07.1**

Automated Unsupervised Respiratory Event Analysis .... *

Robles-Rubio, Carlos Alejandro (McGill Univ.); Brown, Karen (McGill Univ.); Kearney, Robert Edward (McGill Univ.)*

11:30-11:45   WeB07.2

Instrumentation to Record Evoked Potentials for Closed-Loop Control of Deep Brain Stimulation .... *

Kent, Alexander* (Duke Univ.); Grill, Warren (Duke Univ.)

11:45-12:00   WeB07.3

**Robustness of the P-U and LnD-U Loop Wave Speed Estimation Methods: Effects of the Diastolic
Pressure Decay and Vessel Wall Non-Linearities .... ***

Mynard, Jonathan (Murdoch Children's Research Inst.); Davidson, Malcolm R. (Dept. of Chemical &
Biomolecular Eng., Univ. of Melbourne); Penny, Daniel (Murdoch Children's Research Inst.);
Smolich, Joseph (Murdoch Children's Research Inst.)*

12:00-12:15   WeB07.4

**A Prototype 64-Electrode Stimulator in 65 nm CMOS Process towards a
High Density Epi-Retinal Prosthesis .... ***

Tran, Nhan (Univ. of Melbourne); Skafidas, Stan (NICTA Victoria Research Lab); Yang, Jiawei (Univ. of
Melbourne); Bai, Shun (Univ. of Melbourne); Fu, Meng (Univ. of Melbourne); Ng, David (NICTA Victoria
Research Lab); Halpern, Mark E (NICTA Victoria Res. Lab.); Mareels, Iven (Melbourne Univ., Australia)*

12:15-12:30   WeB07.5

On-Chip Incubation System for Long-Term Microfluidic Cell Culture .... *

Takano, Atsushi (Frontier R&D Ctr., Tokyo Denki Univ.); Ogawa, Tomohisa (Tokyo Denki Univ.);
Tanaka, Masato (Tokyo Denki Univ.); Futai, Nobuyuki (Tokyo Denki Univ.)*

WeB11: 11:15-12:45   Wellesley Marriott
5.1.17 Mechanical Devices (Oral Session)
Chair: Timms, Daniel Lee *(Bivacor Pty Ltd)*
Co-Chair: Miura, Hidekazu *(Tohoku Univ.)*

11:15-11:30   WeB11.1

**Improvement of Hemocompatibility for Hydrodynamic Levitation Centrifugal Pump by
Optimizing Step Bearings 1331-1334**

Kosaka, Ryo (AIST); Yada, Toru (Graduate School of Tokyo Univ. of Science); Nishida, Masahiro (Natl. Inst. of
Advanced Industrial Science & Tech. (AIST)); Maruyama, Osamu (Natl. Inst. of Advanced Industrial Science &
Tech. (AIST)); Yamane, Takashi (Natl. Inst. of Advanced Industrial Science & Tech. (AIST))*

11:30-11:45   WeB11.2

Frank-Starling Control of a Left Ventricular Assist Device 1335-1338

Stevens, Michael Charles (Univ. of Queensland); Gaddum, Nicholas Richard (Critical Care Research Group);
Pearcy, Mark (Queensland Univ. of Tech.); Salamonsen, Robert F (Alfred Hospital);
Timms, Daniel Lee (Bivacor Pty Ltd); Mason, David Glen (Univ. of Queensland);
Fraser, John F. (Prince Charles Hospital, Brisbane, Queensland)*

11:45-12:00   WeB11.3

**The Aortic Valve Dynamics Role in the Recovery Treatments of Patients with
Left Ventricular Assist Devices 1339-1342**

Faragallah, George (Univ. of Central Florida); Wang, Yu (Univ. of Central Florida);
Divo, Eduardo (Daytona State College); Simaan, Marwan (Univ. of Central Florida)*

12:00-12:15   WeB11.4

**Noninvasive Miniaturized Mass-Flow Meter Using a Curved Cannula for
Implantable Axial Flow Blood Pump 1343-1346**

Kosaka, Ryo (AIST); Nishida, Masahiro (Natl. Inst. of Advanced Industrial Science & Tech. (AIST));
Maruyama, Osamu (Natl. Inst. of Advanced Industrial Science & Tech. (AIST));
Yamane, Takashi (Natl. Inst. of Advanced Industrial Science & Tech. (AIST))*

12:15-12:30   WeB11.5

**A New Index Measured by Cardiovascular Magnetic Resonance Imaging to
Detect Mechanical Heart Valve Malfunction 1347-1350**

Garcia, Julio (Laval Univ.); Marrufo, Oscar (Univ. Autonoma Metropolitana); Rodriguez, Alfredo O (UAM,
Iztapalapa); Pibarot, Philippe (Laval Univ.); Kadem, Lyes (Concordia Univ.)*

12:30-12:45   WeB11.6

Development of a Total Artificial Heart Using Centrifugal Rotary Blood Pump **1351-1354**

  Miura, Hidekazu* (Tohoku Univ.)

WeB13: 11:15-12:45   Arlington Marriott
4.5.6 Parameter Estimation and Inverse Problems in Biology (Oral Session)
Chair: Marmarelis, Vasilis *(Univ. of Southern California)*
Co-Chair: Taberner, Andrew *(The Univ. of Auckland)*

11:15-11:30   WeB13.1

Reconstruction of Multiple Gastric Electrical Wave Fronts Using Potential Based Inverse Methods **1355-1358**

  Kim, Juliana* (Univ. of Auckland); Pullan, Andrew (Univ. of Auckland); Cheng, Leo (The Univ. of Auckland)

11:30-11:45   WeB13.2

Permittivity Estimation for Breast Cancer Detection Using Particle Swarm Optimization Algorithm **1359-1362**

  Modiri, Arezoo* (Univ. of Texas at Dallas); Kiasaleh, Kamran (Univ. of Texas at Dallas)

11:45-12:00   WeB13.3

Comparison of System Identification Techniques in the Analysis of a
Phantom for Studying Shaken-Baby Syndrome **1363-1366**

  Lintern, Thomas Oliver* (The Univ. of Auckland); Finch, Mark Christopher (The Univ. of Auckland); Taberner,
  Andrew (The Univ. of Auckland); Nielsen, Poul (The Univ. of Auckland); Nash, Martyn (Univ. of Auckland)

12:00-12:15   WeB13.4

Inverse Modeling for Heat Conduction Problem in Human Abdominal Phantom **1367-1370**

  Huang, Ming* (Univ. of Aizu); Chen, Wenxi (Univ. of Aizu)

12:15-12:30   WeB13.5

Estimating Parameters in Genetic Regulatory Networks with SUM Logic **1371-1374**

  Tian, LiPing (Beijing Wuzi Univ.); Liu, LiZhi (Univ. of Saskatchewan); Wu, Fang Xiang* (Univ. of Saskatchewan)

12:30-12:45   WeB13.6

Tissue-Based Optimization of a Sino-Atrial Node Disc Model **1375-1378**

  Al Abed, Amr* (Univ. of New South Wales); Guo, Tianruo (Univ. of New South Wales);
  Lovell, Nigel (Univ. of New South Wales); Dokos, Socrates (Univ. of New South Wales)

WeB16: 11:15-12:45   Darthmouth Marriott
9.2.15 Extending the Benefits of Virtual Reality to Rehabilitation Through
Technology and Methodology Combinations (Oral Session)
Chair: Keshner, Emily *(Temple Univ.)*
Co-Chair: Rikakis, Thanassis *(Arizona State Univ.)*

11:15-11:30   WeB16.1

Augmenting Sensory-Motor Conflict Promotes Adaptation of
Postural Behaviors in a Virtual Environment **1379-1382**

  Keshner, Emily* (Temple Univ.); Slaboda, Jill (Temple Univ.); Buddharaju, Ravi (Temple Univ.);
  Lanaria, Lois (Temple Univ.); Norman, Jeremy (Temple Univ.)

11:30-11:45   WeB16.2

Incorporating Virtual Reality Graphics with Brain Imaging for
Assessment of Sport-Related Concussions **1383-1386**

  Slobounov, Semyon* (Penn State Univ.); Sebastianelli, Wayne (Penn State Univ.);
  Newell, Karl (Pennsylvania State Univ.)

11:45-12:00   WeB16.3

Interactive Rehabilitation and Dynamical Analysis of Scalp EEG **1387-1390**

  Faith, Aaron* (Arizona State Univ.); Chen, Yinpeng (Arizona State Univ.); Rikakis, Thanassis (Arizona State
  Univ.); Iasemidis, Leonidas (Arizona State Univ.)

12:00-12:15   WeB16.4

Utilizing Media Arts Principles for Developing Effective Interactive Neurorehabilitation Systems **1391-1394**

  Rikakis, Thanassis* (Arizona State Univ.)

12:15-12:30   WeB16.5

Adaptive Strategy for Multi-User Robotic Rehabilitation Games **1395-1398**

*Caurin, Glauco (Univ. of Sao Paulo); Siqueira, Adriano (Univ. of São Paulo); Andrade, Kleber de Oliveira (Univ.
de São Paulo); Joaquim, Ricardo Cezar (EESC – Univ. of São Paulo); Krebs, Hermano Igo* (MIT)*

12:30-12:45   WeB16.6

A Computational Framework for Constructing Interactive Feedback for Assisting Motor Learning **1399-1402**

Sundaram, Hari (Arizona State Univ.); Rikakis, Thanassis (Arizona State Univ.);
Chen, Yinpeng (Arizona State Univ.)*

WeB19: 11:15-12:45   Salons AB Marriott
1.5.15 Connectivity and Causality (Oral Session)
Chair: Principe, Jose *(Univ. of Florida)*
Co-Chair: Tong, Shanbao *(Shanghai Jiao Tong Univ.)*

11:15-11:30   WeB19.1

**Study of Neurovascular and Autonomic Response in a Divided Attention Test by
Means of EEG, ECG and NIRS Signals** **1403-1406**

*Bari, Vlasta (Univ. of Milan, Milan, Italy); Calcagnile, Paola (Univ. del Salento, Istituto Italiano di Tecnologia);
Molteni, Erika (Politecnico di Milano); Re, Rebecca (Politecnico di Milano); Contini, Davide (Politecnico di
Milano); Spinelli, Lorenzo (IFN-CNR); Caffini, Matteo (Polytechnic Univ. of Milan); Torricelli, Alessandro
(Politecnico di Milano); Cubeddu, Rinaldo (Politecnico di Milano); Cerutti, Sergio (Politecnico di Milano);
Bianchi, Anna Maria* (Politecnico di Milano)*

11:30-11:45   WeB19.2

Robust EEG Preprocessing for Dependence-Based Condition Discrimination **1407-1410**

Fadlallah, Bilal (Univ. of Florida); Seth, Sohan (Univ. of Florida); Keil, Andreas (Univ. of Florida);
Principe, Jose (Univ. of Florida)*

11:45-12:00   WeB19.3

Modeling Neuronal Source Dynamics and Interactions During Seizure **1411-1414**

Mullen, Tim (Univ. of California, San Diego); Akalin Acar, Zeynep (Univ. of California San Diego);
Worrell, Gregory A. (Mayo Clinic); Makeig, Scott (Univ. of California San Diego)*

12:00-12:15   WeB19.4

**Cortical Networks for Rotational Uncertainty Effect in Mental Rotation Task by
Partial Directed Coherence Analysis of EEG** **1415-1418**

*Yan, Jing (Dept. of Biomedical Eng., Shanghai Jiao Tong Univ., China); Guo, Xiaoli (Shanghai Jiao Tong Univ.);
Sun, Junfeng* (Shanghai Jiao Tong Univ.); Tong, Shanbao (Shanghai Jiao Tong Univ.)*

12:15-12:30   WeB19.5

**Graphic Patterns of Cortical Functional Connectivity of Depressed Patients on the
Basis of EEG Measurements** **1419-1422**

*Sun, Yu (Loughborough Univ.); Hu, Sijung (Loughborough Univ.); Chambers, Jonathon A. (Cardiff Univ.);
Zhu, Yisheng (Shanghai Jiaotong Univ.); Tong, Shanbao* (Shanghai Jiao Tong Univ.)*

12:30-12:45   WeB19.6

Kalman Filter-Based Time-Varying Cortical Connectivity Analysis of Newborn EEG **1423-1426**

Omidvarnia, Amir Hossein (Univ. of Queensland); Mesbah, Mostefa (Univ. of Queensland); Khlif, Mohamed
Salah (Univ. of Queensland); O'Toole, John (Univ. of Deusto); Colditz, Paul (Univ. of Queensland);
Boashash, Boualem (Univ. of Queensland)*

WeB20: 11:15-12:45   Salons CD Marriott
1.2.25 Signal Processing in Physiological Systems II (Oral Session)
Chair: Thakor, Nitish *(Johns Hopkins Univ.)*
Co-Chair: Tian, Jie *(Chinese Acad. of Sciences)*

11:15-11:30   WeB20.1

**A Two-Stage Cascade Nonlinear Dynamical Model of Single Neurons for the Separation and
Quantification of Pre and Post-Synaptic Mechanisms of Synaptic Transmission** **1427-1430**

Lu, Ude (Univ. of Southern California); Roach, Shane (Univ. of Southern California); Song, Dong (Univ. of
Southern California); Berger, Theodore (Univ. of Southern California)*

11:30-11:45   WeB20.2

A State-Space Model of the Burst Suppression Ratio **1431-1434**

Chemali, Jessica Jean* (Massachusetts General Hospital); Wong, Kin Foon Kevin (Massachusetts General Hospital); Solt, Ken (Massachusetts General Hospital); Brown, Emery N (MGH-Harvard Medical School-MIT)

11:45-12:00   WeB20.3

A Bayesian Framework for Analyzing iEEG Data from a Rat Model of Epilepsy **1435-1438**

Santaniello, Sabato* (Johns Hopkins Univ.); Sherman, David (Infinite Biomedical Technologies); Mirski, Marek (Johns Hopkins Univ.); Thakor, Nitish (Johns Hopkins Univ.); Sarma, Sridevi V. (Johns Hopkins Univ.)

12:00-12:15   WeB20.4

Assessing the Impact of Signal Normalization: Preliminary Results on Epileptic Seizure Detection **1439-1442**

Logesparan, Lojini (Imperial College London); Casson, Alexander James* (Imperial College London); Rodriguez-Villegas, Esther (Imperial College London)

12:15-12:30   WeB20.5

An Algorithm for Detecting Seizure Termination in Scalp EEG **1443-1446**

Shoeb, Ali* (Massachusetts Inst. of Tech.); Kharbouch, Alaa (MIT); Soegaard, Jacqueline (MIT); Guttag, John (MIT)

12:30-12:45   WeB20.6

Online EEG Channel Weighting for Detection of Seizures in the Neonate **1447-1450**

Temko, Andriy (Univ. College Cork); Lightbody, Gordon (Univ. College Cork); Boylan, Geraldine (Univ. College Cork); Marnane, Liam* (Univ. College Cork)

WeB21: 11:15-12:45   Salon E Marriott
1.3.32 Nonlinear Analysis of Biomedical Signals I (Oral Session)
Chair: Lake, Douglas E. *(Univ. of Virginia)*
Co-Chair: Schneider, Uwe *(FSU Jena)*

11:15-11:30   WeB21.1

Multi-Scale Characteristics of Resampled Fetal Heart Rate Pattern Provide
Novel Fetal Developmental Indices **1451-1454**

Hoyer, Dirk* (Jena Univ. Hospital); Nowack, Samuel (Biomagnetic Ctr., Friedrich Schiller Univ., Jena, Germany); Schneider, Uwe (FSU Jena)

11:30-11:45   WeB21.2

Phase Plane Based Identification of Fetal Heart Rate Patterns **1455-1458**

Govindan, Rathinaswamy* (UAMS); Vairavan, Srinivasan (Univ. of Arkansas at Little Rock); Sriram, Bhargavi (Univ. of Arkansas at Little Rock); Wilson, James (Univ. of Arkansas at Little Rock); Preissl, Hubert (Univ. of Tübingen); Eswaran, Hari (Univ. of Arkansas for Medical Sci)

11:45-12:00   WeB21.3

Quantification of Cardio-Respiratory Interactions in Healthy Children During
Night-Time Sleep Using Joint Symbolic Dynamics **1459-1462**

Kabir, Muammar Muhammad* (The Univ. of Adelaide); Kohler, Mark (Univ. of South Australia); Abbott, Derek (The Univ. of Adelaide); Baumert, Mathias (The Univ. of Adelaide)

12:00-12:15   WeB21.4

Improved Entropy Rate Estimation in Physiological Data **1463-1466**

Lake, Douglas E* (Univ. of Virginia)

12:15-12:30   WeB21.5

Noninvasive Organization Analysis Along Consecutive Episodes of Paroxysmal Atrial Fibrillation **1467-1470**

Alcaraz Martinez, Raul (Univ. of Castilla-La Mancha); Hornero, Fernando (General Univ. Hospital of Valencia); Rieta, J. J.* (Univ. Politecnica de Valencia)

12:30-12:45   WeB21.6

Electropathological Substrate Detection of Persistent Atrial Fibrillation – A Novel Method to
Analyze Unipolar Electrograms of Noncontact Mapping **1471-1474**

Zhao, Jichao* (Univ. of Auckland); Huang, Wen (Fu Wai Hospital & Cardiovascular Inst.); Yao, Yan (Fu Wai Hospital & Cardiovascular Inst.); Trew, Mark L. (Univ. of Auckland); Smaill, Bruce (Univ. of Auckland); Pullan, Andrew (Univ. of Auckland); Zhang, Shu (Fu Wai Hospital & Cardiovascular Inst.)

1.2.8 Innovative Measurements and Processing for Sleep Studies (Oral Session)
Chair: Cerutti, Sergio *(Pol. di Milano)*
Co-Chair: Bianchi, Anna Maria *(Pol. di Milano)*

11:15-11:30   WeB22.1
Cardiovascular and Respiratory Regulation During Sleep in Patients with
Sleep Apnea with and without Hypertension **1475-1478**
  Penzel, Thomas* (Charite Univ. Hospital); Suhrbier, Alexander (Inst. for Applied Computer Science);
  Bretthauer, G (Inst. for Applied Computer Science); Riedl, Maik (Univ. Potsdam); Wessel, Niels (Humboldt-Univ.
  zu Berlin); Kurths, Juergen (Univ. Potsdam); Malberg, Hagen (Dresden Technical Univ.);
  Fietze, Ingo (Charite-Univ.smedizin Berlin)

11:30-11:45   WeB22.2
Mapping Sleep Using Coupled Biological Oscillations **1479-1482**
  Thomas, Robert Joseph* (Beth Israel Deaconess Medical Ctr.);
  Mietus, Joseph E. (Beth Israel Deaconess Medical Ctr.)

11:45-12:00   WeB22.3
Sleep Apnoea Detection in Children using PPG Envelope-Based Dynamic Features **1483-1486**
  Sepúlveda Cano, Lina María (Univ. Nacional de Colombia Sede Manizales); Gil, Eduardo (Zaragoza Univ. &
  CIBER-BBN); Laguna, Pablo (Zaragoza Univ. & CIBER-BBN); Castellanos-Dominguez, Germán* (Univ.
  Nacional de Colombia)

12:00-12:15   WeB22.4
Monitoring Ultradian Changes in Cardiorespiratory Control in Obstructive Sleep Apnea Syndrome **1487-1490**
  Khoo, Michael* (Univ. of Southern California); Wang, Wenli (Univ. of Southern California);
  Chalacheva, Patjanaporn (Univ. of Southern California)

12:15-12:30   WeB22.5
Automatic Detection of CAP on Central and Fronto-Central EEG Leads via Support Vector Machines **1491-1494**
  Mariani, Sara* (Politecnico di Milano); Grassi, Andrea (Sleep Disorders Ctr., Dept. of Neurology, Univ. of
  Parma, Parma, Italy); Mendez, Martin Oswaldo (Univ. Autonoma de San Luis Potosi); Parrino, Liborio (Sleep
  Disorders Ctr., Dept. of Neurology, Univ. of Parma, Parma, Italy); Terzano, Mario Giovanni (Sleep Disorders
  Ctr., Dept. of Neurology, Univ. of Parma, Parma, Italy); Bianchi, Anna Maria (Politecnico di Milano)

12:30-12:45   WeB22.6
CAP Sleep in Insomnia: New Methodological Aspects for Sleep Microstructure Analysis **1495-1498**
  Chouvarda, Ioanna* (Aristotle Univ.); Mendez, Martin Oswaldo (Univ. Autonoma de San Luis Potosi);
  Rosso, Valentina (Sleep Disorders Ctr., Dept. of Neurology, Univ. of Parma, Parma, Italy); Bianchi, Anna Maria
  (Politecnico di Milano); Parrino, Liborio (Sleep Disorders Ctr., Dept. of Neurology, Univ. of Parma, Parma, Italy);
  Grassi, Andrea (Sleep Disorders Ctr., Dept. of Neurology, Univ. of Parma, Parma, Italy);
  Terzano, Mario Giovanni (Sleep Disorders Ctr., Dept. of Neurology, Univ. of Parma, Parma, Italy);
  Maglaveras, Nikolaos (Aristotle Univ. of Thessaloniki); Cerutti, Sergio (Politecnico di Milano)

10.1.1 Personal, Pervasive, Preventive, and Participatory Health Systems (Oral Session)
Chair: Lovell, Nigel *(Univ. of New South Wales)*
Co-Chair: Bamberg, Stacy J. Morris *(Univ. of Utah)*

11:15-11:30   WeB23.1
Classification Between Non-Multiple Fallers and Multiple Fallers Using a
Triaxial Accelerometry-Based System **1499-1502**
  Liu, Ying* (Univ. of New South Wales); Redmond, Stephen James (Univ. of New South Wales);
  Narayanan, Michael Ravi (Univ. of New South Wales); Lovell, Nigel (Univ. of New South Wales)

11:30-11:45   WeB23.2
Characterization of Maternal Body Movement During Sleep before and after Parturition **1503-1506**
  Liu, Zhaoqin* (Univ. of Aizu); Jiang, Linlin (Univ. of Aizu); Chen, Wenxi (Univ. of Aizu);
  Kitamura, Kei-ichiro (Univ. of Kanazawa); Nemoto, Tetsu (Univ. of Kanazawa)

11:45-12:00   WeB23.3

A Wireless Sensory Feedback System for Real-Time Gait Modification **1507-1510**

Redd, Christian Brandt* (Univ. of Utah); Bamberg, Stacy J Morris (Univ. of Utah)

12:00-12:15   WeB23.4

Analysis of Time-Series Correlation between Weighted Lifestyle Data and Health Data **1511-1514**

Takeuchi, Hiroshi* (Takasaki Univ. of Health & Welfare); Mayuzumi, Yuuki (Takasaki Univ. of Health & Welfare); Kodama, Naoki (Takasaki Univ. of Health & Welfare)

12:15-12:30   WeB23.5

Evaluation of a Novel Cardiac Output Index on Healthy Elderly, Cardiovascular and Heart Failure Patients During Dynamic Exercise **1515-1518**

Wang, Ling (Beihang Univ.); Poon, Carmen CY* (The Chinese Univ. of Hong Kong); Yip, Gabriel W. K. (Prince of Wales Hospital, The Chinese Univ. of Hong Kong); Yu, Cheuk-Man (Prince of Wales Hospital, The Chinese Univ. of Hong Kong); Zhang, Yuan-Ting (The Chinese Univ. of Hong Kong)

12:30-12:45   WeB23.6

An Improved Scheme of IPI-Based Entity Identifier Generation for Securing Body Sensor Networks **1519-1522**

Hong, Tian (Shenzhen Inst. of Advanced Tech., Chinese Acad. of Sciences); Bao, Shu-Di* (Shenzhen Inst. of Advance Tech., Chinese Acad. of Sciences); Zhang, Yuan-Ting (The Chinese Univ. of Hong Kong)

WeB24: 11:15-12:45   Salon HI Marriott
10.3.3 mHealth (Oral Session)
Chair: Puiatti, Alessandro *(Univ. of Applied Science of Southern Switzerland)*
Co-Chair: Philip, Nada *(Kingston Univ.)*

11:15-11:30   WeB24.1

A Collaborative Awareness System for Chronic Disease Medication Adherence Applied to HIV Infection **1523-1527**

Moore, John* (Massachusetts Institute of Tech.); Hardy, Helene (Boston Medical Ctr.); Skolnik, Paul (Boston Medical Ctr.); Moss, Frank (Massachusetts Institute of Tech.)

11:30-11:45   WeB24.2

A Sensor Network to Iphone Interface Separating Continuous and Sporadic Processes in Mobile Telemedicine **1528-1531**

D'Angelo, Lorenzo Tancredi* (Technische Univ. Muenchen); Schneider, Michael (TU Muenchen); Lueth, Tim (Technical Univ. of Munich)

11:45-12:00   WeB24.3

Mapping of Multiple Parameter M-Health Scenarios to Mobile WiMAX QoS Variables **1532-1535**

Alinejad, Ali* (Kingston Univ.); Philip, Nada (Kingston Univ.); Istepanian, Robert (Kingston Univ. London)

12:00-12:15   WeB24.4

Estimation of Patient Compliance in Application of Adherent Mobile Cardiac Telemetry Device **1536-1539**

Engel, Jonathan* (Corventis, Inc); Chakravarthy, Niranjan (Corventis, Inc); Katra, Rodolphe (MetroHealth Campus, Case Western Reserve Univ.); Mazar, Scott (Corventis, Inc); Libbus, Imad (Corventis); Chavan, Abhi (Corventis, Inc)

12:15-12:30   WeB24.5

Mobile Health for Drug Dose Optimisation **1540-1543**

Larsen, Mark Erik* (Univ. of Oxford); Farmer, Andrew (Univ. of Oxford); Weaver, Andrew (Oxford Radcliffe Hospitals NHS Trust); Young, Annie (The Univ. of Warwick); Tarassenko, Lionel (Univ. of Oxford)

12:30-12:45   WeB24.6

Feasibility Assessment of Doppler Radar Long-Term Physiological Measurements **1544-1547**

Massagram, Wansuree* (Naresuan Univ.); Boric-Lubecke, Olga (Univ. of Hawaii Manoa); Lubecke, Victor (Univ. of Hawaii Manoa)

10.1.21 State-of-the-Art Technologies for AAL, eInclusion, and pHealth: The Road Ahead (Oral Session)
Chair: Maglaveras, Nikolaos *(Aristotle Univ. of Thessaloniki)*
Co-Chair: Lymberis, Andreas *(European Commission)*

11:15-11:30   WeB25.1
The Era of Micro and Nano Systems in the Biomedical Area:
Bridging the Research and Innovation Gap **1548-1551**
  Lymberis, Andreas* (European Commission)

11:30-11:45   WeB25.2
Longitudinal Monitoring of Patients with Parkinson's Disease via Wearable
Sensor Technology in the Home Setting **1552-1555**
  Patel, Shyamal* (Harvard Medical School); Chen, Bor-rong (Harvard Univ.); Mancinelli, Chiara (Harvard Medical
  School); Paganoni, Sabrina (Dept. of PM&R, Harvard Medical School); Shih, Ludy (Harvard Medical School);
  Welsh, Matt (Harvard Univ.); Dy, Jennifer (Northeastern Univ.); Bonato, Paolo (Harvard Medical School)

11:45-12:00   WeB25.3
Closing the Loop for Deep Brain Stimulation Implants Enables Personalized
Healthcare for Parkinson's Disease Patients **1556-1558**
  Eberle, Wolfgang* (imec); Penders, Julien (imec); Yazicioglu, Refet Firat (IMEC)

12:00-12:15   WeB25.4
Innovative Self Management System for Guided Cardiac Rehabilitation **1559-1562**
  Ottaviano, Manuel* (Technical Univ. of Madrid); Vera-Muñoz, Cecilia (Univ. Politécnica de Madrid (UPM));
  Arredondo, María Teresa (Technical Univ. of Madrid); Salvi, Dario (Technical Univ. of Madrid);
  Salvi, Sergio (Technical Univ. of Madrid); Paez, Jose Manuel (Technical Univ. of Madrid);
  Díaz de Barrionuevo, Arturo (Technical Univ. of Madrid)

12:15-12:30   WeB25.5
An Integrated Advanced Communication and Coaching Platform for Enabling Personalized
Management of Chronic Cardiovascular Diseases **1563-1566**
  Meneu, Teresa* (Univ. Politécnica de Valencia); Martínez-Romero, Álvaro (Instituto ITACA);
  Martínez-Millana, Antonio (Univ. Politécnica de Valencia); Guillen, Sergio (Inst. Itaca Valencia)

12:30-12:45   WeB25.6
An Ontology-Based Framework Aiming to Support Personalized Exercise Prescription:
Application in Cardiac Rehabilitation **1567-1570**
  Kostopoulos, Konstaninos (Lab of Medical Informatics, Medical School, Aristotle Univ. of Thessaloniki);
  Chouvarda, Ioanna (Aristotle Univ.); Koutkias, Vassilis (Aristotle Univ. of Thessaloniki);
  Athina, Kokonozi (Aristotle Univ. of Thessaloniki); Maglaveras, Nikolaos* (Aristotle Univ. of Thessaloniki)

4.2.2 Systems in Synthetic Biology II (Minisymposium)
Chair: Tidor, Bruce *(Massachusetts Inst. of Tech.)*
Co-Chair: Weiss, Ron *(MIT)*

11:15-11:45   WeB26.1
Making Biology Easier to Engineer .... *****
  Shetty, Reshma* (Ginkgo BioWorks)

11:45-12:15   WeB26.2
Toward Breaking the Complexity Barrier for Synthetic Biology Therapeutics .... *****
  Beal, Jacob* (BBN Technologies)

13:00-13:15   WeC01.1
On the Interlimb Coordination and Synchronization During Gait **1571-1574**
  Artemiadis, Panagiotis* *(Massachusetts Inst. of Tech.)*; Krebs, Hermano Igo *(MIT)*

13:15-13:30   WeC01.2
A Multi-DOF Robotic Exoskeleton Interface for Hand Motion Assistance **1575-1578**
  Iqbal, Jamshed* *(Univ. of Genoa – Italian Inst. of Tech. (IIT))*; Tsagarakis, Nikos *(Italian Inst. of Tech.)*;
  Caldwell, Darwin G. *(Italian Inst. of Tech.)*

13:30-13:45   WeC01.3
Supinator Extender (SUE): A Pneumatically Actuated Robot for Forearm/Wrist
Rehabilitation after Stroke **1579-1582**
  Allington, James* *(Univ. of California, Irvine)*; Spencer, Steven *(Univ. of California, Irvine)*;
  Klein, Julius *(Univ. of California at Irvine)*; Buell, Meghan *(Rehabilitation Inst. of Chicago)*;
  Reinkensmeyer, David J. *(Univ. of California)*; Bobrow, James *(Univ. of Calif, Irvine)*

13:45-14:00   WeC01.4
Treadmill Motor Current Based Anteroposterior Force Estimation Using Ground
Reaction Force Approximation Depending on Gait Cycle **1583-1589**
  Nakashima, Yasutaka* *(Waseda Univ.)*; Ando, Takeshi *(Waseda Univ.)*; Kobayashi, Yo *(Waseda Univ.)*;
  Fujie, Masakatsu G. *(Waseda Univ.)*

14:00-14:15   WeC01.5
Pelvis Motion Analysis for Gait Phase Estimation Toward Leg-Dependent Body
Weight Support at Different Walking Speed **1590-1593**
  Fujie, Masakatsu G. *(Waseda Univ.)*; Kobayashi, Yo *(Waseda Univ.)*; Watanabe, Takao* *(Waseda Univ.)*

14:15-14:30   WeC01.6
Fuzzy Adaptive Control of Electric Power-Assisted Wheelchair for Disturbance Road Driving **1594-1599**
  Seki, Hirokazu* *(Chiba Inst. of Tech.)*; Kiso, Atsushi *(Chiba Inst. of Tech.)*

13:00-13:15   WeC02.1
Evaluation of Modal Analysis Techniques using Physical Models to Detect
Osseointegration of Implants in Transfemoral Amputees **1600-1603**
  Cairns, Nicola Jeanne* *(Univ. of Strathclyde)*; Adam, Clayton *(Queensland Univ. of Tech.)*;
  Pearcy, Mark *(Queensland Univ. of Tech.)*; Smeathers, James *(Queensland Univ. of Tech.)*

13:15-13:30   WeC02.2
Optimal Tracking of a sEMG Based Force Model for a Prosthetic Hand **1604-1607**
  Potluri, Chandra Sekhar* *(Idaho State Univ.)*; Anugolu, Madhavi *(Idaho State Univ.)*; Yihun, Yimesker *(Idaho
  State Univ.)*; Jensen, Alex *(Idaho State Univ.)*; Chiu, Steve *(Idaho State Univ.)*; Schoen, Marco P. *(Idaho State
  Univ.)*; Naidu, D Subbaram *(Idaho State Univ.)*

13:30-13:45   WeC02.3
Decoding of Individuated Finger Movements Using Surface EMG and Input
Optimization Applying a Genetic Algorithm **1608-1611**
  Kanitz, Gunter Robert *(Scuola Superiore Sant'Anna)*; Antfolk, Christian *(Lund Univ.)*; Cipriani, Christian*
  (Scuola Superiore Sant'Anna); Sebelius, Fredrik *(Dept. of Elec. Measurements, Lund Univ., Sweden)*;
  Carrozza, Maria Chiara *(Scuola Superiore Sant'Anna)*

13:45-14:00   WeC02.4

Biomechanical Consideration Based on the Unrestrained Gait Measurement of Trans-Femoral Amputee with a Prosthetic Limb **1612-1615**

Hayashi, Yuichiro* (Graduate School, Doshisha Univ.); Tsujiuchi, Nobutaka (Doshisha Univ.); Koizumi, Takayuki (Doshisha Univ.); Matsuda, Yasushi (Kawamura Gishi Co., LTD); Tsuchiya, Youtaro (Tec Gihan Co., LTD)

14:00-14:15   WeC02.5

Control of a Myoelectric Arm Considering Cooperated Motion of Elbow and Shoulder Joints **1616-1619**

Kiguchi, Kazuo* (Saga Univ.); Hayashi, Yoshiaki (Saga Univ.)

14:15-14:30   WeC02.6

Influence of the Weight Actions of the Hand Prosthesis on the Performance of Pattern Recognition Based Myoelectric Control: Preliminary Study **1620-1623**

Cipriani, Christian* (Scuola Superiore Sant'Anna); Sassu, Rossella (Scuola Superiore Sant'Anna); Controzzi, Marco (Scuola Superiore Sant'Anna); Carrozza, Maria Chiara (Scuola Superiore Sant'Anna)

WeC03: 13:00-14:30   Essex Ballroom South Westin
6.11.1 Algorithms for Seizure Prediction: Towards Wearable Devices to Support Epileptic People (Oral Session)
Chair: Dourado, António *(FCTUC, Univ. of Coimbra)*
Co-Chair: Brown, Michael *(Univ. of Minnesota – Twin Cities)*

13:00-13:15   WeC03.1

Seizure Prediction in Epilepsy: From Circadian Concepts via Probabilistic Forecasting to Statistical Evaluation **1624-1627**

Schelter, Bjorn* (Albert-Ludwigs Univ.); Feldwisch-Drentrup, Hinnerk (Albert-Ludwigs-Univ.); Ihle, Matthias (Univ. of Freiburg, Germany); Schulze-Bonhage, Andreas (Univ. Hospital Freiburg); Timmer, Jens (Inst. of Physics, Univ. of Freiburg)

13:15-13:30   WeC03.2

Hardware for Seizure Prediction: Towards Wearable Devices to Support Epileptic People **1628-1631**

Castellaro, Cipriano (Micromed S.p.A. – Italy); Favaro, Gianpietro* (Micromed S.p.A. – Italy)

13:30-13:45   WeC03.3

Probing Cortical Excitability Using Cross-Frequency Coupling in Intracranial EEG Recordings: A New Method for Seizure Prediction **1632-1635**

Alvarado-Rojas, Catalina (ICM Research Ctr.); Valderrama, Mario (ICM Research Ctr.); Witon, Adrien (ICM Research Ctr.); Navarro, Vincent (Epilesy Unit, Pitié-Salpêtrière Hospital); Le Van Quyen, Michel* (ICM Research Ctr.)

13:45-14:00   WeC03.4

Optimizing Feature Subsets for Epileptic Seizure Prediction Studies **1636-1639**

Direito, Bruno (FCTUC, Univ. of Coimbra); Ventura, Francisco (Univ. of Coimbra); Teixeira, César* (CISUC, Univ. of Coimbra); Dourado, António (FCTUC, Univ. of Coimbra)

14:00-14:15   WeC03.5

A Low Complexity Seizure Prediction Algorithm **1640-1643**

Brown, Michael* (Univ. of Minnesota – Twin Cities); Netoff, Tay (Univ. of Minnesota); Parhi, Keshab (Univ. of Minnesota)

14:15-14:30   WeC03.6

Probing for Cortical Excitability **1644-1647**

Freestone, Dean Robert* (Univ. of Melbourne); Burkitt, Anthony Neville (Univ. of Melbourne); Lai, Alan (The Bionic Ear Inst.); Nelson, Timothy Scott (The Bionic Ear Inst.); Grayden, David B. (Univ. of Melbourne); Vogrin, Simon (St. Vincent's Hospital, Melbourne); Murphy, Michael (Dept. of Neurosurgery, St. Vincent's Hospital Melbourne); D'Souza, Wendyl (St. Vincent's Hospital, Melbourne); Badawy, Radwa (Univ. of Melbourne); Kulhmann, Levin (Univ. of Melbourne); Cook, Mark (St. Vincent's Hospital)

13:00-13:15   WeC05.1
A Point Process Approach for Analyzing Gait Variability Dynamics **1648-1651**
 Ellis, Robert (Beth Israel Deaconess Medical Ctr./Harvard Medical School); Citi, Luca (MGH/Harvard Medical School); Barbieri, Riccardo* (MGH-Harvard Medical School-MIT)

13:15-13:30   WeC05.2
Statistical Analysis of Gait Maturation in Children Based on Probability Density Functions **1652-1655**
 Wu, Yunfeng* (Xiamen Univ.); Zhong, Zhangting (Xiamen Univ.); Lu, Meng (Xiamen Univ.); He, Jia (Xiamen Univ.)

13:30-13:45   WeC05.3
Multivariate Nonlinear Regression Analysis of Trajectory Tracking Performance Using Force Reflecting Joystick in Chronic Stroke-Induced Hemiparesis **1656-1659**
 Feng, Xin* (Marquette Univ.); Winters, Jack (Marquette Univ.)

13:45-14:00   WeC05.4
Identification of Nocturnal Movements During Sleep Using the Non-Contact under Mattress Bed Sensor **1660-1663**
 Walsh, Lorcan* (Natl. Univ. of Ireland Maynooth); Moloney, Eddie (Trinity College Dublin); McLoone, Sean F. (Natl. Univ. of Ireland, Maynooth)

14:00-14:15   WeC05.5
The Frequency of Saccades Correlates to Peak Velocity in Symmetrical Disparity Vergence **1664-1667**
 Kim, Eun Hwa* (New Jersey Inst. of Techonolgy); Alvarez, Tara (New Jersey Inst. of Tech.)

14:15-14:30   WeC05.6
Vibrotactile Stimulation of the Upper Leg: Effects of Location, Stimulation Method and Habituation **1668-1671**
 Wentink, Eva C.* (Univ. of Twente); Mulder, Alex (Univ. of Twente); Rietman, Johan S (Roessingh Research & Development, Univ. of Twente, The Netherlands); Veltink, Peter (Univ. of Twente)

13:00-13:15   WeC11.1
Image-Based Estimation of Ventricular Fiber Orientations for Patient-Specific Simulations **1672-1675**
 Vadakkumpadan, Fijoy* (Johns Hopkins Univ.); Arevalo, Hermenegild (Johns Hopkins); Ceritoglu, Can (Johns Hopkins Univ.); Miller, Michael (Johns Hopkins Univ.); Trayanova, Natalia (Johns Hopkins Univ.)

13:15-13:30   WeC11.2
Experimental Validation of Alternating Transillumination for Imaging Intramural Wave Propagation **1676-1679**
 Walton, Richard David* (Univ. of Leeds); Lawrence Xavier, Christopher Dilip (Univ. of Leeds); Tachtsidis, Ilias (Univ. College London); Bernus, Olivier (Univ. of Leeds)

13:30-13:45   WeC11.3
An Optimization Framework for Inversely Estimating Myocardial Transmembrane Potentials and Localizing Ischemia **1680-1683**
 Wang, Dafang* (Univ. of Utah); Kirby, Robert M. (Univ. of Utah); MacLeod, Rob (Univ. of Utah); Johnson, Chris (Univ. of Utah)

13:45-14:00   WeC11.4
Noninvasive Reconstruction of the Three-Dimensional Ventricular Activation Sequence During Pacing and Ventricular Tachycardia in the Rabbit Heart **1684-1687**
 Han, Chengzong* (Univ. of Minnesota); Pogwizd, Steven (Univ. of Illinois at Chicago); Killingsworth, Cheryl (Dept. of Medicine, Univ. of Alabama at Birmingham); He, Bin (Univ. of Minnesota)

14:00-14:15 WeC11.5

**Slowed Propagation across the Compacta-Trabeculata Interface:
A Consequence of Fiber and Sheet Anisotropy** **1688-1692**

Gilbert, Stephen Henry* (Univ. of Leeds); Benson, Alan Philip (Univ. of Leeds); Walton, Richard David (Univ. of Leeds); Bernus, Olivier (Univ. of Leeds)

14:15-14:30 WeC11.6

**Electrophysiological Models for the Heterogeneous Canine Atria: Computational Platform for
Studying Rapid Atrial Arrhythmias** **1693-1696**

Aslanidi, Oleg* (Univ. of Manchester); Butters, Timothy (Univ. of Manchester); Ren, Christopher (Univ. of Manchester); Ryecroft, Gareth (Univ. of Manchester); Zhang, Henggui (Univ. of Manchester)

WeC19: 13:00-14:30 Salons AB Marriott
1.1.2 Recent Advances in Time-Frequency Analysis of Biosignals I (Oral Session)
Chair: Anderson, John McCune *(Univ. of Ulster)*
Co-Chair: Leonelli, Fabio *(Univ. of South Florida & Veterans Administration Hospital)*

13:00-13:15 WeC19.1

Application of Higher Order Cumulants to ECG Signals for the Cardiac Health Diagnosis **1697-1700**

Martis, Roshan Joy (Indian Inst. of Tech., Kharagpur); Acharya, Rajendra (NgeeAnn Polytechnic);
Ray, Ajoy Kumar (Indian Inst. of Tech., Kharagpur); Chakraborty, Chandan (Indian Inst. of Tech., Kharagpur)*

13:15-13:30 WeC19.2

HRV Response of Vegetative State Patient with Music Therapy **1701-1704**

Lee, Yaw-Chern (Natl. Chiao Tung Univ. Hsinchu, Taiwan); Lei, Chun-Yang (Natl. Chiao Tung Univ.);
Shih, Yi-Sen (Natl. Chiao Tung Univ.); Zhang, Wen-Chih (Natl. Chiao Tung Univ.); Tseng, Cheng-Lung (Natl.
Chiao Tung Univ.); Hou, Mark Chun-Cheng (Changhua Christian Hospital & Natl. Chao Tung Univ.);
Wang, Hui-Min (sense/tcm SOC Lab., Dept. of Elec. Eng., Natl. Chiao Tung Univ.); Huang, Sheng-Chieh
(sense/tcm SOC Lab., Dept. of Elec. Eng., Natl. Chiao Tung Univ. Hsinchu, Taiwan)*

13:30-13:45 WeC19.3

Twin-Peak Effect in Both Cardiac Response and Tempo of Popular Music **1705-1708**

Shih, Yi-Sen (Natl. Chiao Tung Univ.); Zhang, Wen-Chih (Natl. Chiao Tung Univ.); Lee, Yaw-Chern (Natl.
Chiao Tung Univ. Hsinchu, Taiwan); Lei, Chun-Yang (Natl. Chiao Tung Univ.); Tseng, Cheng-Lung (Natl. Chiao
Tung Univ.); Wang, Hui-Min (sense/tcm SOC Lab., Dept. of Elec. Eng., Natl. Chiao Tung Univ.);
Huang, Sheng-Chieh (sense/tcm SOC Lab., Dept. of Elec. Eng., Natl. Chiao Tung Univ. Hsinchu, Taiwan)*

13:45-14:00 WeC19.4

**Detection of Cardiac Arrest Using a Simplified Frequency Analysis of the
Impedance Cardiogram Recorded from Defibrillator Pads** **1709-1712**

Navarro, Cesar Oswaldo (HeartSine Technologies); Cromie, Nick A. (Royal Victoria Hospital &
Queens Univ., Belfast); Turner, Colin (Univ. of Ulster); Escalona, Omar Jacinto (Univ. of Ulster);
Anderson, John McCune (Univ. of Ulster)*

14:00-14:15 WeC19.5

**Automatic Sleep Spindles Detection – Overview and Development of a
Standard Proposal Assessment Method** **1713-1716**

Devuyst, Stéphanie (Faculté polytechnique de Mons); Dutoit, Thierry (Faculté polytechnique de Mons);
Stenuit, Patricia (CHU Vésale); Kerkhofs, Myriam (CHU Vésale)*

14:15-14:30 WeC19.6

**Induced Gamma Activity in EEG Represents Cognitive Control During
Detecting Emotional Expressions** **1717-1720**

Tang, Yingying (Shanghai Mental Health Ctr., Shanghai Jiao TongUniv. School of Medicine); Li, YingJie
(Shanghai Univ.); Wang, Jijun (Shanghai Mental Health Ctr., Shanghai Jiaotong Univ. School of Medicine);
Tong, Shanbao (Shanghai Jiao Tong Univ.); Li, Hui (Shanghai Mental Health Ctr.)*

1.2.26 Signal Processing in Physiological Systems III (Oral Session)
Chair: Kahya, Yasemin P. *(Bogazici Univ.)*
Co-Chair: James, Christopher *(Univ. of Warwick)*

13:00-13:15   WeC20.1
Correcting for Serial Dependence in Studies of Respiratory Dynamics **1721-1724**
  Gong, Jen J* (Harvard College); Wong, Kin Foon Kevin (Massachusetts General Hospital);
  Cotten, Joseph F (Massachusetts General Hospital); Solt, Ken (Massachusetts General Hospital);
  Brown, Emery N (MGH-Harvard Medical School-MIT)

13:15-13:30   WeC20.2
Analysis of the Respiratory Flow Cycle Morphology in Chronic Heart Failure
Patients Applying Principal Components Analysis **1725-1728**
  Garde, Ainara* (Univ. Politècnica de Catalunya); Giraldo, Beatriz (Univ. Poiltècnica de Catalunya);
  Sornmo, Leif (Lund Univ.); Jané, Raimon (Univ. Politècnica de Catalunya)

13:30-13:45   WeC20.3
Distilling Clinically Interpretable Information from Data Collected on
Next-Generation Wearable Sensors **1729-1732**
  Haslam, Bryan* (Massachusetts Inst. of Tech.); Gordhandas, Ankit (Massachusetts Inst. of Tech.);
  Ricciardi, Catherine (Massachusetts Inst. of Tech.); Verghese, George (Massachusetts Inst. of Tech.);
  Heldt, Thomas (Massachusetts Inst. of Tech.)

13:45-14:00   WeC20.4
Ensemble Classification for Robust Discrimination of Multi-Channel, Multi-Class
Tongue-Movement Ear Pressure Signals **1733-1736**
  Mace, Michael* (Imperial College London); Abdullah-Al-Mamun, Khondaker (Univ. of Southampton, UK); Wang,
  Shouyan (Univ. of Southampton); Gupta, Lalit (Southern Illinois Univ.); Vaidyanathan, Ravi (Univ. of Bristol)

14:00-14:15   WeC20.5
Improved Signal Processing Techniques for the Analysis of High Resolution
Serosal Slow Wave Activity in the Stomach **1737-1740**
  Paskaranandavadivel, Niranchan* (Auckland BioEng. Inst., The Univ. of Auckland, New Zealand);
  Cheng, Leo K (The Univ. of Auckland); Du, Peng (The Univ. of Auckland); O'Grady, Gregory (Univ. of
  Auckland); Pullan, Andrew (Univ. of Auckland)

14:15-14:30   WeC20.6
A Framework for the Online Analysis of Multi-Electrode Gastric Slow Wave Recordings **1741-1744**
  Bull, Simon H.* (Univ. of Auckland); O'Grady, Gregory (Univ. of Auckland); Cheng, Leo K (The Univ. of
  Auckland); Pullan, Andrew (Univ. of Auckland)

WeC21: 13:00-14:30   Salon E Marriott
1.3.33 Nonlinear Analysis of Biomedical Signals II (Oral Session)
Chair: Jones, Richard D. *(Van der Veer Inst.)*
Co-Chair: Mitsis, Georgios D. *(Univ. of Cyprus)*

13:00-13:15   WeC21.1
Analysis of Nocturnal Oxygen Saturation Recordings Using Kernel Entropy to
Assist in Sleep Apnea-Hypopnea Diagnosis **1745-1748**
  Marcos, J. Victor* (Univ. of Valladolid); Hornero, Roberto (Univ. of Valladolid); Nabney, Ian T. (Aston Univ.);
  Álvarez, Daniel (Univ. of Valladolid); del Campo, Félix (Hospital del Río Hortega)

13:15-13:30   WeC21.2
Do Anthropometric Parameters Change the Characteristics of Snoring Sound? **1749-1752**
  Azarbarzin, Ali* (The Univ. of Manitoba); Moussavi, Zahra (Univ. of Manitoba)

13:30-13:45   WeC21.3
Synchronization of Sacral Skin Blood Flow Oscillations in Response to Local Heating **1753-1756**
  Jan, Yih-Kuen* (Univ. of Oklahoma Health Sciences Ctr.); Liao, Fuyuan (Univ. of Oklahoma Health Sciences Ctr.)

13:45-14:00 WeC21.4

Matrix Completion Based ECG Compression **1757-1760**
  Polania, Luisa F. (Univ. of Delaware); Carrillo, Rafael E. (Univ. of Delaware); Blanco-Velasco, Manuel (Univ. of Alcala); Barner, Kenneth E. (Univ. of Delaware)*

14:00-14:15 WeC21.5

Low-Complexity R-Peak Detection in ECG Signals: A Preliminary Step
towards Ambulatory Fetal Monitoring **1761-1764**
  Rooijakkers, Michael Johannes (Eindhoven Univ. of Tech.); Rabotti, Chiara (Eindhoven Univ. of Tech.); Bennebroek, Martijn (Philips Research); van Meerbergen, Jef (Philips Research); Mischi, Massimo (Eindhoven Univ. of Tech.)*

14:15-14:30 WeC21.6

Regularity Analysis of Spontaneous MEG Activity in Attention-Deficit/Hyperactivity Disorder **1765-1768**
  Gomez, Carlos (Univ. of Valladolid); Poza, Jesús (Univ. of Valladolid); Garcia, Maria (Univ. of Valladolid); Fernandez, Alberto (Univ. Complutense de Madrid); Hornero, Roberto (Univ. of Valladolid)*

WeC23: 13:00-14:30   Salon G Marriott
10.5.9 Ambient Assisted Living and Smart Homes I (Oral Session)
Chair: Traver, Vicente *(Inst. ITACA)*
Co-Chair: Amft, Oliver *(Eindhoven Univ. of Tech.)*

13:00-13:15 WeC23.1

Use of Electrical Devices Reveals Our Well Being **1769-1772**
  Noury, Norbert (Univ. Claude Bernard Lyon 1)*

13:15-13:30 WeC23.2

Towards a Single Sensor Passive Solution for Automated Fall Detection **1773-1776**
  Belshaw, Michael Sweeney (Toronto Rehabilitation Inst. & Univ. of Toronto); Taati, Babak (Toronto Rehabilitation Inst. & Univ. of Toronto); Snoek, Jasper (Univ. of Toronto); Mihailidis, Alex (Univ. of Toronto)*

13:30-13:45 WeC23.3

Smart Homes to Improve the Quality of Life for All **1777-1780**
  Aiello, Marco (Univ. of Groningen); Aloise, Fabio (Fondazione Santa Lucia IRCCS); Baldoni, Roberto (Sapienza Univ. of Rome); Cincotti, Febo (Fondazione Santa Lucia IRCCS); Guger, Christoph (g.tec medical Eng. GmbH); Lazovik, Alexander (Univ. of Groningen); Mecella, Massimo (Sapienza Univ. of Rome); Pucci, Paolo (Elsag Datamat); Rinsma, Johanna (Thuiszorg Het Friese Land); Santucci, Giuseppe (Sapienza Univ. of Rome); Taglieri, Massimiliano (Elsag Datamat S.p.A.)*

13:45-14:00 WeC23.4

Distributed Activity Recognition in the Home Environment **1781-1784**
  Amft, Oliver (Eindhoven Univ. of Tech.)*

14:00-14:15 WeC23.5

Ambient Assisted Living Spaces Validation by Services and Devices Simulation **1785-1788**
  Fernandez-Llatas, Carlos (Univ. Politecnica de Valencia); Juan Bautista, Mocholi (TSB-ITACA Univ. Politecnica de Valencia); Sala, Pilar (Inst. ITACA); Juan Carlos, Naranjo (TSB-ITACA Univ. Politecnica de Valencia); Pileggi, Salvatore Flavio (TSB-ITACA Univ. Politecnica de Valencia); Guillen, Sergio (Inst. Itaca Valencia); Traver, Vicente (Inst. ITACA)*

14:15-14:30 WeC23.6

Review of Wireless Sensors Networks in Health Applications **1789-1793**
  Dorronzoro Zubiete, Enrique (Univ. de Sevilla); Fernandez-Luque, Luis (Northern Research Inst. Tromsø (Norut)); Medina Rodriguez, Ana Veronica (Univ. de Sevilla); Gomez Gonzalez, Isabel Maria (Univ. de Sevilla)*

13:00-13:15   WeC24.1
A Semi-Supervised Hidden Markov Model-Based Activity Monitoring System 1794-1797
  Xu, Min* (Blue Highway LLC); Zuo, Long (Blue Highway LLC); Iyengar, Satish (Blue Highway LLC);
  Goldfain, Albert (Blue Highway LLC); DelloStritto, Jim (Blue Highway LLC)

13:15-13:30   WeC24.2
Towards Mental Stress Detection Using Wearable Physiological Sensors 1798-1801
  Wijsman, Jacqueline* (Univ. of Twente, Holst Ctr.); Penders, Julien (imec); Grundlehner, Bernard (Holst Ctr.);
  Liu, Hao (IMEC-NL); Hermens, H.J. (RRD)

13:30-13:45   WeC24.3
Wearable Sensor Platform and Mobile Application for Use in Cognitive
Behavioral Therapy for Drug Addiction and PTSD 1802-1805
  Fletcher, Richard Ribon* (Massachusetts Inst. of Tech.); Tam, Sharon (Massachusetts Inst. of Tech.); Omojola,
  Olufemi Abidemi (MIT); Redemske, Richard (MIT Media Lab); Kwan, Joyce (Massachusetts Inst. of Tech.)

13:45-14:00   WeC24.4
A Low-Power Multi-Modal Body Sensor Network with Application to Epileptic Seizure Monitoring 1806-1809
  Altini, Marco (imec/Holst Ctr.); Del Din, Silvia (Univ. of Padova); Patel, Shyamal* (Harvard Medical School);
  Schachter, Steven (Beth Israel Deaconess Medical Ctr., Harvard Medical School); Penders, Julien (imec);
  Bonato, Paolo (Harvard Medical School)

14:00-14:15   WeC24.5
Assessment of Bradykinesia in Parkinson's Disease Patients through a Multi-Parametric System 1810-1813
  Pastorino, Matteo* (Univ. Politecnica de Madrid); Cancela, Jorge (Univ. Politécnica de Madrid);
  Arredondo, María Teresa (Technical Univ. of Madrid); Pansera, Mario (Univ. Politecnica de Madrid);
  Pastor, Laura (Univ. Politécnica de Madrid); Villagra, Federico (Univ. of Navarra); Pastor, María A. (Univ. of
  Navarra, Ctr. for Applied Medical Research); Martín, José Antonio (Technical Univ. of Madrid (UPM))

14:15-14:30   WeC24.6
Evaluation of a Radio Based ADL Interaction Recognition System in a
Day Hospital for Old Age Psychiatry with Healthy Probands 1814-1818
  Neuhaeuser, Jakob* (TU Muenchen); Diehl-Schmid, Janine (TU Muenchen);
  Lueth, Tim (Technical Univ. of Munich)

13:00-13:15   WeC25.1
A Telerehabilitation Platform for Home-Based Automated Therapy of Arm Function 1819-1822
  Brennan, David* (Natl. Rehabilitation Hospital); Lum, Peter (Natl. Rehabilitation Hospital, Catholic Univ. of
  America, Veteran Affairs); Uswatte, Gitendra (Univ. of Alabama at Birmingham); Taub, Ed (Univ. of Alabama at
  Birmingham); Gilmore, Brendan (Aretech LLC); Barman, Joydip (Univ. of Alabama at Birmingham)

13:15-13:30   WeC25.2
Home-Based System for Stroke Rehabilitation 1823-1826
  Durfee, William* (Univ. of Minnesota)

13:30-13:45   WeC25.3
A Low Cost, Adaptive Mixed Reality System for Home-Based Stroke Rehabilitation 1827-1830
  Chen, Yinpeng* (Arizona State Univ.); Baran, Michael (Arizona State Univ.); Sundaram, Hari (Arizona State
  Univ.); Rikakis, Thanassis (Arizona State Univ.)

13:45-14:00 WeC25.4

**Development and Evaluation of Low Cost Game-Based Balance Rehabilitation
Tool Using the Microsoft Kinect Sensor** **1831-1834**

Lange, Belinda (Univ. of Southern California); Chang, Chien-Yen (Inst. for Creative Technologies,
Univ. of Southern California); Suma, Evan (Inst. for Creative Technologies, Univ. of Southern California);
Newman, Bradley (Inst. for Creative Technologies, Univ. of Southern California); Rizzo, Albert (Inst. for
Creative Technologies, Univ. of Southern California); Bolas, Mark (Inst. for Creative Technologies,
Univ. of Southern California)*

14:00-14:15 WeC25.5

Long-Term Hand Tele-Rehabilitation on the PlayStation 3: Benefits and Challenges **1835-1838**

Burdea, Grigore (Rutgers Univ.); Jain, Abhishek (Rutgers Univ.); Rabin, Bryan (Rutgers Univ.);
Golomb, Meredith (Indiana Univ. School of Medicine)*

14:15-14:30 WeC25.6

Usability Testing of a Mobile Robotic System for In-Home Telerehabilitation **1839-1842**

Boissy, Patrick (Univ. de Sherbrooke); Brière, Simon (Research Ctr. on Aging CSSS-IUGS);
Corriveau, Hélène (Univ. Sherbrooke); Grant, Andrew (Univ. de Sherbrooke); Lauria, Michel (Univ. of
Applied Sciences Western Switzerland); Michaud, François (Univ. de Sherbrooke)*

WeC26: 13:00-14:30 Provincetown Marriott
4.2.3 Systems in Synthetic Biology III (Minisymposium)
Chair: Tidor, Bruce *(Massachusetts Inst. of Tech.)*
Co-Chair: Weiss, Ron *(MIT)*

13:00-13:30 WeC26.1

Integral Feedback Control in a Synthetic Gene Network .... *

McMillen, David* (Univ. of Toronto Mississauga)

13:30-14:00 WeC26.2

Using Evolution to Guide the Rewiring of Two-Component Signal Transduction Systems .... *

Laub, Michael T.* (Howard Hughes Medical Inst. & Massachusetts Inst. of Tech.)

14:00-14:30 WeC26.3

Rational Design of Microbial Chemical Factories .... *

Prather, Kristala Jones* (Massachusetts Inst.of Tech.)

WeC27: 15:30-16:30 Provincetown Marriott
4.2.4 Systems in Synthetic Biology IV (Minisymposium)
Chair: Tidor, Bruce *(Massachusetts Inst. of Tech.)*
Co-Chair: Weiss, Ron *(MIT)*

15:30-16:00 WeC27.1

Engineering Microbial Genomes with MAGE: New Genetic Codes .... *

Carr, Peter* (MIT)

16:00-16:30 WeC27.2

Integration of Instrumental, Computational, Molecular, Organismal & Ecological Engineering .... *

Church, George* (Harvard Medical School)

WeP21: 15:30-17:00 America Ballroom Westin
3.3.18 Recent Developments in Bioelectric Sensing II (Poster Session)

15:30-17:00 WeP21.1

**Cole Parameter Estimation from Total Right Side Electrical Bioimpedance Spectroscopy
Measurements – Influence of the Number of Frequencies and the Upper Limit** **1843-1846**

Buendia, Ruben* (Univ. of Alcala); Gil Pita, Roberto (Univ. of Alcala); Seoane, Fernando (Univ. of Borås)

15:30-17:00   WeP21.2

A Band-Tunable, Multichannel Amplifier for Neural Recording with AP/LFP
Separation and Dual-Threshold Adaptive AP Detector **1847-1850**
  Wu, Jo-Yu* (Natl. Tsing Hua Univ.); Tang, Kea Tiong (Natl. Tsing Hua Univ.)

15:30-17:00   WeP21.3

Comparison of Performance Parameters for Conventional and Localized Surface
Plasmon Resonance Graphene Biosensors **1851-1854**
  Islam, Md. Saiful* (Deakin Univ.); Kouzani, Abbas Z. (Deakin Univ.)

15:30-17:00   WeP21.4

Effect of Temperature Changes on the Performance of Ionic Strength Biosensors
Based on Hydrogels and Pressure Sensors **1855-1858**
  Avula, Mahender (Univ. of Utah); Busche, Nora (Technical Univ. of Berlin); Cho, Seung Hei (Univ. of Utah);
  Tathireddy, Prashant* (Univ. of Utah); Loren, Rieth (Univ. of Utah); Magda, Jules (Univ. of Utah);
  Solzbacher, Florian (Univ. of Utah)

15:30-17:00   WeP21.5

An Ultra-Low-Power Filtering Technique for Biomedical Applications **1859-1862**
  Zhang, TanTan* (Univ. of Macau); Mak, Pui-In (Univ. of Macau); Vai, Mang I. (Univ. of Macau);
  Mak, Peng Un (Univ. of Macau); Wan, Feng (Univ. of Macau)

15:30-17:00   WeP21.6

Efficient Magnetic Torque Transduction in Biological Environments Using
Tunable Nanomechanical Resonators **1863-1866**
  Javaheri, Hooman* (Northeastern Univ.); Noubir, Guevara (Northeastern Univ.);
  Barbiellini, Bernardo (Northeastern Univ.)

15:30-17:00   WeP21.7

Skin-Electrode Contact Area in Electrical Bioimpedance Spectroscopy.
Influence in Total Body Composition Assessment **1867-1870**
  Márquez Ruiz, Juan Carlos (KTH Royal Inst. of Tech.); Seoane, Fernando* (Univ. of Borås);
  Lindecrantz, Kaj (Royal Inst. of Tech.)

15:30-17:00   WeP21.8

Assessing Electrical Impedance Alterations in Spinal Muscular Atrophy via the Finite Element Method **1871-1874**
  Jafarpoor, Mina (Beth Israel Deaconess Medical Ctr.); Li, Jia (Beth Israel Deaconess Medical Ctr.);
  Spieker, Andrew (Beth Israel Deaconess Medical Ctr.); Sung, Minhee (Beth Israel Deaconess Medical Ctr.);
  Darras, Basil (Children's Hospital Boston); Rutkove, Seward* (Beth Israel Deaconess Medical Ctr.,
  Harvard Medical School)

WeP22: 15:30-17:00   America Ballroom Westin
3.4.4 Advances in Physiological Monitoring I (Poster Session)

15:30-17:00   WeP22.1

Heart Rate, Oxygen Saturation, and Skin Conductance: A Comparison
Study of Acute Pain in Brazilian Newborns **1875-1879**
  de Jesus, Jose Alfredo Lacerda (Univ. de Brasilia, Brazil); Tristao, Rosana Maria (Univ. de Brasilia Brazil);
  Storm, Hanne (Univ. of Oslo, Norway); da Rocha, Adson F.* (Univ. of Brasilia);
  Campos Junior, Dioclécio (Univ. de Brasilia Brazil)

15:30-17:00   WeP22.2

A Miniaturized Pressure Sensor with Inherent Biofouling Protection Designed for in Vivo Applications . **1880-1883**
  Clausen, Ingelin* (SINTEF ICT, Norway); Moe, Sigurd T (SINTEF ICT, Norway); W Tvedt, Lars Geir (SINTEF
  ICT, Norway); Vogl, Andreas (SINTEF ICT, Norway); Wang, Dag Torstein (SINTEF ICT, Norway)

15:30-17:00   WeP22.3

Design of a Instrumentation Module for Monitoring Ingestive Behavior in Laboratory Studies **1884-1887**
  Fontana, Juan M.* (Univ. of Alabama); Lopez-Meyer, Paulo (The Univ. of Alabama);
  Sazonov, Edward (Univ. of Alabama)

15:30-17:00   WeP22.4
Low Cost Electroencephalographic Acquisition Amplifier to Serve as Teaching and Research Tool **1888-1891**
  Jain, Ankit* (The Pennsylvania State Univ.); Kim, Insoo (The Pennsylvania State Univ.);
  Gluckman, Bruce J. (Pennsylvania State Univ.)

15:30-17:00   WeP22.5
2-Scale Topography Dry Electrode for Biopotential Measurements **1892-1895**
  Vanlerberghe, Filip (imec/Catholic Univ. Leuven); De Volder, Michael (Catholic Univ. of Leuven); Op de Beeck,
  Maaike (IMEC); Penders, Julien (imec); Reynaerts, Dominiek (Catholic Univ. of Leuven); Puers, Robert
  (Catholic Univ. of Leuven); Van Hoof, Chris* (IMEC)

15:30-17:00   WeP22.6
An Embedded Reconfigurable Architecture for Patient-Specific Multi-Paramater Medical Monitoring **1896-1900**
  Alemzadeh, Homa* (Univ. of Illinois at Urbana-Champaign); Jin, Zhanpeng (Univ. of Illinois at
  Urbana-Champaign); Kalbarczyk, Zbigniew (Univ. of Illinois at Urbana-Champaign);
  Iyer, Ravishankar (Univ. of Illinois at Urbana-Champaign)

WeP23: 15:30-17:00	America Ballroom Westin
3.4.5 Advances in Physiological Monitoring II (Poster Session)	

15:30-17:00   WeP23.1
A Work-Loop Calorimeter for Measuring the Force-Length-Heat Relationship of
Working Excised Cardiac Muscle Fibers **1901-1904**
  Taberner, Andrew* (The Univ. of Auckland); Han, June-Chiew (The Univ. of Auckland);
  Loiselle, Denis (The Univ. of Auckland); Nielsen, Poul (The Univ. of Auckland)

15:30-17:00   WeP23.2
Towards Unified Electromagnetic Tracking System Assessment–Static Errors **1905-1908**
  Haidegger, Tamas* (Budapest Univ. of Tech. & Economics); Fenyvesi, Gábor (Budapest Univ. of Tech. &
  Economics); Sirokai, Beáta (Budapest Univ. of Tech. & Economics); Kelemen, Márton (Budapest Univ. of Tech.
  & Economics); Nagy, Melinda (Budapest Univ. of Tech. & Economics); Takács, Barnabás (Budapest Univ. of
  Tech. & Economics); Kovacs, Levente (Budapest Univ. of Tech. & Economics); Benyo, Balazs Istvan
  (Szechenyi Istvan Univ.); Benyo, Zoltan (Budapest Univ. of Tech. & Economics)

15:30-17:00   WeP23.3
DC Coupled Doppler Radar Physiological Monitor **1909-1912**
  Zhao, Xi* (Univ. of Hawaii at Manoa); Song, Chenyan (Concentris Systems, LLC);
  Lubecke, Victor (Univ. of Hawaii Manoa); Boric-Lubecke, Olga (Univ. of Hawaii Manoa)

15:30-17:00   WeP23.4
System-On-Chip Based Doppler Radar Occupancy Sensor **1913-1916**
  Yavari, Ehsan* (Univ. of Hawaii Manoa); Song, Chenyan (Concentris Systems, LLC);
  Lubecke, Victor (Univ. of Hawaii Manoa); Boric-Lubecke, Olga (Univ. of Hawaii Manoa)

15:30-17:00   WeP23.5
Cardio-Respiratory and Daily Activity Monitor Based on FMCW
Doppler Radar Embedded in a Wheelchair **1917-1920**
  Postolache, Octavian (Instituto de Telecomunicações); Girão, Pedro (Instituto de Telecomunicações, & Instituto
  Superior Técnico, Technical Univ. of Lisbon); Postolache, Octavian* (Instituto de Telecomunicaoes)

WeP24: 15:30-17:00	America Ballroom Westin
5.1.15 Autonomic Nervous System/Heart Rate Variability (Poster Session)	

15:30-17:00   WeP24.1
Effect of Respiratory Modulation on Relationship between Heart Rate Variability and Motion Sickness **1921-1924**
  Lin, Chin-Teng (Natl. Chiao-Tung Univ.); Lin, Chun-Ling* (Natl. Chiao-Tung Univ., Taiwan);
  Duann, Jeng-Ren (Univ. of California San Diego); Chiu, Tzai-Wen (Natl. Chiao-Tung Univ.);
  Jung, Tzyy-Ping (Univ. of California San Diego)

15:30-17:00   WeP24.12

**Multiscale Analysis of Acceleration and Deceleration of the Instantaneous
Heart Rate Using Symbolic Dynamics** **1965-1968**

Cysarz, Dirk (Univ. of Witten/Herdecke); Edelhäuser, Friedrich (Univ. of Witten/Herdecke);
Van Leeuwen, Peter (Chair Radiology/Microtherapy, Univ. of Witten/Herdecke)*

15:30-17:00   WeP24.13

**Experimental Jet Lag Causes Sympathoexcitation via Oxidative Stress through
AT1 Receptor in the Brainstem** **1969-1972**

Kishi, Takuya* (Kyushu Univ. Graduate School of Medical sciences); Sunagawa, Kenji (Kyushu Univ.)

15:30-17:00   WeP24.14

**Time-Frequency Heart Rate Variability Characteristics of Young Adults During Physical,
Mental and Combined Stress in Laboratory Environment** **1973-1976**

*Taelman, Joachim (Katholieke Univ. Leuven); Vandeput, Steven (Dept. of Elec. Eng., Division SCD-SISTA,
Katholieke Univ. Leuven, Leuven 3001, Belgium); Gligorijevic, Ivan* (Katholieke Univ. Leuven); Spaepen,
Arthur (Katholieke Univ. Leuven); Van Huffel, Sabine (Katholieke Univ. Leuven)*

WeP25: 15:30-17:00   America Ballroom Westin
6.11.57 Neurological Disorders (Poster Session)

15:30-17:00   WeP25.1

**Determining the Effects of Electrical Stimulation on Functional Recovery of Denervated Rat
Gastrocnemius Muscle Using Motor Unit Number Estimation** **1977-1980**

Willand, Michael P. (McMaster Univ.); Holmes, Michael (McMaster Univ.); Bain, James R. (McMaster Univ.);
Fahnestock, Margaret (McMaster Univ.); de Bruin, Hubert (McMaster Univ.)*

15:30-17:00   WeP25.2

**Phase-Based Measures of Cross-Frequency Coupling in Brain Electrical
Dynamics under General Anesthesia** **1981-1984**

Mukamel, Eran A (Univ. of California, San Diego); Wong, Kin Foon Kevin (Massachusetts General Hospital);
Brown, Emery N (MGH-Harvard Medical School-MIT); Purdon, Patrick L (Massachusetts General Hospital)*

15:30-17:00   WeP25.3

Fabrication of a Prototype Magnetic Stimulator Equipped with Eccentric Spiral Coils **1985-1988**

Kato, Takuya (The Univ. of Tokyo); Sekino, Masaki (Univ. of Tokyo); Matsuzaki, Taiga (Teijin Pharma Limited);
Nishikawa, Atsushi (Shinshu Univ.); Saitoh, Youichi (Osaka Univ.); Ohsaki, Hiroyuki (The Univ. of Tokyo)*

15:30-17:00   WeP25.4

On Handling the Layered Structure of the Skull in Transcranial Direct Current Stimulation Models **1989-1992**

*Rampersad, Sumientra (Dept. Clinical Neurophysiology, Radboud Univ. Nijmegen Medical Ctr.); Stegeman,
Dick (Radboud Univ. Nijmegen Medical Ctr.); Oostendorp, Thom* (Radboud Univ. Nijmegen Medical Ctr.)*

15:30-17:00   WeP25.5

Transcranial Magnetic Stimulation Coil with Electronically Switchable Active and Sham Modes **1993-1996**

Deng, Zhi-De* (Columbia Univ.); Peterchev, Angel V (Duke Univ.)

15:30-17:00   WeP25.6

Dorsolateral Prefrontal Cortex Sensitivity to Rtms **1997-2000**

de Bruin, Hubert* (McMaster Univ.); Hasey, Gary (McMaster Univ.); Hemily, Julie (McMaster Univ.)

15:30-17:00   WeP25.7

Statistical Model Applied to Motor Evoked Potentials Analysis **2001-2004**

*Ma, Ying (Johns Hopkins Univ.); Thakor, Nitish (Johns Hopkins Univ.);
Jia, Xiaofeng* (Johns Hopkins School of Medicine)*

15:30-17:00   WeP25.8

**Plasticity Associated Changes in Cortical Somatosensory Evoked
Potentials Following Spinal Cord Injury in Rats** **2005-2008**

Bazley, Faith A. (Johns Hopkins Univ.); All, Angelo (Johns Hopkins Univ.); Thakor, Nitish (Johns Hopkins
Univ.); Maybhate, Anil (Johns Hopkins Univ.)*

15:30-17:00   **WeP25.21**

Frequency Interactions in Human Epileptic Brain **2057-2060**

Cotic, Marija* (Univ. of Toronto); Zalay, Osbert (Univ. of Toronto); Valiante, Taufik A. (Univ. of Toronto); Carlen, Peter L. (Univ. of Toronto); Bardakjian, Berj Luther (Univ. of Toronto)

15:30-17:00   **WeP25.22**

Capturing the State Transitions of Seizure-Like Events Using Hidden Markov Models **2061-2064**

Guirgis, Mirna* (Univ. of Toronto); Serletis, Demitre (Univ. of Toronto); Carlen, Peter L. (Univ. of Toronto); Bardakjian, Berj Luther (Univ. of Toronto)

15:30-17:00   **WeP25.23**

Employing Neuronal Networks to Investigate the Pathophysiological Basis of Abnormal Cortical Oscillations in Alzheimer's Disease **2065-2068**

Abuhassan, Kamal* (Univ. of Ulster); Coyle, Damien (Univ. of Ulster); Maguire, Liam (Univ. of Ulster)

WeP26: 15:30-17:00   America Ballroom Westin
8.3.18 Robotics in Thereputic Rehabilitation (Poster Session)

15:30-17:00   **WeP26.1**

Absolute Position Calculation for a Desktop Mobile Rehabilitation Robot Based on Three Optical Mouse Sensors **2069-2072**

Zabaleta, Haritz* (Tecnalia Research & Innovation); Keller, Thierry (Tecnalia Research & Innovation); Veneman, Jan Frederik (Univ. of Twente); Perry, Joel C. (Fatronik-Tecnalia); Valencia, David (Tecnalia Research & Innovation)

15:30-17:00   **WeP26.2**

An Advanced Rehabilitation Robotic System for Augmenting Healthcare **2073-2076**

Hu, John (Hstar Technologies); Lim, Yi-Je* (Hstar Technologies); Ding, Ye (Hstar Technologies); Paluska, Daniel (Hstar Technologies); Solochek, Aaron (Hstar Technologies); Laffery, David (Hstar Technologies); Bonato, Paolo (Harvard Medical School)

15:30-17:00   **WeP26.3**

Test for Selecting Upper Limb Robot Treatment in Stroke Patients: Triggered High-Stiffness vs. Adaptive Low-Stiffness Assistance **2077-2080**

Carpinella, Ilaria (Foundation Don Carlo Gnocchi Onlus); Cattaneo, Davide (Foundation Don Carlo Gnocchi Onlus); Ferrarin, Maurizio (Foundation Don Carlo Gnocchi Onlus); Morasso, Pietro (Univ. of Genova); Squeri, Valentina* (Istituto Italiano di Tecnologia)

15:30-17:00   **WeP26.4**

Offaxis Neuromuscular Training of Knee Injuries Using an Offaxis Robotic Elliptical Trainer **2081-2084**

Lee, Song Joo* (Rehabilitation Inst. of Chicago); Ren, Yupeng (Rehabilitation Inst. of Chicago); Geiger, François (RIC); Chang, Alison (Northwestern Univ., Dept. of Physical Therapy & Human Movement Sciences); Press, Joel (Rehabilitation Inst. of Chicago); Zhang, Li-Qun (Northwestern Univ.)

15:30-17:00   **WeP26.5**

Improvement of Gait & Muscle Strength with Functional Electrical Stimulation in Sub-Acute & Chronic Stroke Patients **2085-2088**

Mahadevappa, Manjunatha* (Indian Inst. of Technology); Sabut, Sukanta (SMST, Indian Inst. of Technology, Kharagpur); Kumar, Ratnesh (Natl. Inst. for the Orthopaedically Handicapped); Sikdar, Chanda (NIOH)

15:30-17:00   **WeP26.6**

Young's Modulus Measurement on Pig Trachea and Bronchial Airways **2089-2092**

Wang, Jau-Yi* (King's College of London)

15:30-17:00   **WeP26.7**

Evaluation of a Wearable Tele-Echography Robot System: FASTele in a Vehicle Using a Mobile Network **2093-2096**

Ito, Keiichiro* (Waseda Univ.); Tsuruta, Koichi (Waseda Univ.); Sugano, Shigeki (Waseda Univ.); Iwata, Hiroyasu (Waseda Univ.)

15:30-17:00   WeP27.1
Design of a Telerobot for Percutaneous Instrument Distal Tip Repositioning **2097-2100**
Walsh, Conor* (Massachusetts General Hospital); Slocum, Alexander (MIT);
Gupta, Rajiv (Massachusetts General Hospital)

15:30-17:00   WeP27.2
Accuracy of Navigated Control Concepts Using an Er: Yag-Laser for Cavity Preparation **2101-2106**
Wolff, Regine* (Technische Univ. München); Weitz, Jochen (Technische Univ. München);
Poitzsch, Luise (Technische Univ. München); Hohlweg-Majert, Bettina (Technische Univ. München);
Deppe, Herbert (Technische Univ. München); Lueth, Tim (Technical Univ. of Munich)

15:30-17:00   WeP27.3
Virtually Transparent Epidermal Imagery for Laparo-Endoscopic Single-Site Surgery **2107-2110**
Sun, Yu* (Univ. of South Florida); Anderson, Adam (Brigham Young Univ.); Castro, Cristian (Univ. of south
Florida); Lin, Bingxiong (Univ. of South Florida); Gitlin, Richard (USF)

15:30-17:00   WeP27.4
Reconfigurable MRI-Guided Robotic Surgical Manipulator:
Prostate Brachytherapy and Neurosurgery Applications **2111-2114**
Su, Hao* (Worcester Polytechnic Inst.); Iordachita, Iulian (Johns Hopkins Univ.); Yan, Xiaoan (Worcester
Polytechnic Inst.); Fischer, Gregory (Worcester Polytechnic Inst.)

15:30-17:00   WeP27.5
Surgical Assistance for Instruments' Power Control Based on Navigation and Neuromonitoring **2115-2118**
Shi, Jiaxi* (Technical Univ. Munich); Strauss, Gero (Univ. of Leipzig); Heininger, Sebastian (Technical Univ.
Munich & ERGOSURG GmbH); Lueth, Tim (Technical Univ. of Munich)

15:30-17:00   WeP27.6
Sensors Management in Robotic Neurosurgery: The ROBOCAST Project **2119-2122**
Vaccarella, Alberto* (Politecnico di Milano); Comparetti, Mirko Daniele (Politecnico di Milano); Enquobahrie,
Andinet (Kitware Inc); Ferrigno, Giancarlo (Politecnico di Milano); De Momi, Elena (Politecnico di Milano)

15:30-17:00   WeP28.1
Elastic Properties and Yield Stress of Fetal Membranes **2123-2126**
Wittenberg, George* (Dept. of Veterans Affairs; Univ. of Maryland)

15:30-17:00   WeP28.2
A Chance-Constrained Approach to Preoperative Planning of Robotics-Assisted Interventions **2127-2130**
Azimian, Hamidreza* (Univ. of Western Ontario); Patel, Rajni (London Health Sciences Ctr.);
Naish, Michael D. (The Univ. of Western Ontario, Lawson Health Research Inst.)

15:30-17:00   WeP28.3
ECM versus ICP for Point Registration **2131-2135**
Xie, Weiguo* (Univ. of Bern); Nolte, Lutz-Peter (Univ. of Bern); Zheng, Guoyan (Univ. of Bern)

15:30-17:00   WeP28.4
Development of a StandAlone Surgical Haptic Arm **2136-2139**
Jones, Daniel (Worcester Polytechnic Inst.); Lewis, Andrew (Worcester Polytechnic Inst.);
Fischer, Gregory* (Worcester Polytechnic Inst.)

15:30-17:00   WeP28.5
Conceptual Design of a Miniaturized Hybrid Local Actuator for Minimally Invasive
Robotic Surgery (MIRS) Instruments **2140-2143**
Saedi, Soheil (Sharif Univ. of Tech. Intl. Campus); Mirbagheri, Alireza (Sharif Univ. of Tech.);
Farahmand, Farzam* (Sharif Univ. of Tech.)

15:30-17:00   WeP28.6

Method, Accuracy and Limitation of Computer Interaction in the Operating Room by a Navigated Surgical Instrument **2144-2147**

Hurka, Florian* (Technical Univ. Munich & ERGOSURG GmbH); Wenger, Thomas (Technical Univ. Munich & ERGOSURG GmbH); Heininger, Sebastian (Technical Univ. Munich & ERGOSURG GmbH); Lueth, Tim (Technical Univ. of Munich)

15:30-17:00   WeP28.7

Technical Accuracy of an O-Arm Registered Surgical Navigator **2148-2151**

Koivukangas, Tapani* (Univ. of Oulu); Katisko, Jani Petri Antton (Oulu Univ. Hospital); Koivukangas, John Pertti (Oulu Univ. Hospital)

15:30-17:00   WeP28.8

A Robotics-Based Flat-Panel Ultrasound Device for Continuous Intraoperative Transcutaneous Imaging **2152-2155**

Gumprecht, Jan* (Technische Univ. München); Bauer, Thomas (Technische Univ. München); Stolzenburg, Jens-Uwe (Univ. of Leipzig); Lueth, Tim (Technical Univ. of Munich)

15:30-17:00   WeP28.9

Active Tracking and Dynamic Dose Delivery for Robotic Couch in Radiation Therapy **2156-2159**

Buzurovic, Ivan* (Thomas Jefferson Univ.); Yu, Yan (Thomas Jefferson Univ. Hospital); Podder, Tarun (Thomas Jefferson Univ.)

WeP29: 15:30-17:00   America Ballroom Westin
10.2.18 Wireless Health Technologies and Body Sensor Networks (Poster Session)

15:30-17:00   WeP29.1

Development of a Triage Engine Enabling Behavior Recognition and Lethal Arrhythmia Detection for Remote Health Care System **2160-2163**

Sugano, Hiroto (Osaka City Univ.); Hara, Shinsuke* (Osaka City Univ.); Tsujioka, Tetsuo (Osaka City Univ.); Nakajima, Shigeyoshi (Osaka City Univ.); Inoue, Tadayuki (Osaka City Univ.); Kozaki, Takaaki (Osaka City Univ.); Nakamura, Hajime (Osaka City Univ.); Takeuchi, Kazuhide (Osaka City Univ.)

15:30-17:00   WeP29.2

Eye-Screen Distance Monitoring for Computer Use **2164-2167**

Gale, Timothy John* (Univ. of Tasmania); Eastwood-Sutherland, Caillin (Univ. of Tasmania)

15:30-17:00   WeP29.3

Onboard Tagging for Smart Medical Devices **2168-2171**

Li, Kejia (Kansas State Univ.); Warren, Steve* (Kansas State Univ.)

15:30-17:00   WeP29.4

Development of an Integrated Obesity Management Waist Belt System Composed of Calorie Tracking and Waist Circumference Measuring Module for Long Term Monitoring **2172-2175**

Jang, Yongwon* (Elec.& Telecom Research Inst.); Noh, Hyung Wook (Elec.& Telecommunications Research Inst.); Lee, InBum (ETRI); Song, Yoonseon (Elec.& Telecom Research Inst); Lee, Sooyeul (Elec.& Telecom Research Inst)

15:30-17:00   WeP29.5

UWB-WBAN Sensor Node Design **2176-2179**

Yuce, Mehmet Rasit* (Univ. of Newcastle); Ho, Chee Keong (Univ. of Newcastle, Australia)

15:30-17:00   WeP29.6

Radio Frequency Identification (RFID) in Medical Environment: Gaussian Derivative Frequency Modulation (GDFM) as a Novel Modulation Technique with Minimal Interference Properties **2180-2183**

Rieche, Marie* (Ilmenau Univ. of Tech.); Komenský, Tomáš (Ilmenau Univ. of Tech.); Husar, Peter (Ilmenau Univ. of Tech.)

15:30-17:00   WeP29.7

Scalable Customization of Atrial Fibrillation Detection in Cardiac Monitoring Devices: Increasing Detection Accuracy through Personalized Monitoring in Large Patient Populations **2184-2187**

Jang, Kuk Jin* (Princeton Univ.); Balakrishnan, Guha (Univ. of Michigan – Ann Arbor); Syed, Zeeshan (Univ. of Michigan); Verma, Naveen (Princeton Univ.)

15:30-17:00   WeP29.8

Towards Wireless Emotional Valence Detection from EEG **2188-2191**

Brown, Lindsay (Stichting IMEC Nederland); Grundlehner, Bernard (Holst Ctr.); Penders, Julien (imec)*

15:30-17:00   WeP29.9

Improving the Reliability of Wireless Body Area Networks **2192-2195**

Arrobo, Gabriel (USF); Gitlin, Richard (USF)*

15:30-17:00   WeP29.10

**A Mixed Signal ECG Processing Platform with an Adaptive Sampling ADC for
Portable Monitoring Applications** **2196-2199**

Kim, Hyejung (imec); Yazicioglu, Refet Firat (IMEC); Van Hoof, Chris (IMEC)*

15:30-17:00   WeP29.11

Battery Friendly Packet Transmission for Body Sensor Networks **2200-2203**

*Li, Hong-Gang (Shenzhen Inst. of Advanced Tech., Chinese Acad. of Sciences);
Li, Ye* (Shenzhen Inst. of Advanced Tech., Chinese Acad. of Sciences)*

15:30-17:00   WeP29.12

Power Allocation Strategies to Minimize Energy Consumption in Wireless Body Area Networks **2204-2207**

Kailas, Aravind (The Univ. of North Carolina at Charlotte)*

15:30-17:00   WeP29.13

RiBOMS: RFID-Based Object Management System for Home Environments **2208-2211**

*Iraola, Hodei (Univ. of Massachusetts); Schafer, James (Univ. of Massachusetts Amherst);
Yu, Xunyi (Univ. of Massachusetts); Ganz, Aura* (Univ. of Massachusetts, Amherst)*

15:30-17:00   WeP29.14

A Warning System Based on the RFID Technology for Running-Out of Injection Fluid **2212-2215**

Huang, Chi-Fang (Tatung Univ.); Lin, Jen-Hung (Inst. of Communication Eng., Tatung Univ.)*

15:30-17:00   WeP29.15

Continuous Remote Vital Sign/Environment Monitoring for Returning Soldier Adjustment Assessment **2216-2219**

Genc, Sahika (General Electric Global Research Ctr.); Cleary, Daniel J (General Electric Global Research);
Yardibi, Tarik (General Electric Global Research); Wood, Joseph C (Dept. of Clinical Investigation, Dwight
David Eisenhower Army Medical Ctr.); Stachura, Max E. (Ctr. for Telehealth, Medical College of Georgia);
Astapova, Elena V. (Ctr. for Telehealth, Medical College of Georgia)*

15:30-17:00   WeP29.16

Building Smart Sensor Nodes according to IEEE 1451.3 Standard **2220-2223**

*Costa, Murilo (Pontifical Catholic Univ. of Goias); Corre da Silva Neto, Olegario (Pontifical Catholic Univ. of
Goiás); Ferreira, José Olimpio (Pontifical Catholic Univ. of Goiás); da Rocha, Adson F. (Univ. of Brasilia);
Barbosa, Talles* (Pontifical Catholic Univ. of Goiás)*

15:30-17:00   WeP29.17

Interoperable and Diligent Body Area Networks Over IEEE802.15.6 for Real-Time Monitoring **2224-2227**

Kuroda, Masahiro (Natl. Inst of Information & Comm); Tochikubo, Osamu (Yokohama City Univ.);
Takizawa, Kenichi (NICT); Kaneda, Isami (NJ Techno); Shibata, Yoshiharu (Advanced Medical)*

15:30-17:00   WeP29.18

CARER: Efficient Dynamic Sensing for Continuous Activity Monitoring **2228-2232**

*Au, Lawrence (Univ. of California, Los Angeles); Bui, Alex (Univ. of California, Los Angeles);
Batalin, Maxim (Univ. of California, Los Angeles); Xu, Xiaoyu* (Univ. of California, Los Angeles);
Kaiser, William (Univ. of California, Los Angeles)*

15:30-17:00   WeP29.19

**Gait Assessment in Parkinson's Disease Patients through a Network of Wearable
Accelerometers in Unsupervised Environments** **2233-2236**

Cancela, Jorge (Univ. Politécnica de Madrid); Pastorino, Matteo (Univ. Politecnica de Madrid);
Arredondo, María Teresa (Technical Univ. of Madrid); Pansera, Mario (Univ. Politecnica de Madrid);
Pastor, Laura (Univ. Politécnica de Madrid); Villagra, Federico (Univ. of Navarra); Pastor, María A. (Univ. of
Navarra, Ctr. for Applied Medical Research); Gonzalez-Marcos, Ana Pilar (Technical Univ. of Madrid)*

15:30-17:00   WeP29.20
Low-Power Sensor Module for Long-Term Activity Monitoring **2237-2241**
Leuenberger, Kaspar* (ETH Zuerich); Gassert, Roger (ETH Zurich)

15:30-17:00   WeP29.21
Path-Loss Estimation of Wireless Channels in Capsule Endoscopy from X-Ray CT Images **2242-2245**
Takizawa, Kenichi* (NICT); Hamaguchi, Kiyoshi (Natl. Inst. of Information & CommunicationsTech.);
Hagiwara, Hiroaki (Yokohama City Univ.)

15:30-17:00   WeP29.22
Long-Term Performance of a CE-Approved Telemetric Intracranial Pressure Monitoring **2246-2249**
Kiefer, Michael* (Saarland Univ., Medical School); Antes, Sebastian (Saarland Univ., Medical School);
Schmitt, Melanie (Saarland Univ., Medical School); Krause, Inga (Helmholtz-Inst., RWTH Aachen);
Eymann, Regina (Saarland Univ., Medical School)

WeD12: 17:15-18:45   Suffolk Marriott
10.8.25 Telemedicine and Interoperability: Improved Care for Wounded Warriors (Minisymposium)
Chair: Kennedy, Sean *(Massachusetts General Hospital)*

17:15-17:30   WeD12.1
Improving Care for Veterans: Telemedicine & Electronic Information Exchange .... *
Kennedy, Sean* (Massachusetts General Hospital); Fredman, Steffany (Massachusetts General Hospital)

WeD16: 17:15-18:45   Darthmouth Marriott
9.3.19 Psycho Behavioral Monitoring and Cyber Therapy in Mental Disorders (Minisymposium)
Chair: Paradiso, Rita *(Smartex srl)*
Co-Chair: De Rossi, Danilo *(Univ. of Pisa)*

17:15-17:30   WeD16.1
Wearable Monitoring Systems for Psychological and Physiological State
Assessment in a Naturalistic Environment **2250-2253**
Paradiso, Rita* (Smartex srl); Faetti, Tommaso (Smartex s.r.l.)

17:30-17:45   WeD16.2
Affective Computing and Autism .... *
Picard, Rosalind* (Massachusetts Inst. of Tech.)

17:45-18:00   WeD16.3
Neuroscience, Virtual Reality and Neurorehabilitation: Brain Repair As a Validation of Brain Theory **2254-2257**
Verschure, Paul F M J* (SPECS, ICREA & Univ. Pompeu Fabra)

WeD26: 16:30-18:45   Provincetown Marriott
4.2.4 Systems Models in Biology I (Minisymposium)
Chair: Tidor, Bruce *(Massachusetts Inst. of Tech.)*
Co-Chair: Weiss, Ron *(MIT)*

16:30-17:00   WeD26.1
A Light-Based Feedback Controller for Generating User-Defined Intracellular Signaling Dynamics .... *
Toettcher, Jared E.* (Univ. of California, San Francisco); Gong, Delquin (Delquin Gong);
Lim, Wendell A. (Wendell A. Lim); Weiner, Orion D. (Orion D. Weiner)

17:15-17:45   WeD26.2
Sloppy Models, Information Geometry, and Data Fitting .... *
Transtrum, Mark* (Cornell Univ., Lab. of Atomic & Solid State Physics);
Sethna, James (Cornell Univ., Lab. of Atomic & Solid State Physics)

17:45-18:15   WeD26.3
Optimal Experimental Design for Model Identification in Systems Biology .... *
Hagen, David R.* (MIT)

18:15-18:45   WeD26.4
Multi-Factorial Analysis of Receptor-Mediated Apoptosis .... *
  Aldridge, Bree* (Harvard School of Public Health); Gaudet, Suzanne (Suzanne Gaudet);
  Lauffenburger, Douglas (Massachusetts Inst. of Tech.); Sorger, Peter (Harvard Medical School)

Thursday, 1 September 2011

ThA01: 08:00-09:30   St. George AB Westin
6.4.13 Vestibular Prostheses – Medical, Scientific and Ethical Issues (Oral Session)
Chair: Hoffmann, Klaus-Peter *(Fraunhofer Inst.)*
Co-Chair: Guinand, Nils *(Univ. of Geneva)*

08:00-08:15   ThA01.1
Finding Physiological Responses in Vestibular Evoked Potentials **2258-2261**
  Nguyen, Thuy Anh Khoa* (ETH Zurich); Koegler, Vinzenz (ETH Zurich); DiGiovanna, Jack (ETH Zurich);
  Micera, Silvestro (École Polytechnique Fédérale de Lausanne)

08:15-08:30   ThA01.2
Vestibular Implants: The First Steps in Humans **2262-2264**
  Guinand, Nils* (Univ. of Geneva); Guyot, Jean-Philippe (ENT Dept., Geneva Univ. Hospital);
  Kingma, Herman (Univ. Hospital Maastricht); Kos, Izabel (ENT Dept., Geneva Univ. Hospital);
  Pelizzone, Marco (ENT Dept., Geneva Univ. Hospital)

08:30-08:45   ThA01.3
Ethical Issues in the Development of a Vestibular Prosthesis **2265-2268**
  Poppendieck, Wigand* (Fraunhofer Institut für Biomedizinische Technik); Hoffmann, Klaus-Peter (Fraunhofer
  Institut); Merfeld, Daniel (Massachusetts Eye & Ear Infirmary/Harvard Medical School); Guyot, Jean-Philippe
  (ENT Dept., Geneva Univ. Hospital); Micera, Silvestro (École Polytechnique Fédérale de Lausanne)

08:45-09:00   ThA01.4
Secret Laws of the Labyrinth **2269-2272**
  David, Romain (MNHN); Berthoz, Alain (LPPA CNRS); Bennequin, Daniel* (Univ. Paris 7 & LPPA to the
  College de France)

09:00-09:15   ThA01.5
Nonlinear Galilean Vestibular Receptive Fields **2273-2276**
  Bennequin, Daniel* (Univ. Paris 7 & LPPA to the College de France); Berthoz, Alain (LPPA CNRS)

09:15-09:30   ThA01.6
Vestibular Prosthesis Tested in Rhesus Monkeys **2277-2279**
  Lewis, Richard* (MEEI, Harvard Medical School); Haburcakova, Csilla (MEEI); Gong, Wangsong (MEEI); Lee,
  Daniel (MEEI, Harvard Medical School); Wall, Conrad (Harvard Medical School); Thompson, Lara (Harvard MIT
  SHBT); Merfeld, Daniel (Massachusetts Eye & Ear Infirmary/Harvard Medical School)

ThA02: 08:00-09:30   St. George CD Westin
6.1.23 Implantable Systems I (Oral Session)
Chair: Nurmikko, Arto *(Brown Univ.)*
Co-Chair: Eberle, Wolfgang *(imec)*

08:00-08:15   ThA02.1
Chronic Cuff Electrode Recordings from Walking Göttingen Mini-Pigs **2280-2283**
  Andersen, Mads Peter* (Neurodan A/S); Munch, Majken (Aalborg Univ.); Jensen, Winnie (Ctr. for Sensory-
  Motor Interaction); Sørensen, Preben (Aalborg Hospital); Eder, Clemens (Neurodan A/S)

08:15-08:30   ThA02.2
Compact Wireless Neural Recording System for Small Animals Using Silicon-Based Probe Arrays **2284-2287**
  Ruther, Patrick* (Univ. of Freiburg); Holzhammer, Tobias (Univ. of Freiburg, Dept. of Microsystems Eng.);
  Herwik, Stanislav (Univ. of Freiburg); Rich, P.D. (Univ. of Cambridge, Dept. of Experimental Psychology);
  Dalley, Jeff W. (Univ. of Cambridge, Dept. of Experimental Psychology); Paul, Oliver (Univ. of Freiburg);
  Holtzman, Tahl (Univ. of Cambridge, Dept. of Experimental Psychology)

08:30-08:45   ThA02.3

Robust Intraocular Acquisition of the Accommodation Demand Using Eyeball Movements **2288-2291**

Rheinschmitt, Liane* (Karlsruhe Inst. of Tech. (KIT)); Ritter, Fabian (Karlsruhe Inst. of Tech. (KIT)); Nagel, Jörg André (Karlsruhe Inst. of Tech. (KIT)); Gengenbach, Ulrich (Karlsruhe Inst. of Tech. (KIT)); Guth, Helmut (Karlsruhe Inst. of Tech. (KIT)); Bretthauer, G (Inst. for Applied Computer Science)

08:45-09:00   ThA02.4

Chronic Behavior Evaluation of a Micro-Machined Neural Implant with Optimized Design Based on an Experimentally Derived Model **2292-2295**

Andrei, Alexandru* (IMEC); Welkenhuysen, Marleen (IMEC); Ameye, Lieveke (K.U.Leuven); Nuttin, Bart (KU Leuven); Eberle, Wolfgang (imec)

09:00-09:15   ThA02.5

Ensuring Minimal Humidity Levels in Hermetic Implant Housings **2296-2299**

Schuettler, Martin (Univ. of Freiburg); Schatz, Andreas (Univ. of Freiburg); Ordonez, Juan Sebastian* (Univ. of Freiburg); Stieglitz, Thomas (Univ. of Freiburg)

09:15-09:30   ThA02.6

A 32-Channel Fully Implantable Wireless Neurosensor for Simultaneous Recording from Two Cortical Regions **2300-2306**

Aceros, Juan* (Brown Univ.); Yin, Ming (Brown Univ.); Borton, David (Brown Univ.); Patterson, William (Brown Univ.); Nurmikko, Arto (Brown Univ.)

ThA03:   08:00-09:30   Essex Ballroom South Westin
6.10.40 Analysis of Neural Signals I (Oral Session)
Chair: Barbieri, Riccardo *(Massachusetts General Hospital-Harvard Medical School-MIT)*
Co-Chair: Poon, Chi-Sang *(Massachusetts Inst. of Tech.)*

08:00-08:15   ThA03.1

An Automated Method to Determine Angular Preferentiality Using LFPs Recorded from R at Barrel Cortex by Brain-Chip Interface under Mechanical Whisker Stimulation **2307-2310**

Mahmud, Mufti* (Univ. of Padova); Girardi, Stefano (NeuroChip Lab., Univ. of Padova); Maschietto, Marta (NeuroChip Lab., Univ. of Padova); Pasqualotto, Elisabetta (Univ. of Padova); Vassanelli, Stefano (NeuroChip Lab., Univ. of Padova)

08:15-08:30   ThA03.2

Point-Process Analysis of Neural Spiking Activity of Muscle Spindles Recorded from Thin-Film Longitudinal Intrafascicular Electrodes **2311-2314**

Citi, Luca* (MGH/Harvard Medical School); Djilas, Milan (Institut de la Vision); Azevedo-Coste, Christine (DEMAR INRIA/LIRMM); Yoshida, Ken (Indiana Univ.-Purdue Univ. Indianapolis); Brown, Emery N (MGH-Harvard Medical School-MIT); Barbieri, Riccardo (MGH-Harvard Medical School-MIT)

08:30-08:45   ThA03.3

Memory Efficient On-Line Streaming for Multichannel Spike Train Analysis **2315-2318**

Yu, Bo* (Tsinghua Univ.); Mak, Terrence (Newcastle Univ.); Yakovlev, Alex (Newcastle Univ.); Poon, Chi-Sang (Massachusetts Inst. of Tech.)

08:45-09:00   ThA03.4

Simulations of Hearing Loss and Hearing Aid: Effects on Electrophysiological Correlates of Listening Effort **2319-2322**

Bernarding, Corinna* (Computational Diagnostics & Biocybernetics Unit); Strauss, Daniel J. (Comp. Diagn. & Biocyb. Unit); Latzel, Matthias (SIEMENS Audiology); Corona-Strauss, Farah I. (Saarland Univ. Hospital)

09:00-09:15   ThA03.5

The Effects of Age and Hearing Impairment on the Extraction of Listening Effort Correlates **2323-2326**

Bernarding, Corinna* (Computational Diagnostics & Biocybernetics Unit); Strauss, Daniel J. (Comp. Diagn. & Biocyb. Unit); Latzel, Matthias (SIEMENS Audiology); Seidler, Harald (MediClin Bosenberg Kliniken); Corona-Strauss, Farah I. (Saarland Univ. Hospital)

09:15-09:30   ThA03.6

EEG-Based Upper Alpha Neurofeedback Training Improves Working Memory Performance **2327-2330**

Escolano, Carlos* (Univ. of Zaragoza); Aguilar Herrero, Monica (Bit&Brain Technologies S.L.); Minguez, Javier (Zaragoza Univ.)

ThA05: 08:00-09:30   Essex Ballroom North Westin
6.12.45 Brain Functional Imaging (Oral Session)
Chair: Babiloni, Fabio *(Univ. of Rome)*
Co-Chair: Dumont, Guy *(Univ. of British Columbia)*

08:00-08:15   ThA05.1

Subject Identification through Standard EEG Signals During Resting States **2331-2333**

De Vico Fallani, Fabrizio (Univ. Sapienza); Astolfi, Laura (Univ. of Rome); Babiloni, Fabio* (Univ. of Rome); Vecchiato, Giovanni (Univ. of Rome Sapienza)

08:15-08:30   ThA05.2

Estimating Cortical Connectivity in Functional Near Infrared Spectroscopy Using Multivariate Autoregressive Modeling **2334-2337**

Molavi, Behnam* (Univ. of British Columbia); Gervain, Judit (Laboratoire Psychologie de la Perception, CNRS-Paris Descartes); Dumont, Guy (Univ. of British Columbia)

08:30-08:45   ThA05.3

Study of the Functional Hyperconnectivity between Couples of Pilots During Flight Simulation: An EEG Hyperscanning Study **2338-2341**

Astolfi, Laura* (Univ. of Rome); Toppi, Jlenia (Univ. of Rome "Sapienza"); Babiloni, Fabio (Univ. of Rome); Vecchiato, Giovanni (Univ. of Rome Sapienza)

08:45-09:00   ThA05.4

BOLD Correlations to Force in Precision Grip: An Event-Related Study **2342-2346**

Sulzer, James* (Swiss Federal Inst. of Tech., Zurich (ETHZ)); Chib, Vikram (California Inst. of Tech.); Hepp-Reymond, Marie-Claude (Swiss Federal Inst. of Tech., Zurich, Univ. of Zurich); Kollias, Spyros (Univ. Hospital Zurich); Gassert, Roger (ETH Zurich)

09:00-09:15   ThA05.5

ECoG Based Cortical Function Mapping Using General Linear Model **2347-2350**

Qian, Tianyi* (Tsinghua Univ.); Wu, Wei (Tsinghua Univ.); Zhou, WenJing (Tsinghua Univ.); Gao, Shangkai (Tsinghua Univ.); Hong, Bo (Tsinghua Univ.)

09:15-09:30   ThA05.6

Task-Related MEG Source Localization via Discriminant Analysis **2351-2354**

Zhang, Jinyin* (Carnegie Mellon Univ.); Sudre, Gustavo (Carnegie Mellon Univ.); Li, Xin (Carnegie Mellon Univ.); Wang, Wei (Univ. of Pittsburgh); Weber, Douglas (Univ. of Pittsburgh); Bagic, Anto (Univ. of Pittsburgh)

ThA07: 08:00-09:30   Boylston Marriott
6.6.17 What Is Motor Skill and Can Technology Enhance It? (Oral Session)
Chair: Sanguineti, Vittorio *(Univ. of Genoa)*
Co-Chair: Krakauer, John W. *(Johns Hopkins Univ.)*

08:00-08:15   ThA07.1

Toward 'optimal' Schemes of Robot Assistance to Facilitate Motor Skill Learning **2355-2358**

Basteris, Angelo (Univ. of Genoa, Italy); Sanguineti, Vittorio* (Univ. of Genoa)

08:15-08:30   ThA07.2

Motor Skills: Exploiting Stability, Channeling Variability, and Optimizing Safety Margins .... *****

Sternad, Dagmar* (Northeastern Univ.)

08:30-08:45   ThA07.3

Defining Motor Skill Learning As Improvement in Movement Execution .... *****

Shmuelof, Lior* (Motor performance lab, Columbia Univ.); Krakauer, John W. (Johns Hopkins Univ.); Mazzoni, Pietro (Columbia Univ.)

08:45-09:00   ThA07.4
MusicGlove: Motivating and Quantifying Hand Movement Rehabilitation by Using
Functional Grips to Play Music 2359-2363
Friedman, Nizan* (Univ. of California, Irvine); Chan, Vicky (Univ. of California in Irvine);
Zondervan, Danny (Univ. of California, Irvine); Bachman, Mark (Univ. of California, Irvine);
Reinkensmeyer, David J. (Univ. of California)

09:00-09:15   ThA07.5
Enhancing Motor Skill Learning with Noninvasive Brain Stimulation .... *
Schambra, Heidi* (Columbia Univ.)

09:15-09:30   ThA07.6
Classification of Strategies for Disturbance Attenuation in Human-Human Collaborative Tasks 2364-2367
Melendez-Calderon, Alejandro* (Imperial Collge of Science, Tech. & Medicine); Komisar, Vicki (Imperial
College of Science, Tech. & Medicine); Ganesh, Gowrishankar (NICT, ATR_CNS); Burdet, Etienne (Imperial
Collge of Science, Tech. & Medicine)

ThA10: 08:00-09:30   Simmons Marriott
10.6.6 Health Information Management and Electronic Health Records (Oral Session)
Chair: Nikita, Konstantina *(Natl. Tech. Univ. of Athens)*
Co-Chair: Jafari, Roozbeh *(Univ. of Texas at Dallas)*

08:00-08:15   ThA10.1
MEDIFRAME – Remote Volume Rendering Visualization Framework 2368-2371
Unterhinninghofen, Roland* (Karlsruhe Inst. of Tech. (KIT)); Giesel, Frederik (Univ. of Heidelberg);
Dillmann, Rüdiger (Karlsruhe Inst. of Tech. (KIT))

08:15-08:30   ThA10.2
A Semantically-Aided Approach for Online Annotation and Retrieval of Medical Images 2372-2375
Kyrgiazos, George (Natl. Technical Univ. of Athens); Gerostathopoulos, Ilias (Natl. Technical Univ. of Athens
(NTUA)); Kolias, Vassileios* (Natl. Technological Univ. of Athens); Stoitsis, John (Inst. of Communication);
Nikita, Konstantina (Natl. Technical Univ. of Athens)

08:30-08:45   ThA10.3
Biomedical Devices and Systems Security 2376-2379
Arney, David (CIMIT, Univ. of Pennsylvania); Venkatasubramanian, Krishna Kumar* (Univ. of Pennsylvania);
Lee, Insup (Univ. of Pennsylvania); Sokolsky, Oleg (Univ. of Pennsylvania)

08:45-09:00   ThA10.4
Assessing HIPAA Standard in Practice: PHRs Privacy Policies 2380-2383
Carrión Señor, Inmaculada (Univ. of Murcia); Fernandez Aleman, Jose Luis* (Univ. of Murcia);
Toval, Ambrosio (Univ. of Murcia)

09:00-09:15   ThA10.5
Study on Self Hearing Assessment Using Speech Sounds 2384-2387
Sohn, Junil* (Samsung Advanced Inst. of Tech.); Kim, Dongwook (Samsung Advanced Inst. of Tech.);
Ku, Yunseo (with Samsung Advanced Inst. of Tech. (SAIT), Korea); Lee, Kyungwon (Hallym Univ. of
Graduate Studies, Korea); Lee, Junghak (Hallym Univ. of Graduate Studies, Korea)

09:15-09:30   ThA10.6
WiiPD – An Approach for the Objective Home Assessment of Parkinson's Disease 2388-2391
Synnott, Jonathan* (Univ. of Ulster); Chen, Liming (Univ. of Ulster); Nugent, Chris (Univ. of Ulster);
Moore, George (Univ. of Ulster)

ThA11: 08:00-09:30   Wellesley Marriott
10.1.22 Rethinking Health: ICT Enabled Services for People to Be Responsible for Their Health (Minisymposium)
Chair: Saranummi, Niilo *(VTT Tech. Res. Centre)*
Co-Chair: Meneu, Teresa *(Univ. Pol. de Valencia)*

08:00-08:15   ThA11.1
Rethinking Health 2392-2394
Saranummi, Niilo* (VTT Technical Research Ctr.)

08:15-08:30   ThA11.2

HealthPGS, Guiding Patients and Citizens in the Co-Production of Health .... *

Meneu, Teresa* (Univ. Politécnica de Valencia); Sanchez-Calzon, Ana Belen (Univ. Politecnica de Valencia);
Traver, Vicente (Inst. ITACA)

08:30-08:45   ThA11.3

Health Guidance: Supporting Behavior Change in Personal Context .... *

Kaipainen, Kirsikka* (VTT Technical Research Ctr. of Finland)

08:45-09:00   ThA11.4

Profiling and Personalization: Identifying Individual Needs to Support Healthy Behaviour .... *

Honka, Anita* (VTT Technical Research Ctr. of Finland)

09:00-09:15   ThA11.5

Rules of the Game for ICT Enabled Primary Prevention – Understanding the Ecosystem .... *

Traver, Vicente* (Inst. ITACA); Navarro, Maria Amparo (ITACA-TSB Univ. Politécnica de Valencia);
Martínez-Piqueras, Maria (ITACA-TSB Univ. Politécnica de Valencia); Meneu, Teresa (Univ. Politécnica de Valencia)

ThA12: 08:00-09:30	Suffolk Marriott
5.5.6 Cardiovascular and Pulmonary Modeling (Oral Session)	
Chair: Magjarevic, Ratko *(Univ. of Zagreb)*	
Co-Chair: Ursino, Mauro *(Univ. of Bologna)*	

08:00-08:15   ThA12.1

Transient Respiratory Response to Hypercapnia: Analysis via a Cardiopulmonary Simulation Model 2395-2398

Albanese, Antonio (Columbia Univ.); Chbat, Nicolas* (Philips Research North America);
Ursino, Mauro (Univ. of Bologna)

08:15-08:30   ThA12.2

The Impact of Gravity During Head-Up Tilt 2399-2402

Olufsen, Mette* (North Carolina State Univ.); Kaye Smith, Brittany (North Carolina State Univ.);
Mehlsen, Jesper (Frederiksberg Hospital, Denmark); Ottesen, Johnny T (Roskilde Univ., Denmark)

08:30-08:45   ThA12.3

Modeling Study of the Failing Heart and its Interaction with an Implantable Rotary Blood Pump 2403-2409

Ramachandran, Deepa (Rice Univ.); Luo, Chuan (Rice Univ.); Ma, Tony (VA Medical Ctr.);
Clark, John W.* (Rice Univ.)

08:45-09:00   ThA12.4

Toward Online, Noninvasive, Nonlinear Assessment of Cerebral Autoregulation 2410-2413

Aoi, Mikio* (North Carolina State Univ.); Matzuka, Brett (North Carolina State Univ., Biomathematics Program);
Olufsen, Mette (North Carolina State Univ.)

09:00-09:15   ThA12.5

A Multiscale Bidirectional Coupling Framework 2414-2417

Kabilan, Senthil* (Pacific Northwest Natl. Lab.); Kuprat, Andrew (Pacific Northwest Natl. Lab.);
Hlastala, Michael (Univ. of Washington, Seattle, WA); Corley, Richard (Pacific Northwest Natl. Lab.);
Einstein, Daniel (Pacific Northwest Natl. Lab.)

09:15-09:30   ThA12.6

Modeling Cardio-Respiratory System Response to Inhaled CO_2 in
Patients with Congestive Heart Failure 2418-2421

Batzel, Jerry (Medical Univ. Graz); Ellwein, Laura (Marquette Univ.); Olufsen, Mette* (North Carolina State Univ.)

4.5.14 Models of Biological Networks and Gene Regulation (Oral Session)
Chair: Zoltowski, Mariusz, Leslaw *(CM UMK in Bydgoszcz (Univ. of Torun))*
Co-Chair: Amar, Salomon *(Boston Univ.)*

08:00-08:15   ThA13.1
Robustness of Inverse Perturbation for Discrete Event Control 2422-2425
Bouaynaya, Nidhal* (Univ. of Arkansas at Little Rock); Schonfeld, Dan (Univ. of Illinois at Chicago); Shterenberg, Roman (Univ. of Alabama at Birmingham)

08:15-08:30   ThA13.2
An Analytical Study of Relay Neuron's Reliability: Dependence on Input and Model Parameters 2426-2429
Agarwal, Rahul* (Johns Hopkins Univ.); Sarma, Sridevi V. (Johns Hopkins Univ.)

08:30-08:45   ThA13.3
An Application of Monotone Functions Decomposition to the
Reconstruction of Gene Regulatory Networks 2430-2433
Chang, H.J. (Imperial College London); Richard, Guilhem* (Boston Univ.); Julius, Agung (Rensselaer Polytechnic Inst.); Belta, Calin (Boston Univ.); Amar, Salomon (Boston Univ.)

08:45-09:00   ThA13.4
GIST: A Gibbs Sampler to Identify Intracellular Signal Transduction Pathways 2434-2437
Gu, Jinghua* (Virginia Polytechnic Inst. & State Univ.); Chen, Wang (Virginia Polytechnic Inst. & State Univ.); Shih, Ie-Ming (John Hopkins Univ.); Wang, Tian-Li (John Hopkins Univ.); Wang, Yue (Virginia Polytechnic Inst. & State Univ.); Clarke, Robert (Lombardi Comprehensive Cancer Ctr., Georgetown Univ.); Xuan, Jianhua (Virginia Polytechnic Inst. & State Univ.)

09:00-09:15   ThA13.5
Insight into DNA Periodicity by a Single-Channel Sequence Data Approach 2438-2441
Zoltowski, Mariusz, Leslaw* (CM UMK in Bydgoszcz (Univ. of Torun))

09:15-09:30   ThA13.6
GPU-Accelerated Protein Sequence Alignment 2442-2446
Hasan, Laiq* (TU Delft); Kentie, Marijn (TU Delft); Al-Ars, Zaid (TU Delft)

ThA15: 08:00-09:30   Clarendon Marriott
7.9.1 Vascular Tissue Engineering (Oral Session)
Chair: Arjunan, Krishna *(Drexel Univ.)*
Co-Chair: Nukavarapu, Syam *(Univ. of Connecticut)*

08:00-08:15   ThA15.1
Non-Thermal Dielectric Barrier Discharge Plasma Induces Angiogenesis through
Reactive Oxygen Species 2447-2450
Morss Clyne, Alisa* (Drexel Univ.); Arjunan, Krishna (Drexel Univ.)

08:15-08:30   ThA15.2
Electrical Detachment of Cells for Engineering Capillary-Like Structures in a
Photocrosslinkable Hydrogel 2451-2454
Osaki, Tatsuya (Univ. of Tsukuba); Kakegawa, Takahiro (Univ. of Tsukuba); Suzuki, Hiroaki (Univ. of Tsukuba); Fukuda, Junji* (Univ. of Tsukuba)

08:30-08:45   ThA15.3
A Study on the Cellular Structure During Stress Solicitation Induced by BioMEMS 2455-2458
Fior, Raffaella* (Univ. of Trieste); Maggiolino, Stefano (Univ. of Trieste Dept. of Industrial Eng. & Information Tech.); Codan, Barbara (Univ. of Trieste Dept. of Industrial Eng. & Information Tech.); Sbaizero, Orfeo (Univ. of Trieste Dept. of Industrial Eng. & Information Tech.)

08:45-09:00   ThA15.4
Fabrication of Interpenetrate Chitosan: Bioactive Glass, Using Dense Gas CO_2 2459-2463
Fathi, Ali (the Univ. of Sydney, School of Chemical & Biomolecular Eng.); Ravarian, Roya* (the Univ. of Sydney, School of Chemical & Biomolecular Eng.)

09:00-09:15 ThA15.5

Optimal Scaffolds and Effective Progenitor Cells for the Regeneration of Vascularized Bone 2464-2467

Nukavarapu, Syam* (Univ. of Connecticut); Amini, Ami (Univ. of Connecticut)

09:15-09:30 ThA15.6

The Use of Sonication Treatment to Completely Decellularize Blood Arteries: A Pilot Study 2468-2471

Azhim, Azran* (Tokyo Denki Univ.); Yamagami, Kazuki (Division of Life Science & Eng., Tokyo Denki Univ.); Muramatsu, Kazuaki (Division of Life Science & Eng., Tokyo Denki Univ.); Morimoto, Yuji (Dept. Int. Physiol. Bio-Nano Medicine, Natl. Defense Medical College); Tanaka, Masato (Tokyo Denki Univ.)

ThA16: 08:00-09:30 Darthmouth Marriott

9.4.6 Cardiovascular Diagnostic and Therapeutic Devices and Modeling (Oral Session)
Chair: Poon, Carmen CY *(The Chinese Univ. of Hong Kong)*
Co-Chair: Scheffer, Cornie *(Stellenbosch Univ.)*

08:00-08:15 ThA16.1

Multi-Signal Electromechanical Cardiovascular Monitoring on a Modified Home Bathroom Scale 2472-2475

Inan, Omer* (Stanford Univ.); Park, Dookun (Stanford Univ.); Kovacs, Gregory T.A. (Stanford Univ.); Giovangrandi, Laurent (Stanford Univ.)

08:15-08:30 ThA16.2

Beating-Heart Mitral Valve Chordal Replacement 2476-2479

Laing, Genevieve* (Boston Univ.); Dupont, Pierre (Children's Hospital/Harvard Medical School)

08:30-08:45 ThA16.3

**Preferred Patterns of Diastolic Timed Vibrations for Pre-Hospitalization
Treatment of Acute Coronary Ischemia** 2480-2483

Kajbafzadeh, Behrad (Simon Fraser Univ.); Marzencki, Marcin (Simon Fraser Univ.); Alavi, Nezam (Simon Fraser Univ.); Khosrow-khavar, Farzad (Simon Fraser Univ.); Tavakolian, Kouhyar* (Simon Fraser Univ.); Kaminska, Bozena (Simon Fraser Univ.); Menon, Carlo (Simon Fraser Univ.)

08:45-09:00 ThA16.4

The Impact of Various Backboard Configurations on Compression Stiffness in a Manikin Study of CPR ... 2484-2487

Cloete, Garth (Stellenbosch Univ.); Dellimore, Kiran (Stellenbosch Univ.); Scheffer, Cornie* (Stellenbosch Univ.)

09:00-09:15 ThA16.5

Designing for Reliable Textile Neonatal ECG Monitoring Using Multi-Sensor Recordings 2488-2491

Bouwstra, Sibrecht* (Eindhoven Univ. of Tech.); Chen, Wei (Eindhoven Univ. of Tech.); Feijs, Loe (Eindhoven Univ. of Tech.); Bambang Oetomo, Sidarto (Máxima Medical Ctr.); Cluitmans, Pierre J.M. (Eindhoven Univ. of Tech.)

09:15-09:30 ThA16.6

Blood Pressure Estimation Using Oscillometric Pulse Morphology 2492-2496

Mafi, Majid (Univ. of Ottawa); Rajan, Sreeraman (School of Information Tech. & Eng. (SITE), Univ. of Ottawa); Bolic, Miodrag (Univ. of Ottawa); Groza, Voicu (Univ. of Ottawa); Dajani, Hilmi* (Univ. of Ottawa)

ThA17: 08:00-09:30 Exeter Marriott

3.6.1 Intelligent eHealth Monitoring Systems (Oral Session)
Chair: Pattichis, Constantinos *(Univ. of Cyprus)*
Co-Chair: Cafazzo, Joseph *(Univ. Health Network)*

08:00-08:15 ThA17.1

**Fabric Circuit Board-Based Dry Electrode and Its Characteristics for
Long-Term Physiological Signal Recording** 2497-2500

Yoo, Jerald* (Masdar Inst. of Science & Tech.); Yoo, Hoi-Jun (KAIST)

08:15-08:30 ThA17.2

eEmergency Health Care Information Systems 2501-2504

Kyriacou, Efthyvoulos* (Frederick Univ. Cyprus); Constantinides, Panos (Frederick Univ. Cyprus); Pattichis, Constantinos (Univ. of Cyprus); Pattichis, Marios (Univ. of New Mexico,); Panayides, Andreas (Univ. of Cyprus)

08:30-08:45   ThA17.3

A Web Services-Based Exergaming Platform for Senior Citizens:
The Long Lasting Memories Project Approach to E-Health Care **2505-2509**

Bamidis, Panagiotis (Aristotle Univ.); Konstantinidis, Evdokimos (Aristotle Univ. of Thessaloniki);
Billis, Antonis (Aristotle Univ. of Thessaloniki); Frantzidis, Christos (Aristotle Univ. of Thessaloniki);
Hlauschek, Walter (CEIT RALTEC, Inst. for Rehabilitation & Assisted Living Technologies, Schwechat, Austria);
Kyriacou, Efthyvoulos (Frederick Univ. Cyprus); Pattichis, Constantinos* (Univ. of Cyprus)

08:45-09:00   ThA17.4

A Low-Power Wireless ECG Necklace for Reliable Cardiac Activity Monitoring On-The-Move .... *****

Penders, Julien* (imec); van de Molengraft, Jef (Holst Ctr.); Altini, Marco (imec/Holst Ctr.);
Yazicioglu, Refet Firat (IMEC); Van Hoof, Chris (IMEC)

09:00-09:15   ThA17.5

Wearable Healthcare with Attachable Sensors .... *****

Yoo, Hoi-Jun* (KAIST); Yoo, Jerald (Masdar Inst. of Science & Tech.); Yan, Long (KAIST); Lee, Seulki (KAIST);
Joonsung, Bae (KAIST)

09:15-09:30   ThA17.6

The Evolution of Remote Patient Monitoring: From Physician Management to Patient Self-Care .... *****

Cafazzo, Joseph* (Univ. Health Network); Seto, Emily (Univ. Health Network)

ThA19: 08:00-09:30   Salons AB Marriott
3.4.1 Physiological Monitoring I (Oral Session)
Chair: Bragos, Ramon *(Tech. Univ. of Catalonia (UPC))*
Co-Chair: Jayaraman, Sundaresan *(Georgia Inst. of Tech.)*

08:00-08:15   ThA19.1

Recording of Electrohysterogram Laplacian Potential **2510-2513**

Alberola-Rubio, Jose (Univ. Politècnica de València); Garcia-Casado, Javier* (Univ. Politècnica de València);
Ye Lin, Yiyao (Univ. Politècnica de València); Prats-Boluda, Gema (Univ.Politècnica de València);
Perales, Alfredo (Hospital Univ. y Politécnico La Fe de Valencia)

08:15-08:30   ThA19.2

Novel Approach to Admittance to Volume Conversion for Ventricular Volume Measurement **2514-2517**

Kottam, Anil* (Scisense Inc.); Dubois, John (Scisense); McElligott, Andrew (Loyola Univ.);
Henderson, Kyle (Loyola Univ.)

08:30-08:45   ThA19.3

In-Cycle Myocardium Tissue Electrical Impedance Monitoring Using
Broadband Impedance Spectroscopy **2518-2521**

Sanchez, Benjamin* (Technical Univ. of Catalonia, Barcelona, SPAIN); Vandersteen, Gerd (Vrije Univ.
Brussels, Brussels, BELGIUM); Rosell-Ferrer, Javier (Technical Univ. of Catalonia); Cinca, Joan (Cardiology
Unit, Hospital Santa Creu i Sant Pau (HSCSP)); Bragos, Ramon (Technical Univ. of Catalonia (UPC))

08:45-09:00   ThA19.4

An Unpowered, Wireless Contact Lens Pressure Sensor for Point-Of-Care Glaucoma Diagnosis **2522-2525**

Yan, John* (Univ. of California, Davis)

09:00-09:15   ThA19.5

Impedance Changes According to the Degree of Atopi Dermatitis in Mice **2526-2529**

Kim, Soochan* (Hankyong Natl. Univ.)

09:15-09:30   ThA19.6

Fitting the Frequency Response in Acoustic Reflectometry for an
in Vitro Model of a Human Upper Airway **2530-2533**

Vazquez Ceron, Ernesto R.* (Univ. Autonoma Metropolitana); Pierluissi, Joseph H (Univ. of Texas @ El Paso);
Barrales Guadarrama, Victor Rogelio (Univ. Autonoma Metropolitana); Rodriguez Rodriguez, Ezequiel Meliton
(Univ. Autonoma Metropolitana); Barrales Guadarrama, Raymundo (Univ. Autonóma Metropolitana–Azcapotzalco)

1.4.39 Multivariate Signal Processing (Oral Session)
Chair: Aviyente, Selin *(Michigan State Univ.)*
Co-Chair: Signorini, Maria G. *(Politecnico di Milano)*

08:00-08:15   ThA20.1
Multivariate Synchrony Modules Identified through Multiple Subject
Community Detection in Functional Brain Networks 2534-2537
  Bolanos, Marcos* (Michigan State Univ.); Aviyente, Selin (Michigan State Univ.);
  Bernat, Edward (Univ. of Minnesota)

08:15-08:30   ThA20.2
Assessment of Linear Regression Techniques for Modeling Multisensor Data for
Non-Invasive Continuous Glucose Monitoring 2538-2541
  Zanon, Mattia* (Univ. of Padova); Riz, Michela (Univ. of Padova); Sparacino, Giovanni (Univ. of Padova);
  Facchinetti, Andrea (Univ. of Padova); Suri, Roland Erwin (Solianis Monitoring AG); Talary, Mark (Solianis
  Monitoring AG); Cobelli, Claudio (Univ. of Padova)

08:30-08:45   ThA20.3
Parallel Independent Component Analysis Using an Optimized Neurovascular
Coupling for Concurrent EEG-Fmri Sources 2542-2545
  Wu, Lei* (Univ. of New Mexico); Eichele, Tom (Univ. of Bergen); Calhoun, Vince (The Mind Research
  Network/Univ. of New Mexico)

08:45-09:00   ThA20.4
Statistical Characterization of Complex-Valued EEG Spectrum During Mental Imagery Tasks 2546-2549
  S. Aghaei, Amirhossein* (Univ. of Toronto); Mahanta, Mohammad Shahin (Univ. of Toronto);
  Plataniotis, Konstantinos (Univ. of Toronto); Pasupathy, Subbarayan (Univ. of Toronto)

09:00-09:15   ThA20.5
System Identification of Baroreflex Response to Mild Lower Body Negative Pressure 2550-2553
  Aletti, Federico* (Politecnico di Milano); Ferrario, Manuela (Politecnico di Milano); Xu, Da (Univ. of Waterloo);
  Danielle, Greaves (Faculty of Applied Health Sciences, Univ. of Waterloo); Shoemaker, Kevin (the Univ. of
  Western Ontario); Arbeille, Philippe (Univ. of Tours); Cerutti, Sergio (Politecnico di Milano); Hughson, Richard
  (Faculty of Applied Health Sciences, Univ. of Waterloo); Baselli, Giuseppe (Politecnico di Milano)

09:15-09:30   ThA20.6
Factors Influencing Differences between Invasive and Spontaneous
Baroreflex Estimates: Distinct Methods or Different Data? 2554-2557
  Gouveia, Sonia* (Univ. do Porto); Rocha, Ana Paula (Univ. do Porto/CMUP); Van de Borne, Philippe (Hôpital
  Erasme); Laguna, Pablo (Zaragoza Univ. & CIBER-BBN)

1.3.31 Nonlinear Analysis of Biomedical Signals III (Oral Session)
Chair: Bardakjian, Berj Luther *(Univ. of Toronto)*
Co-Chair: Fazel-Rezai, Reza *(Univ. of North Dakota)*

08:00-08:15   ThA21.1
A Waveform Independent Cell Identification Method to Study Long-Term
Variability of Spike Recordings 2558-2561
  Chah, Ehsan (Trinity College Dublin); Hok, Vincent (Trinity College Inst. of Neuroscience, Trinity College
  Dublin, Ireland); O'Mara, Shane M. (Trinity College Inst. of Neuroscience, Trinity College Dublin, Ireland);
  Reilly, Richard* (Trinity College Dublin)

08:15-08:30   ThA21.2
Changes in Dynamical Characteristics of Epileptic EEG in Rats Using
Recurrence Quantification Analysis 2562-2565
  Rabbi, Ahmed Fazle (Univ. of North Dakota); Jaiswal, Manoj Kumar (Univ. of North Dakota);
  Lei, Saobo (Univ. of North Dakota); Fazel-Rezai, Reza* (Univ. of North Dakota)

08:30-08:45   ThA21.3

Seizure Prediction in Intracranial EEG: A Patient-Specific Rule-Based Approach **2566-2569**

    Aarabi, Ardalan* (Univ. of Minnesota); He, Bin (Univ. of Minnesota)

08:45-09:00   ThA21.4

EEG Analysis for Estimation of Duration and Inter-Event Intervals of Seizure-Like Events Recorded In-Vivo from Mice **2570-2573**

    Colic, Sinisa* (Univ. of Toronto); Wither, Rob (Univ. of Toronto); Eubanks, James (Univ. of Toronto); Zhang, Liang (Univ. of Toronto); Bardakjian, Berj Luther (Univ. of Toronto)

09:00-09:15   ThA21.5

Auto-Mutual Information Function of the EEG As a Measure of Depth of Anesthesia **2574-2577**

    Julitta, Barbara (Univ. Politècnica de Catalunya); Vallverdu, Montserrat* (Univ. Politècnica de Catalunya); Melia, Umberto Sergio Pio (Univ. Politècnica de Catalunya); Tupaika, Nadine (Univ. Politècnica de Catalunya); Jospin, Mathieu (Technical Univ. of Catalonia (UPC)); Jensen, Erik Weber (Aircraft Medical Medical); Struys, Michel (Ghent Univ. Hospital); Vereecke, Hugo (Ghent Univ. Hospital); Caminal, Pere (Technical Univ. of Catalonia (UPC))

09:15-09:30   ThA21.6

Phase-Based Features for Motor Imagery Brain-Computer Interfaces **2578-2581**

    Hamner, Benjamin* (EPFL); Leeb, Robert (Ecole Polytechnique Fédérale de Lausanne); Tavella, Michele (Ecole Polytechnique Fédérale de Lausanne); Millán, José del R. (Swiss Federal Inst. of Tech., Lausanne)

ThA22:   08:00-09:30   Salon F Marriott
1.4.37 Advances in Biomedical Signal Classification (Oral Session)
Chair: Voss, Andreas *(Univ. of Applied Sciences Jena)*
Co-Chair: Verma, Naveen *(Princeton Univ.)*

08:00-08:15   ThA22.1

Time-Domain ECG Signal Analysis Based on Smart-Phone **2582-2585**

    Zhou, Shijie* (Dalhousie Univ.); Zhang, Zichen (Dalhousie Univ.); Gu, Jason (Dalhousie Univ.)

08:15-08:30   ThA22.2

Topographic Imaging of the Atrial Electrical Activity During Atrial Fibrillation for the Analysis of Uniform Distributions of the Surface Electrical Potentials **2586-2589**

    Bonizzi, Pietro* (Maastricht Univ.); Meste, Olivier (UNSA-CNRS); Zarzoso, Vicente (Univ. Nice Sophia Antipolis – CNRS); Westra, Ronald (Univ. Maastricht); Karel, Joël (Maastricht Univ.); Guillem, Maria S. (Univ. Politecnica de Valencia); Castells, Francisco (Univ. Politécnica de Valencia)

08:30-08:45   ThA22.3

Preliminary Feasibility Analysis of Remote Subject Identification During Hemodynamic Monitoring by Radio Frequency Impedance **2590-2593**

    O Griofa, Marc* (Univ. of Limerick; Noninvasive Medical Technologies, Inc.); Blue, Rebecca (Orlando Health); Friedman, Robert (Noninvasive Medical Technologies, Inc); Hamski, Phillip (Noninvasive Medical Technologies, Inc); Bhagavatula, Madhusudan (Carnegie Mellon Univ.); Jaech, Aaron (Carnegie Mellon Univ.); Hu, Si Ying (Carnegie Mellon Univ.); Savvides, Marios (Carnegie Mellon Univ.)

08:45-09:00   ThA22.4

Affective Assessment of Computer Users Based on Processing the Pupil Diameter Signal **2594-2597**

    Ren, Peng (Florida Intl. Univ.); Barreto, Armando* (Florida Intl. Univ.); Gao, Ying (Univ. of Wisconsin – Platteville); Adjouadi, Malek (Florida Intl. Univ.)

09:00-09:15   ThA22.5

Entropy Measures for Discrimination of 'Awake' vs 'Anaesthetized' State in Recovery from General Anesthesia **2598-2601**

    Nicolaou, Nicoletta* (Univ. of Cyprus); Houris, Saverios (Nicosia General Hospital); Alexandrou, Pandelitsa (Nicosia General Hospital); Georgiou, Julio (Univ. of Cyprus)

09:15-09:30   ThA22.6

Classification of Multichannel Uterine EMG Signals **2602-2605**

    Moslem, Bassam* (Univ. Libanaise/Univ. de Technologie Compiègne); Diab, Mohamad (Univ. of Tech. of Compiegne); Khalil, Mohamad (Lebanese Univ.); Marque, Catherine (Univ. of Tech. of Compiegne)

08:00-08:15   ThA23.1
Automatic Retinal Vessel Profiling Using Multi-Step Regression Method 2606-2609
Aliahmad, Behzad* (RMIT Univ.); Kant Kumar, Dinesh (RMIT Univ.); Janghorban, Samira (RMIT Univ.);
Che Azemin, Mohd Zulfaezal (RMIT Univ.); Hao, Hao (RMIT Univ.); kawasaki, Ryo (Royal Victorian Eye & Ear
Hospital, Univ. of Melbourne)

08:15-08:30   ThA23.2
Scale-Invariant Vesselness Filtering for Simultaneous Extraction of Optimal Medial and
Boundary Paths in Retinal Images 2610-2613
Zhu, Tao* (AT&T); Schaefer, Gerald (Loughborough Univ.)

08:30-08:45   ThA23.3
Improving Vessel Segmentation in Ultra-Wide Field-Of-View Retinal Fluorescein Angiograms 2614-2617
Perez-Rovira, Adria (Univ. of Dundee); Zutis, Kris (Univ. of Dundee); Hubschman, Jean Pierre (UCLA);
Trucco, Emanuele* (Univ. of Dundee)

08:45-09:00   ThA23.4
Joint Spatio-Temporal Registration and Microvasculature Segmentation of
Retinal Angiogram Sequences 2618-2621
Cao, Shuoying* (Imperial College London); Bharath, Anil (Imperial College London); Parker, Kim (Imperial
College London); Ng, Jeffrey (Imperial College London); Arnold, John (Hammersmith Hospital, Imperial College
Healthcare NHS Trust); McGregor, Alison (Imperial College London); Hill, Adam (Imperial College London)

09:00-09:15   ThA23.5
Computerized Analysis of Narrow-Field ROP Images for the Assessment of
Vessel Caliber and Tortuosity 2622-2625
Fiorin, Diego (Univ. of Padova); Ruggeri, Alfredo* (Univ. of Padua)

09:15-09:30   ThA23.6
Model-Based Optic Nerve Head Segmentation on Retinal Fundus Images 2626-2629
Yin, Fengshou* (Inst. for Infocomm Research); Liu, Jiang (Inst. for Infocomm Research, A STAR);
Ong, Sim Heng (Natl. Univ. of Singapore); Sun, Ying (Natl. Univ. of Singapore); Wong, Damon (Inst. for
Infocomm Research); Tan, Ngan Meng (A*STAR, Inst. for Infocomm Research); Cheung, Carol (Singapore Eye
Research Inst.); Baskaran, Mani (Singapore Eye Research Inst.); Aung, Tin (Singapore Eye Research Inst.);
Wong, Tien Yin (Natl. Univ. of Singapore)

08:00-08:15   ThA24.1
Hextuple Registration of Interim and Follow-Up PET-CT Images for the Accurate
Tracking of Patient Recovery After Therapy 2630-2633
Zsoter, Norbert* (Mediso Medical Imaging Systems Ltd.); Bandi, Peter (Mediso Medical Imaging Systems Ltd.);
Garai, Ildiko (Medical Univ. of Debrecen, Scanomed Ltd.); Papp, Laszlo (Mediso Medical Imaging Systems Ltd.)

08:15-08:30   ThA24.2
Image Geometric Corrections for a New EMCCD-Based Dual Modular X-Ray Imager 2634-2637
Qu, Bin* (State Univ. of New York at Buffalo); Huang, Ying (Univ. at Buffalo); Wang, Weiyuan (Univ. at Buffalo);
Cartwright, Alexander (Elec. Eng., Univ. at Buffalo, SUNY); Titus, Albert (Univ. at Buffalo, The State Univ. of
New York); Bednarek, Daniel (Univ. at Buffalo); Rudin, Stephen (Univ. at Buffalo)

08:30-08:45   ThA24.3
A Robust Registration Method for Real-Time Ultrasound Image Fusion with Pre-Acquired 3D Dataset ... 2638-2641
Zhu, Liren (Tsinghua Univ.); Ding, Hui (Tsinghua Univ.); Zhu, Lei (Beijing Shen Mindray Medical Elec.Tech.
Acad.Co, Ltd.); Wang, Guangzhi* (Tsinghua Univ.)

09:00-09:15   ThA24.4

Learning-Based Multi-Modal Rigid Image Registration by Using Bhattacharyya Distances 2642-2645

So, Wai King* (The Hong Kong Univ. of Science & Tech.); Chung, Albert C. S. (The Hong Kong Univ. of Sci & Tech)

ThA25: 08:00-09:30   Salon JK Marriott
2.8.32 Cardiac Image Analysis (Oral Session)
Chair: Laine, Andrew *(Columbia Univ.)*
Co-Chair: Po, Ming Jack *(Columbia Univ.)*

08:00-08:15   ThA25.1

Three-Dimensional Quantification of Regional Left-Ventricular
Dyssynchrony by Magnetic Resonance Imaging 2646-2649

Mischi, Massimo* (Eindhoven Univ. of Tech.); Kaklidou, Foteini (Eindhoven Univ. of Tech.); Houthuizen, Patrick (Maastricht Univ.); Aben, Jean-Paul (Pie Medical Imaging); Prinzen, Frits (Cardiovascular Research Inst. Maastricht); Bracke, Frank (Catharina Hospital Eindhoven); van den Bosch, Harrie (Catharina Hospital); Korsten, Erik (Catharina Hospital Eindhoven)

08:15-08:30   ThA25.2

Myocardial Strain Estimated from Standard Cine MRI Closely Represents Strain
Estimated from Dedicated Strain-Encoded MRI 2650-2653

Allan, Andrew* (BHF Glasgow Cardiovascular Research Ctr., Univ. of Glasgow); Gao, Hao (Univ. of Strathclyde & Univ. of Glasgow); McComb, Christie (NHS Greater Glasgow & Clyde); Berry, Colin (Univ. of Glasgow)

08:30-08:45   ThA25.3

Parameterization of Real-Time 3D Speckle Tracking Framework for Cardiac Strain Assessment 2654-2657

Lorsakul, Auranuch* (Columbia Univ.); Duan, Qi (NIH); Po, Ming Jack (Columbia Univ.); Angelini, Elsa (Ecole Nat. Superieure des Telecom); Homma, Shunichi (Columbia Univ.); Laine, Andrew (Columbia Univ.)

08:45-09:00   ThA25.4

Manifold Learning for Shape Guided Segmentation of Cardiac Boundaries:
Application to 3D+t Cardiac MR 2658-2662

Eslami, Abouzar* (Technical Univ. of Munich); Yigitsoy, Mehmet (Technische Univ. München); Navab, Nasir (Technische Univ. München)

09:00-09:15   ThA25.5

Comparison of Different Segmentation Approaches without Using Gold Standard. Application to the
Estimation of the Left Ventricle Ejection Fraction from Cardiac Cine MRI Sequences 2663-2666

Lebenberg, Jessica* (ESME-Sudria, INSERM UMR_S 678); Buvat, Irène (Inserm U494); Garreau, Mireille (INSERM, U642, Univ. de Rennes 1); Casta, Christopher (Univ. de Lyon, CNRS UMR5220, Inserm U1044); Constantinidès, Constantin (ESME-Sudria, INSERM UMR_S 678); Cousty, Jean (ESIEE, Univ. Paris-Est, UMR8049); Cochet, Alexandre (Univ. de Bourgogne, CNRS UMR 5158); Jehan-Besson, Stéphanie (Laboratoire LIMOS); Tilmant, Christophe (Univ. Blaise Pascal); Lefort, Muriel (INSERM UMR_S 678); Roullot, Elodie (ESME-Sudria); Najman, Laurent (ESIEE, Univ. Paris-Est, UMR 8049); Sarry, Laurent (Univ. d'Auvergne); Clarysse, Patrick (Univ. of Lyon); De Cesare, Alain (INSERM); Lalande, Alain (Univ. de Bourgogne, CNRS UMR 5158); Frouin, Frederique (INSERM)

09:15-09:30   ThA25.6

Cubic Hermite Bezier Spline Based Reconstruction of Implanted Aortic Valve Stents from CT Images ... 2667-2670

Gessat, Michael* (Univ. Hospital Zürich); Altwegg, Lukas (Univ. Hospital Zürich, Klinik für Kardiology); Frauenfelder, Thomas (Univ. Hospital Zürich, Institut für Diagnostische und Interventionelle Radiologie); Plass, André (Univ. Hospital Zürich, Klinik für Herz- und Gefässchirurgie); Falk, Volkmar (Univ. Hospital Zürich, Klinik für Herz- undGefässchirurgie)

ThA27: 09:30-11:00   Provincetown Marriott
4.5.4 Systems Models in Biology II (Minisymposium)
Chair: Tidor, Bruce *(Massachusetts Inst. of Tech.)*
Co-Chair: May, Elebeoba *(Sandia Natl. Lab.)*

09:30-10:00   ThA27.1

Stochastic Model of Cell Cycle Regulation in Budding Yeast .... *

Barik, Debashis* (Memorial Sloan-Kettering Cancer Ctr.); Tyson, John J. (John J. Tyson)

10:00-10:30   ThA27.2
Computational Design for Synthetic Biology .... *
  Toni, Tina (Massachusetts Inst. of Tech.)*

10:30-11:00   ThA27.3
Robust Protocol Design for Cancer Immunotherapy .... *
  *White, Jacob K. (Massachusetts Inst. of Tech.); Tidor, Bruce (Massachusetts Inst. of Tech.);
  Kim, Bo* (Massachusetts Inst. of Tech.)*

ThP11: 09:30-11:00   America Ballroom Westin
1.1.1 Nonstationary Processing of Biomedical Signals (Poster Session)

09:30-11:00   ThP11.1
Testing for Nonlinearity in Non-Stationary Physiological Time Series 2671-2674
  Guarin, Diego Luis (Univ. Tecnologica de Pereira); Delgado-Trejos, Edilson (Instituto Tecnológico
  Metropolitano); Orozco, Alvaro (Univ. Tecnológica de Pereira)*

09:30-11:00   ThP11.2
EEG Seizure Identification by Using Optimized Wavelet Decomposition 2675-2678
  Pinzon-Morales, Ruben-Dario (Univ. Tecnologica de Pereira); Orozco Gutierrez, Alvaro Angel (Univ.
  Tecnológica de Pereira); Castellanos-Dominguez, Germán (Univ. Nacional de Colombia)*

09:30-11:00   ThP11.3
On the Automated Assessment of Levodopa-Induced Dyskinesia in Parkinson's Disease 2679-2682
  Tsipouras, Markos G. (Univ. of Ioannina); Tzallas, Alexandros (Univ. of Ioannina); Fotiadis, Dimitrios I. (Univ. of
  Ioannina); Konitsiotis, Spiros (Medical School, Univ. of Ioannina)*

09:30-11:00   ThP11.4
Discriminative Time-Frequency Kernels for Gait Analysis for Amyotrophic Lateral Sclerosis 2683-2686
  Sugavaneswaran, Lakshmi (Ryerson Univ.); Umapathy, Karthikeyan (Ryerson Univ.);
  Krishnan, Sridhar (Ryerson Univ.)*

09:30-11:00   ThP11.5
Optimal Two-Stage Filtering of Elastograms 2687-2690
  Subramaniam, Suba (King's College London); Hon, Tsz Kin (King's College of London);
  Ling, Wing-Kuen (Univ. of Lincoln); Georgakis, Apostolos (King's College London)*

09:30-11:00   ThP11.6
New Insight into Arrhythmia Onset Using HRV and BPV Analysis 2691-2694
  Postolache, Octavian (Instituto de Telecomunicacoes); Postolache, Octavian (Instituto de Telecomunicações);
  Girão, Pedro (Instituto de Telecomunicações, & Instituto Superior Técnico, Technical Univ. of Lisbon)*

09:30-11:00   ThP11.7
**Quantification of Cardiovascular and Cardiorespiratory Coupling During
Hypoxia with Joint Symbolic Dynamics** 2695-2698
  *Reulecke, Sina (Univ. of Applied Sciences Jena, Dept. Medical Eng. & BioTech.); Schulz, Steffen (Univ. of
  Applied Sciences Jena); Bauer, Reinhard (Friedrich Schiller Univ., Inst. of Molecular Cell Biology);
  Witte, Herbert (Friedrich Schiller Univ.); Voss, Andreas* (Univ. of Applied Sciences Jena)*

09:30-11:00   ThP11.8
**System Identification to Characterize Human Use of Ethanol Based on Generative
Point-Process Models of Video Games with Ethanol Rewards** 2699-2702
  Ozil, Ipek (Cornell Univ.); Plawecki, Martin (Purdue Univ.); Doerschuk, Peter C. (Cornell Univ.); O'Connor,
  Sean (Indiana Univ. School of Medicine & Purdue Univ.)*

09:30-11:00   ThP11.9
A 1.72µW, 23.2fj/conversion Step Successive Approach ADC for Bio-Medical Signal Acquisition 2703-2706
  Wang, Wei-Sheng (Nation Tsing Hua Univ.); Tang, Kea Tiong (Natl. Tsing Hua Univ.)*

09:30-11:00   ThP12.1

Theoretical and Experimental Analysis of the Non Markov Parameter to Detect Synchronicity in Complex Time Signals **2707-2711**

    Varghese, John (The Univ. of Queensland); Weegink, Kristian (The Univ. of Queensland); Bellette, Paul (The Univ. of Queensland); Meehan, Paul A* (The Univ. of Queensland)

09:30-11:00   ThP12.2

ECG Baseline Wander Correction by Mean-Median Filter and Discrete Wavelet Transform **2712-2715**

    Hao, Wei Tuo* (Beijing Inst of Tech); Chen, Yu (Beijing Inst of Tech); Xin, Yi (Beijing Inst of Tech)

09:30-11:00   ThP12.3

Interpretation of Coarse-Graining of Lempel-Ziv Complexity Measure in ECG Signal Analysis **2716-2719**

    Zhou, Shijie* (Dalhousie Univ.); Zhang, Zichen (Dalhousie Univ.); Gu, Jason (Dalhousie Univ.)

09:30-11:00   ThP12.4

Analysis of Degree of Nonlinearity and Stochastic Nature of HRV Signal During Meditation Using Delay Vector Variance Method **2720-2723**

    Kuntamalla, Srinivas (Natl. Inst. of Tech., warangal); Lekkala, Ram Gopal Reddy* (Natl. Inst. of Tech., warangal)

09:30-11:00   ThP12.5

Recurrence Quantification Analysis of Heart Rate Variability and Respiratory Flow Series in Patients on Weaning Trials **2724-2727**

    Arcentales, Andrés (Univ. Politècnica de Catalunya); Giraldo, Beatriz* (Univ. Poiltècnica de Catalunya); Caminal, Pere (Technical Univ. of Catalonia (UPC)); Benito, Salvador (Hospital de la Santa Creu i Sant Pau); Voss, Andreas (Univ. of Applied Sciences Jena)

09:30-11:00   ThP12.6

Complexity-Based Analysis for the Detection of Heart Murmurs **2728-2731**

    Gómez-García, Jorge Andrés (Univ. Nacional de Colombia Sede Manizales); Martínez-Vargas, Juan David* (Univ. Nacional de Colombia); Castellanos-Dominguez, Germán (Univ. Nacional de Colombia)

09:30-11:00   ThP12.7

Nonlinear Dynamics of Voices in Esophageal Phonation **2732-2735**

    Yan, Nan* (The Univ. of Hong Kong)

09:30-11:00   ThP12.8

E-Tube Regression: A New Method for Motion Artifact Reduction **2736-2739**

    Ansari, Sardar* (Virginia Commonwealth Univ.); Ward, Kevin (Virginia Commonwealth Univ.); Najarian, Kayvan (Virginia Commonwealth Univ.)

09:30-11:00   ThP12.9

An Improved Algorithm for Quantifying Real-Time Impedance Biosensor Signals **2740-2744**

    Messing, Dean* (Sharp Laboratories of America); Ghindilis, Andrey (Sharp Laboratories of America); Schwarzkopf, Kevin (Sharp Laboratories of America)

09:30-11:00   ThP13.1

ECG Biometric Using Multilayer Perceptron and Radial Basis Function Neural Networks **2745-2748**

    Mai, Vu* (RMIT Univ.); Khalil, Ibrahim (RMIT Univ.)

09:30-11:00   ThP13.2

Individual Identification with High Frequency ECG : Preprocessing and Classification by Neural Network **2749-2751**

    Tashiro, Futoshi* (Tokyo City Univ.)

09:30-11:00   ThP13.3

Using Artificial Neural Networks to Classify Unknown Volatile Chemicals from the Firings of Insect Olfactory Sensory Neurons **2752-2755**

Bachtiar, Luqman R (The Univ. of Auckland); Unsworth, Charles Peter* (Univ. of Auckland); Newcomb, Richard D (The New Zealand Inst. for Plant & Food Research); Crampin, Edmund (Univ. of Auckland)

09:30-11:00   ThP13.4

Predicting Odorant Chemical Class from Odorant Descriptor Values with an Assembly of Multi-Layer Perceptrons **2756-2759**

Bachtiar, Luqman R* (The Univ. of Auckland); Unsworth, Charles Peter (Univ. of Auckland); Newcomb, Richard D (The New Zealand Inst. for Plant & Food Research); Crampin, Edmund (Univ. of Auckland)

09:30-11:00   ThP13.5

Identification of Hypoglycemic States for Patients with T1DM Using Various Parameters Derived from EEG Signals **2760-2763**

Nguyen, Lien B.* (Univ. of Tech., Sydney); Ling, Steve (Univ. of Tech. Sydney); Jones, Timothy (Princess Margaret Hospital for Children); Nguyen, Hung T. (Univ. of Tech., Sydney)

09:30-11:00   ThP13.6

Detection of Arousals in Parkinson's Disease Patients **2764-2767**

Sorensen, Gertrud Laura* (Technical Univ. of Denmark); Kempfner, Jacob (Technical Univ. of Denmark); Sorensen, Helge B D (Technical Univ. of Denmark); Jennum, Poul (Danish Ctr. for Sleep Medicing)

09:30-11:00   ThP13.7

Classification of Morphological Features Extracted from Intracranial Pressure Recordings in the Diagnosis of Normal Pressure Hydrocephalus (NPH) **2768-2771**

Galeano, Massimiliano* (Univ. of Messina); Calisto, Andrea (Univ. of Messina); Bramanti, Alessia (Univ. of Messina); Angileri, Flavio Filippo (Univ. of Messina); Campobello, Giuseppe (Univ. of Messina); Serrano, Salvatore (Univ. of Messina); Azzerboni, Bruno (Univ. of Messina)

09:30-11:00   ThP13.8

Binary Particle Swarm Optimization for Feature Selection in Detection of Cries of Infants with Hypothyroidism **2772-2775**

Zabidi, Azlee (Univ. Teknologi Mara); Lee, Khuan Y.* (Univ. Teknologi MARA); Mansor, Wahidah (Univ. Teknologi MARA); Mohd Yassin, Ahmad Ihsan (Univ. Teknologi Mara); Sahak, Rohilah (Univ. Teknologi mara)

09:30-11:00   ThP13.9

Optimization of Head Movement Recognition Using Augmented Radial Basis Function Neural Network ... **2776-2779**

Yuwono, Mitchell* (Univ. of Tech. Sydney); Handojoseno, Aluysius Maria Ardi (Univ. of Tech., Sydney); Nguyen, Hung T. (Univ. of Tech., Sydney)

09:30-11:00   ThP13.10

Development and Validation of a Prototypal Neural Networks-Based Tumor Tracking Method **2780-2783**

Seregni, Matteo* (Politecnico di Milano); Pella, Andrea (Politecnico di Milano); Riboldi, Marco (Politecnico di Milano); Baroni, Guido (Politecnico di Milano)

ThP14: 09:30-11:00   America Ballroom Westin
2.1.4 Magnetic Resonance Imaging (Poster Session)

09:30-11:00   ThP14.1

Investigation of Acupoint Specificity by Whole Brain Functional Connectivity Analysis from fMRI Data . **2784-2787**

Feng, Yuanyuan (Inst. of Automation); Bai, Lijun (Life Science Research Ctr., Xidian Univ.); Zhang, Wensheng (Inst. of Automation, Chinese Acad. of Sciences); Xue, Ting (Life Science Research Ctr., Xidian Univ.); Wang, Hu (Inst. of Automation, Chinese Acad. of Sciences); Zhong, Chongguang (Inst. of Automation, Chinese Acad. of Sciences); Tian, Jie* (Chinese Acad. of Sciences)

09:30-11:00   ThP14.11
A Combined HRV-Fmri Approach to Assess Cortical Control of
Cardiovagal Modulation by Motion Sickness **2825-2828**
  Kim, Jieun* (MGH); Napadow, Vitaly (Massachusetts General Hospital); Kuo, Braden (Massachusetts General
  Hospital, Harvard Medical School); Barbieri, Riccardo (MGH-Harvard Medical School-MIT)

09:30-11:00   ThP14.12
Ambiguity and Regularization in Parallel MRI **2829-2832**
  Gol, Derya* (The Ohio State Univ.); Potter, Lee (The Ohio State Univ., Dept Elec. & Computer Eng.)

09:30-11:00   ThP14.13
The Optimization of an 8-Channel Transceive Volume Array for Small Animal MRI at 9.4T **2833-2836**
  Li, Yu* (The Univ. of Queensland); Weber, Ewald (The Univ. of Queensland); Liu, Feng (The Univ. of
  Queensland); Li, Bing Keong Joe (The Univ. of Queensland); Crozier, Stuart (The Univ. of Queensland)

09:30-11:00   ThP14.14
A MOM/FEM-Based Coil Sensitivity Mapping Method for High-Field Parallel MRI **2837-2840**
  Jin, Jin (The Univ. of Queensland); Liu, Feng (The Univ. of Queensland); Li, Yu* (The Univ. of Queensland);
  Weber, Ewald (The Univ. of Queensland); Xu, Wenlong (Univ. of Science & Tech of China);
  Crozier, Stuart (The Univ. of Queensland)

09:30-11:00   ThP14.15
Visual Cortex Activation Induced by Tactile Stimulation in Late-Blind
Individuals with Retinitis Pigmentosa **2841-2844**
  Cunningham, Samantha* (Univ. of Southern California); Weiland, James (Univ. of Southern California);
  Bao, Pinglei (Univ. of Southern California); Tjan, Bosco S. (Univ. of Southern California)

09:30-11:00   ThP14.16
3D Selective Pulse Design with Variable Spoke Trajectories for Parallel Excitation **2845-2848**
  Feng, Shuo* (Texas A&M Univ.); Ji, Jim Xiuquan (Texas A&M Univ.)

ThP15: 09:30-11:00	America Ballroom Westin
3.5.25 Chemical Biosensors (Poster Session)	

09:30-11:00   ThP15.1
A Novel Strategy for Long-Term Implantable Artificial Pancreas **2849-2853**
  Ricotti, Leonardo* (Scuola Superiore Sant'Anna); Assaf, Tareq (Biorobotics Inst., Scuola Superiore Sant'Anna);
  Menciassi, Arianna (Scuola Superiore Sant'Anna); Dario, Paolo (IIT Italian Inst. of Tech.)

09:30-11:00   ThP15.2
A SU-8-Based Compact Implantable Wireless Pressure Sensor for
Intraocular Pressure Sensing Application **2854-2857**
  Xue, Ning* (Univ. of Texas at Dallas); Chang, Sung Pil (Inha Univ.); Lee, Jeong-Bong (Univ. of Texas at Dallas)

09:30-11:00   ThP15.3
Low Power Implantable Ultrasound Imager for Online Monitoring of Tumor Growth **2858-2861**
  Basak, Abhishek* (Case Western Reserve Univ.); Narasimhan, Seetharam (Case Western Reserve Univ.);
  Bhunia, Swarup (Case Western Reserve Univ.)

09:30-11:00   ThP15.4
A 64-Channel Neuron Recording System **2862-2865**
  Lo, Yi-Kai* (Univ. of California, Santa Cruz); Chen, Kuanfu (Univ. of California, Santa Cruz);
  Liu, Wentai (Univ. of California, Santa Cruz)

09:30-11:00   ThP15.5
In Vitro Study of Titanium Nitride Electrodes for Neural Stimulation **2866-2869**
  Pour Aryan, Naser* (Univ. of Ulm); Asad, Mohammad Imam Hasan Bin (Univ. of Ulm); Brendler, Christian (Univ.
  of Ulm); Kibbel, Steffen (Retina Implant AG); Heusel, Gerhard (Natural & Medical Sciences Inst. at Univ. of
  Tuebingen (NMI)); Rothermel, Albrecht (Univ. of Ulm)

09:30-11:00   ThP15.6

Hydrogel Optimization towards Fibroblast-Friendly Biomimetic Coatings for Implantable Devices **2870-2873**

Sanchez Linde, Alicia (Katholieke Univ. Leuven (KUL), imec); O'Callaghan, John M. (Katholieke Univ. Leuven (KUL), imec); Op de Beeck, Maaike (IMEC); Neves, Herc (imec); Van Hoof, Chris* (IMEC); Mertens, Robert (Katholieke Univ. Leuven (KUL), imec)

ThP16:   09:30-11:00   America Ballroom Westin

3.5.27 Recent Developments in Smart Clothes (Poster Session)

09:30-11:00   ThP16.1

Delivering Optical Power to Subcutaneous Implanted Devices **2874-2877**

Ayazian, Sahar* (Univ. of Texas at Austin); Hassibi, Arjang (Univ. of Texas at Austin)

09:30-11:00   ThP16.2

Flexible PET/ITO Electrode Array for Implantable Biomedical Applications **2878-2881**

Ahani, Asieh* (Northeastern Univ., Boston, USA); Saadati-Fard, Laila (Integrated Circuits & Systems Lab., Elec. & Computer Eng. Dept., K.N. Toosi Univ. of Tech.,Tehran, Iran); Sodagar, Amir M. (Univ. of Michigan); Boroumand, Farhad (Elec. & Computer Eng. Dept., K.N. Toosi Univ. of Tech.)

09:30-11:00   ThP16.3

Design of Double Layer Printed Spiral Coils for Wirelessly-Powered Biomedical Implants **2882-2885**

Ashoori, Ehsan* (K.N. Toosi Univ. of Tech.); Asgarian, Farzad (K.N.Toosi Univ. of Tech.); Sodagar, Amir M. (Univ. of Michigan)

09:30-11:00   ThP16.4

Implantable Radio Frequency Identification Sensors: Wireless Power and Communication **2886-2892**

Hutchens, Chriswell* (Oklahoma State Univ.); Rennaker, Robert (Univ. of Texas at Dallas); Venkataraman, Srinivasan (oklahoma state Univ.); Liao, Ran (Oklahoma State Univ.); Ahmed, Rehan (Oklahoma State Univ.)

09:30-11:00   ThP16.5

Design and Implementation of a Volume Conduction Based RFID System for Smart Implants **2893-2896**

Liu, Xiaoyu* (Univ. of Pittsburgh); Ogirala, Ajay (Univ. of Pittsburgh); Berger, Lee (LB Medical); Mickle, Marlin (Univ. of Pittsburgh)

09:30-11:00   ThP16.6

Ultra-High Density Packaging Technology for Injectable Medical Devices **2897-2900**

McLaughlin, Bryan* (Draper Lab.); Smith, Brian (Draper Lab.); John, Lachapelle (Draper Lab.); Traviglia, Daniel (Draper Lab.); Sriram, Tirunelveli (CS Draper Lab.); O'Dowd, David (Draper Lab.)

09:30-11:00   ThP16.7

Biocompatible Nanolayered Polymerization of MEMS Devices **2901-2904**

Divyala, Sri Divya (Dept. of Biomedical Eng., Nano Tech. Research & Teaching Facility, Univ. of Texas at Arlington); Asghar, Waseem (Dept. of Elec. Eng., Nano Tech. Research & Teaching Facility, Univ. of Texas at Arlington); Iqbal, Samir M* (Univ. of Texas at Arlington)

09:30-11:00   ThP16.8

Optimal Secondary Coil Design for Inductive Powering of the Artificial Accommodation System **2905-2908**

Nagel, Jörg André* (Karlsruhe Inst. of Tech. (KIT)); Krug, Markus (Karlsruhe Inst. of Tech. (KIT)); Gengenbach, Ulrich (Karlsruhe Inst. of Tech. (KIT)); Guth, Helmut (Karlsruhe Inst. of Tech. (KIT)); Bretthauer, G (Inst. for Applied Computer Science); Guthoff, Rudolf F. (Dept. of Ophthalmology Univ. of Rostock)

09:30-11:00   ThP16.9

A MICS Telemetry Implant Powered by a 27MHz ISM Inductive Link **2909-2912**

Laskovski, Anthony Nikola* (Univ. of Newcastle); Yuce, Mehmet Rasit (Univ. of Newcastle)

09:30-11:00   ThP16.10

Reactive Component Selection for TET Powered Medical Devices **2913-2916**

Leung, Ho Yan* (Univ. of Auckland); Budgett, David (Auckland Univ.); Hu, Aiguo Patrick (Univ. of Auckland)

09:30–11:00 ThP16.11

Wireless Intra-Brain Communication for Image Transmission through Mouse Brain **2917-2920**

Sasagawa, Kiyotaka* (Nara Inst. of Science & Tech.); Matsuda, Takashi (Natinal Institute of Information and Communications Tech.); Davis, Peter (Telecognix corpolation); Zhang, Bing (Natl. Inst. of Information & Communications Tech.); Li, Keren (Natl. Inst. of Information & Communications Tech.); Kobayashi, Takuma (Nara Inst. of Science & Tech.); Noda, Toshihiko (Nara Inst. of Science & Tech.); Tokuda, Takashi (Nara Inst. of Science & Tech.); Ohta, Jun (Nara Inst. of Science & Tech.)

ThP17: 09:30-11:00 America Ballroom Westin
3.5.30 Advances in Implantable Systems (Poster Session)

09:30–11:00 ThP17.1

**Development of a Novel Six-Axis Force/Moment Sensor Attached to a
Prosthetic Limb for the Unrestrained Gait Measurement** **2921-2924**

Hayashi, Yuichiro* (Graduate School, Doshisha Univ.); Tsujiuchi, Nobutaka (Doshisha Univ.); Koizumi, Takayuki (Doshisha Univ.); Oshima, Hiroko (Doshisha Univ.); Tsuchiya, Youtaro (Tec Gihan Co., LTD)

09:30–11:00 ThP17.2

MEMS-Based Bubble Pressure Sensor for Prosthetic Socket Interface Pressure Measurement **2925-2928**

Wheeler, Jason* (Sandia Natl. Laboratories); Dabling, Jeffrey (Sandia Natl. Laboratories); Chinn, Douglas (Sandia Natl. Laboratories); Turner, Timothy (Sandia Natl. Laboratories); Filatov, Anton (Sandia Natl. Laboratories); Anderson, Larry (Sandia Natl. Laboratories); Rohrer, Brandon (Sandia Natl. Laboratories)

09:30–11:00 ThP17.3

Slip Detection and Grip Adjustment Using Optical Tracking in Prosthetic Hands **2929-2932**

Roberts, Luke* (Univ. of Maryland Baltimore County); Singhal, Girish (Infinite Biomedical Technologies, LLC); Kaliki, Rahul (Univ. of Southern California)

09:30–11:00 ThP17.4

Ultra-High Photosensitivity Silicon Nanophotonics for Retinal Prosthesis: Electrical Characteristics **2933-2936**

Khraiche, Massoud* (Univ. of California, San Diego); Lo, Yu-Hwa (Univ. of California San Diego); Wang, Deli (UCSD); Cauwenberghs, Gert (Univ. of California San Diego); Silva, Gabriel (UCSD); Freeman, William (Jacob's Retina Ctr.)

ThP18: 09:30-11:00 America Ballroom Westin
6.1.47 Neural Interfaces and Regeneration (Poster Session)

09:30–11:00 ThP18.1

A Transparent µECoG Array for Simultaneous Recording and Optogenetic Stimulation **2937-2940**

Ledochowitsch, Peter* (Univ. of California at Berkeley); Olivero, Elisa (Polytechnic of Turin); Blanche, Tim (Univ. of California at Berkeley); Maharbiz, Michel (Univ. of California, Berkeley)

09:30–11:00 ThP18.2

**Dynamically Characterizing Bioimpedance of Fingertip Skin through a Developed CVD
Based Electrotactile Rendering System** **2941-2944**

Shen, Yantao* (Univ. of Nevada, Reno); Gregory, John (Michigan State Univ.); Shelton, Claire (Univ. of Nevada Reno)

09:30–11:00 ThP18.3

A 8.6 uW 3-Bit Programmable Gain Amplifier for Multiplexed-Input Neural Recording Systems **2945-2948**

Al-Ashmouny, Khaled* (Univ. of Michigan); Chang, Sun-Il (Univ. of Michigan); Yoon, Euisik (Univ. of Michigan)

09:30–11:00 ThP18.4

**A Comparison of Tripolar Concentric Ring Electrode and Spline Laplacians on a
Four-Layer Concentric Spherical Model** **2949-2952**

Liu, Xiang* (Univ. of Rhode Island); Makeyev, Oleksandr (Univ. of Rhode Island); Besio, W. G. (Univ. of Rhode Island)

09:30–11:00 ThP18.5

A Blister-Test Apparatus for Studies on the Adhesion of Materials Used for Neural Electrodes **2953-2956**

Ordonez, Juan Sebastian* (Univ. of Freiburg); Boehler, Christian (Univ. of Freiburg); Schuettler, Martin (Univ. of Freiburg); Stieglitz, Thomas (Univ. of Freiburg)

09:30-11:00   ThP18.17

Surface Modification of Neural Stimulating/Recording Electrodes with High Surface Area Platinum-Iridium Alloy Coatings **3001-3004**

Petrossians, Artin* (Univ. of Southern California); Whalen, Jack (Univ. of Southern California); Weiland, James (Univ. of Southern California); Mansfeld, Florian (Univ. of Southern California)

09:30-11:00   ThP18.18

Analytical Design Equations for Self-Tuned Class-E Power Amplifier **3005-3008**

Hu, Zhe* (Illinois Inst. of Tech.); Troyk, Philip (Illinois Inst. of Tech.)

09:30-11:00   ThP18.19

Feasibility Study for Future Implantable Neural-Silicon Interface Devices **3009-3015**

Yu, Bo (Tsinghua Univ.); Mak, Terrence* (Newcastle Univ.)

09:30-11:00   ThP18.20

Modeling Two-Photon Calcium Fluorescence of Episodic V1 Recordings Using Multifrequency Analysis **3016-3019**

Zheng, Henry* (Yale Univ.); Malik, Wasim Q. (Massachusetts Inst. of Tech.); Runyan, Caroline (Dept. of Brain & Cognitive Science, MIT); Sur, Mriganka (MIT); Brown, Emery N (MGH-Harvard Medical School-MIT)

09:30-11:00   ThP18.21

Coupling Biotic and Abiotic Metrics to Create a Testbed for Predicting Neural Electrode Performance **3020-3023**

Prasad, Abhishek* (Univ. of Miami); Sankar, Viswanath (Univ. of Florida); Dyer, Aubrey T. (Univ. of Florida); Knott, Eric (Univ. of Florida); Xue, Qing-Shan (Univ. of Florida); Nishida, Toshikazu (Univ. of Florida); Reynolds, John (Univ. of Florida); Shaw, Gerry (Univ. of Florida); Streit, Wolfgang (Univ. of Florida); Sanchez, Justin C. (Univ. of Miami)

09:30-11:00   ThP18.22

Developing Implantable Neuroprosthetics: A New Model in Pig **3024-3030**

Borton, David* (Brown Univ.); Yin, Ming (Brown Univ.); Aceros, Juan (Brown Univ.); Agha, Naubahar (Brown Univ.); Minxha, Juri (Brown Univ.); Komar, Jacob (Brown Univ.); Patterson, William (Brown Univ.); Bull, Christopher (Brown Univ.); Nurmikko, Arto (Brown Univ.)

09:30-11:00   ThP18.23

Multi-Layer Coils for Efficient Transcutaneous Power Transfer **3031-3034**

Artan, Nabi Sertac* (Polytechnic Inst. of New York Univ.); Li, Xiaonin (Polytechnic Inst. of New York Univ.); Patel, Ramesh (Polytechnic Inst. of New York Univ.); Ning, Chengzhi (Polytechnic Inst. of New York Univ.); Ludvig, Nandor (Comprehensive Epilepsy Ctr., New York Univ. School of Medicine); Chao, Jonathan (Polytechnic Inst. of New York Univ.)

09:30-11:00   ThP18.24

A Programmable and Implantable Microsystem for Multimodal Processing of Ensemble Neural Recordings **3035-3038**

Zhang, Fei* (Michigan State Univ.); Aghagolzadeh, Mehdi (Michigan State Univ.); Oweiss, Karim (Michigan State Univ.)

ThB01: 11:15-12:45   St. George AB Westin
6.3.33 Neuromuscular Stimulation I (Oral Session)
Chair: Prochazka, Arthur *(Univ. of Alberta)*
Co-Chair: Triolo, Ronald J. *(US Dept. of Veterans Affairs & Case Western Res. Univ.)*

11:15-11:30   ThB01.1

Optimization of Stimulus Parameters for Selective Peripheral Nerve Stimulation with Multi-Contact Electrodes **3039-3042**

Fisher, Lee* (Case Western Reserve Univ.); Anderson, James (MetroHealth Medical Ctr.); Tyler, Dustin (Case Western Reserve Univ.); Triolo, Ronald J. (US Dept. of Veterans Affairs & Case Western Reserve Univ.)

11:30-11:45   **ThB01.2**

Effect of Functional Electrical Stimulation (FES) Combined with Robotically Assisted Treadmill Training on the EMG Profile **3043-3046**

Askari, Sina* (Univ. of Southern California); Chao, Tekang (Student, California State Univ. Los Angeles); Conn, lauren (Student, California State Univ. Los Angeles); Partida, Elizabeth (Student, California State Univ. Los Angeles); Lazzaretto, Teresa (Student, California State Univ. Los Angeles); Anne See, Pamela (Student, California State Univ. Los Angeles); Chow, Cheryl (Student, California State Univ. Los Angeles); de Leon, Ray (California State Univ. Los Angeles); Won, Deborah (California State Univ., Los Angeles)

11:45-12:00   **ThB01.3**

A Hybrid Tool for Reaching and Grasping Rehabilitation: The ArmeoFES **3047-3050**

Crema, Andrea* (ETH Zurich); McNaught, Andrew Murray (Univ. of Cape Town, South Africa); Albisser, Urs (Balgrist Univ. Hospital); Bolliger, Marc (Balgrist Univ. Hospital); Micera, Silvestro (École Polytechnique Fédérale de Lausanne); Curt, Armin (Spinal Cord Injury Ctr., Balgrist Univ. Hospital); Morari, Manfred (Swiss Federal Inst. of Tech.)

12:00-12:15   **ThB01.4**

First Permanent Human Implant of the Stimulus Router System, a Novel Neuroprosthesis: Preliminary Testing of a Polarity Reversing Stimulation Technique **3051-3054**

Gan, Liu Shi* (Univ. of Alberta); Ravid, Einat (Natalie) (Univ. of Alberta); Kowalczewski, Jan (Univ. of Alberta); Prochazka, Arthur (Univ. of Alberta)

12:15-12:30   **ThB01.5**

Neuromuscular Electrical Stimulation to Augment Reach and Hand Opening after Stroke **3055-3058**

Makowski, Nathaniel* (Case Western Reserve Univ.); Knutson, Jayme (Case Western Reserve Univ.); Chae, John (Case Western Reserve Univ.); Crago, Patrick (Case Western Reserve Univ.)

ThB02: 11:15-12:45   St. George CD Westin
6.13.46 Human Performance: II (Oral Session)
Chair: Krebs, Hermano Igo *(MIT)*
Co-Chair: Estepp, Justin *(Air Force Res. Lab.)*

11:15-11:30   **ThB02.1**

Activity Level Classification Algorithm Using SHIMMER Wearable Sensors for Individuals with Rheumatoid Arthritis **3059-3062**

Fortune, Emma* (Intel Ireland Limited); Tierney, Marie (Univ. of Limerick); Ni Scanaill, Cliodhna (Intel Labs); Bourke, Alan (Univ. of Limerick); Kennedy, Norelee (Univ. of Limerick)

11:30-11:45   **ThB02.2**

An Instrumented Sit-to-Stand Test used to Examine Differences between Older Fallers and Non-Fallers **3063-3066**

Doheny, Emer* (Intel); Fan, Chie Wei (St James's hospital); Foran, Tim (St.James's Hospital); Greene, Barry R. (Intel); Cunningham, Clodagh (St James' Hospital); Kenny, Rose Anne (Trinity College Dublin)

11:45-12:00   **ThB02.3**

Locating the Sources for Cross-Modal Interactions and Decision Making During Judging the Visual-Affected Auditory Intensity Change **3067-3070**

Li, Xuan (Shanghai Jiao Tong Univ.); Ge, Xiaoli (Shanghai Jiao Tong Univ.); Sun, Junfeng* (Shanghai Jiao Tong Univ.); Tong, Shanbao (Shanghai Jiao Tong Univ.)

12:00-12:15   **ThB02.4**

Switching Rate Changes Associated with Mental Fatigue for Assistive Technologies **3071-3074**

Craig, Ashley (Univ. of Tech., Sydney); Tran, Yvonne* (Univ. of Tech., Sydney); Wijesuriya, Nirupama (The Univ. of Sydney); Thuraisingham, Ranjit Arulnayagam (Univ. of Tech. Sydney); Nguyen, Hung T. (Univ. of Tech., Sydney)

12:15-12:30   **ThB02.5**

Vigilance Estimation by Using Forehead EOG Features **3075-3078**

Cai, Haoyu (Shanghai Jiao Tong Univ., BCMI Lab); Ma, Jiaxin (Shanghai Jiaotong Univ.); Shi, Lichen (Shanghai Jiao Tong Univ.); Lu, Bao-Liang* (Shanghai Jiao Tong Univ.)

12:30-12:45   ThB02.6

Implicit Visual Distortion Modulates Human Gait **3079-3082**

Kim, Seung-Jae (Massachusetts Inst. of Tech.); Krebs, Hermano Igo (MIT)*

11:15-11:30   ThB03.1

The Impact of Electrode Characteristics on Electrocorticography (ECoG) **3083-3086**

Wodlinger, Brian (Univ. of Pittsburgh); Degenhart, Alan (Univ. of Pittsburgh); Collinger, Jennifer (Univ. of Pittsburgh); Tyler-Kabara, Elizabeth (Univ. of Pittsburgh); Wang, Wei (Univ. of Pittsburgh)*

11:30-11:45   ThB03.2

A Method for Real-Time Cortical Oscillation Detection and Phase-Locked Stimulation **3087-3090**

Chen, L. Leon (Harvard Medical School); Madhavan, Radhika (Georgia Inst. of Tech.); Rapoport, Benjamin Isaac (Massachusetts Inst. of Tech.); Anderson, William S. (Dept. of Neurosurgery, Brigham & Women's Hospital, Boston, MA)*

11:45-12:00   ThB03.3

An Unsupervised Method for Identifying Regions That Initiate Seizures on Intracranial EEG **3091-3094**

Wulsin, Drausin (Univ. of Pennsylvania); Litt, Brian (Univ. of Pennsylvania)*

12:00-12:15   ThB03.4

Discrete Gamma Oscillations Identify the Seizure Onset Zone in Some Pediatric Epilepsy Patients **3095-3098**

Gupta, Jay (Univ. of Pennsylvania); Marsh, Eric (Children's Hospital of Philadelphia, Univ. of Pennsylvania); Nieh, Horng-An (Univ. of Pennsylvania); Porter, Brenda (Children's Hospital of Philadelphia, Univ. of Pennsylvania); Litt, Brian (Univ. of Pennsylvania)*

12:15-12:30   ThB03.5

Spectral Features of Electroencephalogram in Characterizing Various Brain States under Anesthesia .. **3099-3102**

Kang, Eunji E. (Univ. of Toronto); Zalay, Osbert (Univ. of Toronto); El Beheiry, Hossam (Trillium Health Ctr.); Wong, Jean (Univ. Health Network); Carlen, Peter L. (Univ. of Toronto); Bardakjian, Berj Luther (Univ. of Toronto)*

12:30-12:45   ThB03.6

Fibre-Selective Recording from Peripheral Nerves Using a Multiple-Contact Cuff:
Report on Pilot Pig Experiments **3103-3106**

Schuettler, Martin (Univ. of Freiburg); Seetohul, Vipin (Univ. of Warwick); Rijkhoff, Nico (Aalborg Univ.); Møller, Flemming (Surgical Research Unit, Dept. of Surgery P, Aahus Univ. Hospital, Denmark); Donaldson, Nicholas de Neufville (Univ. College London); Taylor, John (Univ. of Bath)*

11:15-11:30   ThB05.1

Selective Control of Physiological Responses by Temporally-Patterned
Electrical Stimulation of the Canine Vagus Nerve **3107-3110**

Yoo, Paul (Duke Univ.); Hincapie, Juan Gabriel (Boston Scientific Corp.); Jason, Hamann (Boston Scientific Corp.); Ruble, Stephen (Boston Scientific Corp.); Wolf, Patrick (Duke Univ.); Grill, Warren (Duke Univ.)*

11:30-11:45   ThB05.2

Haptically Facilitated Bimanual Training Combined with Augmented Visual
Feedback in Moderate to Severe Hemiplegia **3111-3114**

Boos, Amy (New Jersey Inst. of Tech.); Qiu, Qinyin (NJIT); Fluet, Gerard (UMDNJ); Adamovich, Sergei (NJIT)*

11:45-12:00   ThB05.3

Expert Strategy Switching in the Control of a Bimanual Manipulandum with an Unstable Task **3115-3118**

Zenzeri, Jacopo (Fondazione Istituto Italiano di Tecnologia); Morasso, Pietro (Univ. of Genova); Saha, Devjani (Northwestern Univ.)*

12:00-12:15   ThB05.4

Development of a Network FES System for Stroke Rehabilitation **3119-3122**

Qu, Hongen (MED-X Research Inst. of Shanghai Jiao Tong Univ.); Wang, Ting (Med-x Research Inst. of Shanghai Jiao Tong Univ.); Hao, Manzhao (Med-x Research Inst. of Shanghai Jiao Tong Univ.); Shi, Ping (Med-x Research Inst. of Shanghai Jiao Tong Univ.); Zhang, Weifeng (Shanghai Jiaotong Univ.); Wang, Guoxing (Shanghai Jiao Tong Univ.); Lan, Ning* (Shanghai Jiao Tong Univ.)

12:15-12:30   ThB05.5

Development of a Progressive Task Regulation Algorithm for Robot-Aided Rehabilitation **3123-3126**

Colombo, Roberto* (Fondazione Salvatore Maugeri, IRCCS, RehabilitationInst. of Pavia); Sterpi, Irma (Fondazione Salvatore Maugeri,IRCCS, Rehabilitation Inst. of Pavia, Italy); Mazzone, Alessandra (Fondazione Salvatore Maugeri,IRCCS, Rehabilitation Inst. of Veruno(NO), Italy); Delconte, Carmen (Fondazione Salvatore Maugeri,IRCCS, Rehabilitation Inst. of Veruno(NO), Italy); Pisano, Fabrizio (Fondazione Salvatore Maugeri,IRCCS, Rehabilitation Inst. of Veruno(NO), Italy)

12:30-12:45   ThB05.6

Bilateral Transfer in Active and Passive Guidance-Reproduction Based Bimanual Tasks: Effect of Proprioception and Handedness **3127-3130**

Park, Keunyoung* (Nagoya Univ.); Kim, Youngwoo (Nagoya Univ.); Obinata, Goro (Nagoya Univ.)

ThB07: 11:15-12:45	Boylston Marriott

6.4.12 Next Generation Sensory Replacement Implants (Oral Session)
Chair: Merfeld, Daniel *(Massachusetts Eye & Ear Infirmary/Harvard Medical School)*
Co-Chair: Weiland, James *(Univ. of Southern California)*

11:15-11:30   ThB07.1

The Next Generation of Visual Neuroprosthesis: A Two-Wire, Split-System Approach .... *****

Suaning, Gregg* (The Univ. of New South Wales)

11:30-11:45   ThB07.2

Low Power Sensing for Vestibular Prostheses **3131-3134**

Bhatti, Pamela* (Georgia Inst. of Tech.); McClain, Maxine (Axion Biosystems)

11:45-12:00   ThB07.3

Next Generation Retinal Prostheses .... *****

Weiland, James* (Univ. of Southern California)

12:00-12:15   ThB07.4

Development of the Boston Retinal Prosthesis **3135-3138**

Rizzo, Joseph F.* (Boston VA Healthcare System); Shire, Douglas (Boston VA Healthcare System); Kelly, Shawn (Boston VA Healthcare System); Troyk, Philip (Illinois Inst. of Tech.); Gingerich, Marcus (Boston VA Healthcare System); McKee, Bruce (VA CIVR); Priplata, Attila (VA CIVR); Chen, Jinghua (Massachusetts Eye & Ear Infirmary); Drohan, William (Boston VA Healthcare System); Doyle, Patrick (Boston VA Research Inst.); Mendoza, Oscar (MIT); Theogarajan, Luke (Univ. of California); Cogan, Stuart (EIC Laboratories, Inc.); Wyatt, John (Massachusetts Inst. of Tech.)

12:15-12:30   ThB07.5

Towards Optogenetic Sensory Replacement **3139-3141**

Doroudchi, M. Mehdi (Eos Neuroscience, Inc., Los Angeles, California, USA); Greenberg, Kenneth (Eos Neuroscience, Inc., Los Angeles, California, USA & the Division of Neurobiology, Univ. of California Berkeley, Berkel); Zorzos, Anthony (MIT Media Lab Synthetic Neurobiology Group, Depts. of Brain & Cognitive Sciences & Biological Eng., MIT McGovern); Hauswirth, William (Dept. of Ophthalmology, Univ. of Florida (UF), Gainesville, Florida); Fonstad, Clifton (MIT Microsystems Tech. Lab., MIT Dept. of Elec. Eng. & Computer Science, Massachusetts Inst. o); Horsager, Alan (Eos Neuroscience, Inc., Los Angeles, California, USA, & the Inst. for Genetic Medicine, Univ. of Southern California); Boyden, Edward* (MIT)

12:30-12:45 ThB07.6

Restoring the 3D Vestibulo-Ocular Reflex via Electrical Stimulation: The Johns Hopkins Multichannel Vestibular Prosthesis Project **3142-3145**

Rahman, Mehdi (Johns Hopkins Univ.); Dai, Chenkai (JHU); Fridman, Gene (Johns Hopkins Univ.); Davidovics, Natan (Johns Hopkins Univ.); Chiang, Bryce (Johns Hopkins Univ.); Ahn, JoongHo (Johns Hopkins Univ.); Hayden, Russell (Johns Hopkins Univ.); Melvin, Thuy-Anh (Johns Hopkins Univ.); Sun, Daniel (Johns Hopkins); Della Santina, Charles C.* (Johns Hopkins School of Medicine)

ThB10: 11:15-12:45 Simmons Marriott
10.4.4 eHealth and Telehealth (Oral Session)
Chair: Finkelstein, Joseph *(Johns Hopkins Univ.)*
Co-Chair: Barnes, Laura *(Univ. of South Florida)*

11:15-11:30 ThB10.1

Designing Patient-Centric Applications for Chronic Disease Management **3146-3149**

Tsalatsanis, Athanasios (Univ. of South Florida); Gil-Herrera, Eleazar (Univ. of South Florida); Yalcin, Ali (Univ. of South Florida); Djulbegovic, Benjamin (Univ. of South Florida); Barnes, Laura* (Univ. of South Florida)

11:30-11:45 ThB10.2

Congestive Heart Failure Home Monitoring Pilot Study in Urban Denver **3150-3153**

Bakhshi, Saba (Univ. of Denver); Xin, Li (Univ. of Denver); Semenov, Nikolay (Univ. of Denver); Apodaca-Madrid, Jesús (Univ. of Denver); Mahoor, Mohammad H.* (Univ. of Denver); Newman, Kimberly (Univ. of Colorado at Boulder); Long, Carlin (Denver Health Medical Ctr.); Neuman, Christine (Denver Health Medical Ctr.)

11:45-12:00 ThB10.3

Data Acquisition in a Wireless Diabetic and Cardiac Monitoring System **3154-3157**

Harvey, Paul Dennis* (Loughborough Univ.); Datta, Sekharjit (Loughborough Univ.); Mulvaney, David (Loughborough Univ.)

12:00-12:15 ThB10.4

Implementing Home Telemanagement of Congestive Heart Failure Using Xbox Gaming Platform **3158-3163**

Finkelstein, Joseph (Johns Hopkins Univ.); Wood, Jeffrey* (Johns Hopkins Univ.)

12:15-12:30 ThB10.5

Concept and Modular Telemedicine Platform for Measuring of Vital Signs, ADL and Behavioral Patterns of Elderly in Home Settings **3164-3167**

Czabke, Axel* (TU Muenchen); Loeschke, Jakob (Technical Univ. Munich); Lueth, Tim (Technical Univ. of Munich)

12:30-12:45 ThB10.6

Caremote: The Design of a Cancer Reporting and Monitoring Telemedicine System for Domestic Care **3168-3171**

Cheng, Chihwen (Georgia Inst. of Tech.); Stokes, Todd (Georgia Inst. of Tech.); Wang, May Dongmei* (Georgia Tech & Emory Univ.)

ThB11: 11:15-12:45 Wellesley Marriott
10.7.7 Data Mining, Information Processing, and Decision Support Systems (Oral Session)
Chair: Fotiadis, Dimitrios I. *(Univ. of Ioannina)*
Co-Chair: Akay, Metin *(Univ. of Houston)*

11:15-11:30 ThB11.1

Computerized Decision Support System for Kidney Paired Donation Program **3172-3175**

Chen, Yanhua* (Univ. of Michigan); Song, Peter (Univ. of Michigan)

11:30-11:45 ThB11.2

Information Fusion for Diagnosis Coding Support **3176-3179**

Lecornu, Laurent* (GET ENST Bretagne); Le Guillou, Clara (Univ. Hospital); Le Saux, Frederic (Telecom Bretagne); Hubert, Matthieu (CHRU Brest); Puentes, John (TELECOM Bretagne – INSERM); Montagner, Julien (INSERM ; GET ENST Bretagne); Cauvin, Jean-Michel (Universitary Hospital (CHU))

11:45-12:00   ThB11.3
Implementation of the 7-Point Checklist for Melanoma Detection on Smart Handheld Devices **3180-3183**
Wadhawan, Tarun (Univ. of Houston); Situ, Ning (Univ. of Houston); Hu, Rui (Univ. of Houston);
Lancaster, Keith (Univ. of Houston); Yuan, Xiaojing (Univ. of Houston); Zouridakis, George* (Univ. of Houston)

12:00-12:15   ThB11.4
Missing Data Imputation for Remote CHF Patient Monitoring Systems **3184-3187**
Suh, Myung-kyung* (Univ. of California, Los Angeles); Woodbridge, Jonathan (Univ. of California, Los Angeles);
Bui, Alex (Univ. of California, Los Angeles); Evangelista, Lorraine (Univ. of California, Irvine);
Sarrafzadeh, Majid (Univ. of California Los Angeles)

12:15-12:30   ThB11.5
SVM-Based Multi-Sensor Fusion for Free-Living Physical Activity Assessment **3188-3191**
Liu, Shaopeng* (Univ. of Connecticut); Gao, Robert X. (Univ. of Connecticut);
John, Dinesh (Univ. of Massachusetts Amherst); Staudenmayer, John (Univ. of Massachusetts, Amherst);
Freedson, Patty (Univ. of Massachusetts Amherst)

12:30-12:45   ThB11.6
Guideline-Driven Telemonitoring and Follow-Up of Cardiovascular Implantable Electronic Devices
Using ISO/IEEE 11073, HL7 & IHE Profiles **3192-3196**
Yang, Maohua (OFFIS); Chronaki, Catherine* (Foundation for Research & Tech. Hellas); Lüpkes, Christian
(OFFIS – Inst. for Information Tech., Oldenburg, Germany); Thiel, Andreas (OFFIS – Inst. for Information Tech.,
Oldenburg, Germany); Plößnig, Manuela (Salzburg Research, Salzburg, Austria); Hinterbuchner, Lynne
(Salzburg Univ. Hospital, Salzburg, Austria); Arbelo, Elena (Hospital Clinic I Provincial de Barcelona, Spain);
Laleci, Gokce Banu (Software Research, Development & Consultation Ltd); Kabak, Yildiray (Software
Research, Development & Consultation Ltd., Ankara); Duarte, Fernandez (Medtronic, Madrid, Spain);
Guillen, Alejandra (Medtronic Spain); Navarro, Xavier (Medtronic, Madrid, Spain); Dogac, Asuman (Software
Research, Development & Consultation Ltd.); Eichelberg, Marco (OFFIS – Inst. for Information Tech.,
Oldenburg, Germany); Hein, Andreas (OFFIS – Inst. for Information Tech., Oldenburg, Germany)

ThB12: 11:15-12:45   Suffolk Marriott
5.10.10 Sleep Apnea and Respiratory Monitoring (Oral Session)
Chair: Penzel, Thomas *(Charite Univ. Hospital)*
Co-Chair: Khoo, Michael *(Univ. of Southern California)*

11:15-11:30   ThB12.1
Normal Non-Regular Snores as a Tool for Screening SAHS Severity **3197-3200**
Mesquita, Joana* (Univ. Politècnica de Catalunya); Fiz Fernandez, José Antonio (Navarra Hospital);
Solà-Soler, Jordi (Univ. Politècnica de Catalunya); Morera Prat, Jose (Hospital Univ. Germans
Trias i Pujol); Jané, Raimon (Univ. Politècnica de Catalunya)

11:30-11:45   ThB12.2
Automated Unsupervised Respiratory Event Analysis **3201-3204**
Robles-Rubio, Carlos Alejandro* (McGill Univ.); Brown, Karen (McGill Univ.); Kearney, Robert Edward (McGill Univ.)

11:45-12:00   ThB12.3
Comparison of Upper Airway Respiratory Resistance Measurements with the
Esophageal Pressure/airflow Relationship During Sleep **3205-3208**
Morgenstern, Christian* (Institut de Bioenginyería de Catalunya); Schwaibold, Matthias (MCC-Med
GmbH & Co KG); Randerath, Winfried (Klinikum Bethanien); Bolz, Armin (Univ. of Karlsruhe);
Jané, Raimon (Univ. Politècnica de Catalunya)

12:00-12:15   ThB12.4
Concurrent Variations of Cerebral Blood Flow and Arterial Blood Pressure in Simulated Sleep Apnea ... **3209-3212**
Alex, Raichel* (Univ. of Texas Arlington); Bhave, Gauri (Univ. of Texas at Arlington); Al-Abed, Mohammad
(Univ. of Texas at Arlington); Bashaboyina, Aditya (Univ. of Texas at Arlington); Watenpaugh, Donald (Sleep
Consultants Inc.); Zhang, Rong (Univ. of Texas Southwestern Medical Ctr. at Dallas); Iyer, Swathi (Univ. of
Texas at Arlington); Behbehani, Khosrow (Univ. of Texas at Arlington)

12:15-12:30　ThB12.5

A Novel Respiratory Rate Estimation Method for Sound-Based Wearable Monitoring Systems 3213-3216

Zhang, Jianmin (Nanyang Technological Univ.); Ser, Wee* (Nanyang Technological Univ.); Goh, Daniel (Natl. Univ. Hospital)

12:30-12:45　ThB12.6

Respiratory Rate Detection Using a Wearable Electromagnetic Generator 3217-3220

Padasdao, Bryson* (Univ. of Hawaii at Manoa); Boric-Lubecke, Olga (Univ. of Hawaii Manoa)

ThB13:　11:15-12:45　Arlington Marriott
4.6.9 Structural Bioinformatics (Oral Session)
Chair: Ruggiero, Carmelina *(Univ. of Genova)*
Co-Chair: Vaisman, Iosif *(George Mason Univ.)*

11:15-11:30　ThB13.1

**Structure-Based Prediction of Protein Activity Changes: Assessing the Impact of
Single Residue Replacements** 3221-3224

Masso, Majid* (George Mason Univ.); Vaisman, Iosif (George Mason Univ.)

11:30-11:45　ThB13.2

**A Structure-Based Computational Mutagenesis Elucidates the Spectrum of
Stability-Activity Relationships in Proteins** 3225-3228

Masso, Majid* (George Mason Univ.); Vaisman, Iosif (George Mason Univ.)

11:45-12:00　ThB13.3

On Modeling Peptidomimetics in Complex with the SH2 Domain of Stat3 3229-3232

Dhanik, Ankur* (Rice Univ.); McMurray, John S. (Univ. of Texas M. D. Anderson Cancer Ctr.); Kavraki, Lydia (Rice Univ.)

12:00-12:15　ThB13.4

**An Identification and Prediction Methods for Feature-Subsets of CpG Islands Methylation
Based on Human Peripheral Blood Leukocytes of Chromosomes 21q** 3233-3236

Ali, Isse* (De Monfort Univ.)

12:15-12:30　ThB13.5

Drug Design for Cardiovascular Disease: The Effect of Solvation Energy on Rac1-Ligand Interactions .. 3237-3240

Maggi, Norbert (Univ. of Genoa); Arrigo, Patrizio (CNR Genova); Ruggiero, Carmelina* (Univ. of Genova)

ThB15:　11:15-12:45　Clarendon Marriott
7.6.3 Drug Delivery and Drug Activity (Oral Session)
Chair: Peng, Ching-An *(Michigan Tech. Univ.)*
Co-Chair: Seifalian, Alexander *(Univ. College London)*

11:15-11:30　ThB15.1

SN-38: B-Cyclodextrin Inclusion Complex for in Situ Solidifying Injectable Polymer Implants 3241-3244

Manaspon, Chawan (Mahidol Univ.); Nittayacharn, Pinunta (Mahidol Univ.); Vejjasilpa, Ketpat (Mahidol Univ.); Fongsuk, Chayut (Mahidol Univ.); Nasongkla, Norased* (Faculty of Eng., Mahidol Univ.)

11:30-11:45　ThB15.2

PEG-b-PCL and PEG-b-PLA Polymeric Micelles as Nanocarriers for Lamellarin N Delivery 3245-3248

Pungkham, Hathaichanok (Mahidol Univ.); Swatdipakdi, Nattharin (Mahidol); Theerasilp, Man (Mahidol Univ.); Karnkla, Supattra (Chulabhorn Research Inst.); Chittchang, Montakarn (Chulabhorn Research Inst.); Ploypradith, Poonsakdi (Chulabhorn Research Inst.); Nasongkla, Norased* (Faculty of Eng., Mahidol Univ.)

11:45-12:00　ThB15.3

Anticancer Effectiveness of Polymeric Drug Nanocarriers on Colorectal Cancer Cells 3249-3252

Peng, Ching-An* (Michigan Technological Univ.); Wang, Jiesheng (Michigan Technological Univ.)

12:00-12:15　ThB15.4

**Next Generation Brain Implant Coatings and Nerve Regeneration Biomaterials via
Novel Conductive Nanocomposite Development** 3253-3257

Antoniadou, Eleni* (Univ. College of London); Seifalian, Alexander (Univ. College London)

12:15-12:30   ThB15.5

Microfluidics-Mediated Isothermal Detection of Enzyme Activity at the Single Molecule Level **3258-3261**
  Juul, Sissel* (Aarhus Univ., Duke Univ.); Ho, Yi-Ping (Duke Univ.); Stougaard, Magnus (Aarhus Univ. Hospital);
  Koch, Jørn (Aarhus Univ. Hospital); Andersen, Félicie F. (Aarhus Univ.); Leong, Kam W. (Duke Univ.);
  Knudsen, Birgitta R. (Aarhus Univ.)

12:30-12:45   ThB15.6

Development of an In Vitro Method for Modeling Drug Release and Subsequent Tissue Drug Uptake
and Deposition in a Pulsatile Flow Network **3262-3265**
  O'Brien, Caroline* (Univ. of New South Wales); Finch, Charles (Univ. of New South Wales);
  Barber, Tracie (Univ. of New South Wales); Simmons, Anne (Univ. of New South Wales)

ThB16: 11:15-12:45   Darthmouth Marriott
9.4.20 Novel Clinical Applications for Non-Invasive Electrical Stimulation (Minisymposium)
Chair: Caulfield, Brian *(UCD)*
Co-Chair: Alon, Gad *(Univ. of Maryland, School of Medicine)*

11:15-11:30   ThB16.1

Clinical Application of Neuromuscular Electrical Stimulation Induced Cardiovascular Exercise **3266-3269**
  Caulfield, Brian* (UCD); Crowe, Louis (Univ. College Dublin); Coughlan, Garrett (Univ. College Dublin);
  Minogue, Conor M (Biomedical Research Ltd)

11:30-11:45   ThB16.2

Impact of Neuromuscular Electrical Stimulation Training on Skeletal Muscle Function .... *
  Maffiuletti, Nicola* (Schulthess Clinic)

11:45-12:00   ThB16.3

Functional Electrical Stimulation (FES) and Non-Invasive Electrical Brain Stimulation (ESB):
On the Road to Personalized Intervention in Neuro-Rehabilitation .... *
  Alon, Gad* (Univ. of Maryland, School of Medicine)

ThB17: 11:15-12:45   Exeter Marriott
3.6.2 Reliable and Trustworthy Physiological Signal Monitoring in Daily-Life (Minisymposium)
Chair: Penders, Julien *(imec)*
Co-Chair: Patel, Shyamal *(Harvard Medical School)*

11:15-11:30   ThB17.1

Medical Application and Clinical Validation for Reliable and Trustworthy Physiological Monitoring
Using Functional Textile: Experience from the HeartCycle and MyHeart Project **3270-3273**
  Reiter, Harald* (Philips); Muehlsteff, Jens (Philips); Sipilä, Auli (Clothing+)

11:30-11:45   ThB17.2

Textile Electrodes and Integrated Smart Textile for Reliable Biomonitoring **3274-3277**
  Paradiso, Rita* (Smartex srl); Pacelli, Maria (Smartex s.r.l.)

11:45-12:00   ThB17.3

Ultra-Low-Power Circuits for Monitoring and Reducing Artifacts in Portable and
Wearable Bio-Potential Recordings .... *
  Yazicioglu, Refet Firat* (IMEC); Kim, Hyejung (imec); Kim, Sunyoung (KAIST); van Helleputte, Nick (IMEC);
  Huisken, Jos (IMEC); Van Hoof, Chris (IMEC)

12:00-12:15   ThB17.4

Algorithms and Circuits for Truly Wearable Physiological Monitoring .... *
  Casson, Alexander James* (Imperial College London); Rodriguez-Villegas, Esther (Imperial College London)

11:15-11:30   ThB19.1
Printed Organic Conductive Polymers Thermocouples in Textile and Smart Clothing Applications **3278-3281**
Seeberg, Trine Margrethe* (SINTEF ICT); Røyset, Arne (SINTEF); Jahren, Susannah (sintef);
Strisland, Frode (SINTEF ICT)

11:30-11:45   ThB19.2
AD5933-Based Electrical Bioimpedance Spectrometer. Towards Textile-Enabled Applications **3282-3285**
Ferreira, Javier* (Royal Inst. of Tech. (KTH)); Seoane, Fernando (Univ. of Borås);
Lindecrantz, Kaj (Royal Inst. of Tech.)

11:45-12:00   ThB19.3
Polymer Substrate Temperature Sensor Array for Brain Interfaces **3286-3289**
Kim, Insoo* (The Pennsylvania State Univ.); Fok, Raymond (Pennsylvania State Univ.);
Li, Yuanyuan (Pennsylvania State Univ.); Jackson, Thomas N. (Pennsylvania State Univ.);
Gluckman, Bruce J. (Pennsylvania State Univ.)

12:00-12:15   ThB19.4
Human Thermoregulatory System State Estimation Using Non-Invasive Physiological Sensors **3290-3293**
Buller, Mark* (U.S. Army Research Inst. of Environmental Medicine); Castellani, John (U.S. Army Research
Inst. of Environmental Medicine); Roberts, Warren (DSTO, Australia); Hoyt, Reed (US Army Research Inst. of
Environmental Medicine); Jenkins, Odest Chadwicke (Brown Univ.)

12:15-12:30   ThB19.5
The Development of Feedback Monitoring Device for CPR **3294-3297**
Song, Yeong-Tak (Univ. of Ulsan); Chee, Youngjoon* (Univ. of Ulsan)

12:30-12:45   ThB19.6
Wireless Dry EEG for Drowsiness Detection **3298-3301**
Park, Joon (UC San Diego); Xu, Ling* (Massachusetts Inst. of Tech.); Sridhar, Vishnu (Univ. of California San
Diego); Chi, Yu (UCSD); Cauwenberghs, Gert (Univ. of California San Diego)

11:15-11:30   ThB20.1
On-Line Classification of Human Activity and Estimation of Walk-Run Speed from
Acceleration Data Using Support Vector Machines **3302-3305**
Mannini, Andrea* (Scuola Superiore Sant'Anna); Sabatini, Angelo Maria (Scuola Superiore Sant'Anna)

11:30-11:45   ThB20.2
Efficient Feature Selection for Sleep Staging Based on Maximal Overlap
Discrete Wavelet Transform and SVM **3306-3309**
Khalighi, Sirvan* (Inst. of Systems & Robotics, Univ. of Coimbra); Silva, Sousa, Teresa Maria (Univ. of Coimbra);
Oliveira, Dulce (Univ. of Coimbra); Pires, Gabriel (Univ. of Coimbra); Nunes, Urbano (Univ. of Coimbra)

11:45-12:00   ThB20.3
Combined Multivariate Matching Pursuit and Support Vector Machine:
A Way Forward to Classify Single-Sweep Evoked Potentials? **3310-3313**
Graversen, Carina* (Aalborg Hospital); Brock, Christina (Aalborg Hospital, Denmark); Drewes, Asbjørn Mohr
(Aalborg Hospital, Mech-Sense, Dept. of Gastroenterology); Farina, Dario (Bernstein Ctr. for Computational
Neuroscience, Univ. Medical Ctr. Göttingen)

12:00-12:15   ThB20.4

Feature Extraction Using Time-Frequency/Scale Analysis and Ensemble of Feature Sets for Crackle Detection **3314-3317**

Serbes, Gorkem* (Bahcesehir Univ.); Sakar, Cemal Okan (Bahcesehir Univ.); Kahya, Yasemin P. (Bogazici Univ.); Aydin, Nizamettin (Yildiz Technical Univ.)

12:15-12:30   ThB20.5

Detection of Ventricular Suction in an Implantable Rotary Blood Pump Using Support Vector Machines **3318-3321**

Wang, Yu* (Univ. of Central Florida); Faragallah, George (Univ. of Central Florida); Divo, Eduardo (Daytona State College); Simaan, Marwan (Univ. of Central Florida)

12:30-12:45   ThB20.6

Customizing the Training Dataset to an Individual for Improved Heartbeat Recognition Performance in Long-Term ECG Signals **3322-3325**

Ye, Can* (Carnegie Mellon Univ.); Pallauf, Johannes (Univ. do Porto); Bhagavatula, Vijayakumar (Dept. of Elec. & Computer Eng., Carnegie Mellon Univ.); Coimbra, Miguel (Instituto de Telecomunicações/Univ. do Porto)

ThB21: 11:15-12:45   Salon E Marriott
1.3.2 Nonlinear Modeling of Dynamic Biomedical Systems (Oral Session)
Chair: Marmarelis, Vasilis *(Univ. of Southern California)*
Co-Chair: Pack, Christopher C. *(Montreal Neurological Inst., McGill Univ.)*

11:15-11:30   ThB21.1

Tracking the Changes of Hippocampal Population Nonlinear Dynamics in Rats Learning a Memory-Dependent Task **3326-3329**

Chan, Rosa H.M.* (Univ. of Southern California); Song, Dong (Univ. of Southern California); Goonawardena, Anushka (Wake Forest Univ.); Bough, Sarah (Wake Forest Univ.); Sesay, John (Wake Forest Univ.); Hampson, Robert (Wake Forest School of Medicine); Deadwyler, Sam (Wake Forest Univ.); Berger, Theodore (Univ. of Southern California)

11:30-11:45   ThB21.2

Estimation and Statistical Validation of Event-Invariant Nonlinear Dynamic Models of Hippocampal CA3-CA1 Population Activities **3330-3333**

Song, Dong* (Univ. of Southern California); Chan, Rosa H. M. (Univ. of Southern California); Marmarelis, Vasilis (Univ. of Southern California); Hampson, Robert (Wake Forest School of Medicine); Deadwyler, Sam (Wake Forest Univ.); Berger, Theodore (Univ. of Southern California)

11:45-12:00   ThB21.3

Dynamic Nonlinear Modeling of Interactions between Neuronal Ensembles Using Principal Dynamic Modes **3334-3337**

Marmarelis, Vasilis* (Univ. of Southern California); Shin, Dae (Univ. of Southern California); Song, Dong (Univ. of Southern California); Hampson, Robert (Wake Forest School of Medicine); Deadwyler, Sam (Wake Forest Univ.); Berger, Theodore (Univ. of Southern California)

12:00-12:15   ThB21.4

Restorative Encoding Memory Integrative Neural Device: "REMIND" **3338-3341**

Hampson, Robert (Wake Forest School of Medicine); Song, Dong (Univ. of Southern California); Chan, Rosa H. M. (Univ. of Southern California); Sweatt, Andrew (Wake Forest School of Medicine); Shin, Dae (Univ. of Southern California); Marmarelis, Vasilis (Univ. of Southern California); Gerhardt, Greg (Univ. of Kentucky Medical Ctr.); Granacki, John (Univ. of Southern California); Berger, Theodore (Univ. of Southern California); Deadwyler, Sam* (Wake Forest Univ.)

12:15-12:30   ThB21.5

Functional Connectivity During Surround Suppression in Macaque Area V4 .... **3342-3345**

Zanos, Theodoros* (Montreal Neurological Inst., McGill Univ.); Mineault, Patrick J (Montreal Neurological Inst., McGill Univ.); Monteon, Jachin A (Montreal Neurological Inst., McGill Univ.); Pack, Christopher C (Montreal Neurological Inst., McGill Univ.)

12:30-12:45   ThB21.6

Fractal Behavior of Spontaneous Neurotransmitter Release:
From Single-Synapse to Whole-Cell Recordings **3346-3349**

*Lamanna, Jacopo (Politecnico di Milano); Esposti, Federico (Politecnico di Milano); Malgaroli, Antonio (Univ.
Vita e Salute San Raffaele Milano); Signorini, Maria G.* (Politecnico di Milano)*

ThB22: 11:15-12:45   Salon F Marriott
1.4.35 Pattern Recognition and Classification (Oral Session)
Chair: Ding, Mingzhou *(Univ. of Florida)*
Co-Chair: Hargrove, Levi *(Rehabilitation Inst. of Chicago)*

11:15-11:30   ThB22.1

A Comparison of the Effects of Majority Vote and a Decision-Based Velocity Ramp on
Real-Time Pattern Recognition Control **3350-3353**

Simon, Ann* (Rehabilitation Inst. of Chicago); Hargrove, Levi (Rehabilitation Inst. of Chicago)

11:30-11:45   ThB22.2

A Comparison of Proportional Control Methods for Pattern Recognition Control **3354-3357**

*Simon, Ann (Rehabilitation Inst. of Chicago); Stern, Ken (Northwestern Univ.);
Hargrove, Levi* (Rehabilitation Inst. of Chicago)*

11:45-12:00   ThB22.3

Interpreting Sign Components from Accelerometer and sEMG Data for
Automatic Sign Language Recognition **3358-3361**

Li, Yun (Univ. of Science & Tech. of China); Chen, Xiang (Univ. of Science & Tech. of China); Zhang, Xu
(Rehabilitation Inst. of Chicago); Wang, Kong-qiao (Nokia); Yang, Jihai (Univ. of Science & Tech. of China)*

12:00-12:15   ThB22.4

Sparse Representation via L1-Minimization for Underdetermined Systems in
Classification of Tumors with Gene Expression Data **3362-3366**

Sanchez, Reinaldo (The Univ. of Texas at El Paso); Argaez, Miguel (The Univ. of Texas at El Paso);
Guillen, Pablo (The Univ. of Texas at El Paso)*

12:15-12:30   ThB22.5

Classification of Upper Limb Motions in Stroke Using High Density Surface EMG **3367-3370**

Zhang, Xu (Rehabilitation Inst. of Chicago); Zhou, Ping* (Northwestern Univ. & Rehab Inst of Chicago)

12:30-12:45   ThB22.6

Classification Performance of the Frequency-Related Parameters Derived from Uterine EMG Signals ... **3371-3374**

Moslem, Bassam (Univ. Libanaise/Univ. de Technologie Compiègne); Diab, Mohamad (Univ. of Tech. of
Compiegne); Khalil, Mohamad (Lebanese Univ.); Marque, Catherine (Univ. of Tech. of Compiegne)*

ThB23: 11:15-12:45   Salon G Marriott
2.3.16 Ocular Image Processing and Ocular Disease Diagnosis (Oral Session)
Chair: Wall, Conrad *(Harvard Medical School)*
Co-Chair: Della Santina, Charles C. *(Johns Hopkins School of Medicine)*

11:15-11:30   ThB23.1

Automated Diagnosis of Referable Maculopathy in Diabetic Retinopathy Screening **3375-3378**

Hunter, Andrew (Univ. of Lincoln); James, Lowell (Foster Findlay Associates); Ryder, Bob (City Hospital
Birmingham); Basu, Ansu (City Hospital Birmingham); Steel, David (Sunderland Eye Infirmary)*

11:30-11:45   ThB23.2

From Laboratory to Clinic: The Development of Web-Based Tools for the
Estimation of Retinal Diagnostic Parameters **3379-3382**

Ruggeri, Alfredo (Univ. of Padua); Poletti, Enea (Univ. of Padova); Fiorin, Diego (Univ. of Padova);
Tramontan, Lara (Univ. of Padova)*

11:45-12:00 ThB23.3

Automatic Glaucoma Diagnosis from Fundus Image **3383-3386**
  Liu, Jiang (Inst. for Infocomm Research, A STAR); Yin, Fengshou (Inst. for Infocomm Research); Wong,
  Damon (Inst. for Infocomm Research); Zhang, Zhuo (A*STAR); Tan, Ngan Meng (A*STAR, Inst. for Infocomm
  Research); Cheung, Carol (Singapore Eye Research Inst.); Aung, Tin (Singapore Eye Research Inst.);
  Baskaran, Mani (Singapore Eye Research Inst.); Wong, Tien Yin (Natl. Univ. of Singapore)*

12:00-12:15 ThB23.4

Automatic Measurement of Cup to Disc Ratio Based on Line Profile Analysis in Retinal Images **3387-3390**
  Hatanaka, Yuji (Univ. of Shiga Prefecture); Noudo, Atsushi (Gifu Univ.); Muramatsu, Chisako (Gifu Univ.);
  Sawada, Akira (Gifu Univ.); Hara, Takeshi (Gifu Univ. Graduate Sch of Medicine); Yamamoto, Tetsuya (Gifu
  Univ.); Fujita, Hiroshi (Gifu Univ.)*

12:15-12:30 ThB23.5

VAMPIRE: Vessel Assessment and Measurement Platform for Images of the REtina **3391-3394**
  Perez-Rovira, Adria (Univ. of Dundee); MacGillivray, Thomas (Univ. of Edinburgh); Trucco, Emanuele (Univ. of
  Dundee); Chin, Khai Sing (Univ. of Dundee); Zutis, Kris (Univ. of Dundee); Lupascu, Carmen (Univ. of
  Palermo); Tegolo, Domenico (Univ. of Palermo, Dipartimento di Matematica e Informatica); Giachetti, Andrea
  (Univ. of Verona); Wilson, Peter (Dept. of Ophthalmology at Ninewells Hospital & Medical School, Dundee);
  Doney, Alex (Univ. of Dundee, Biomedical Research); Dhillon, Baljean (Princess Alexandra Eye Pavilion)*

12:30-12:45 ThB23.6

3D Optical Coherence Tomography Super Pixel with Machine Classifier
Analysis for Glaucoma Detection **3395-3398**
  Xu, Juan (Univ. of Pittsburgh, UPMC Eye Ctr.); Ishikawa, Hiroshi (Univ. of Pittsburgh School of
  Medicine); Wollstein, Gadi (Univ. of Pittsburgh School of Medicine); Schuman, Joel S. (Univ. of
  Pittsburgh School of Medicine)*

ThB24: 11:15-12:45   Salon HI Marriott
2.7.26 CT Image Segmentaion (Oral Session)
Chair: Wu, Ed X. *(The Univ. of Hong Kong)*
Co-Chair: Laine, Andrew *(Columbia Univ.)*

11:15-11:30 ThB24.1

A New Hierarchical Method for Multi-Level Segmentation of Bone in Pelvic CT Scans **3399-3402**
  Wu, Jie (Virginia Commonwealth Univ.); Davuluri, Pavani (Virginia Commonwealth Univ.);
  Ward, Kevin (Virginia Commonwealth Univ.); Cockrell, Charles (Virginia Commonwealth Univ.);
  Hobson, Rosalyn (Virginia Commonwealth Univ.); Najarian, Kayvan (Virginia Commonwealth Univ.)*

11:30-11:45 ThB24.2

Centerline Extraction with Principal Curve Tracing to Improve 3D Level Set
Esophagus Segmentation in CT Images **3403-3406**
  Kurugol, Sila (Northeastern Univ.); Bas, Erhan (Northeastern Univ.); Erdogmus, Deniz (Northeastern Univ.);
  Dy, Jennifer (Northeastern Univ.); Sharp, Gregory Charles (Massachusetts General Hospital & Harvard Medical
  School); Brooks, Dana (Northeastern Univ.)*

11:45-12:00 ThB24.3

A Chance-Constrained Programming Level Set Method for
Longitudinal Segmentation of Lung Tumors in CT **3407-3410**
  Rouchdy, Youssef* (Telecom ParisTech); Bloch, Isabelle (Télécom ParisTech – CNRS UMR 5141 LTCI)

12:00-12:15 ThB24.4

Inter-Observer Variability Assessment of a Left Ventricle Segmentation Tool Applied to
4D MDCT Images of the Heart **3411-3414**
  Silva, Samuel (Univ. of Aveiro); Madeira, Joaquim (Univ. of Aveiro); Sousa Santos, Beatriz (Aveiro Univ.);
  Ferreira, Carlos Manuel Santos (Aveiro Univ.)*

12:15-12:30 ThB24.5

Automated CT Liver Segmentation Using Improved Chan-Vese Model with
Global Shape Constrained Energy **3415-3418**
  Li, Changyang (Univ. of Sydney); Zheng, Chaojie (Univ. of Sydney); Wang, Xiu Ying (The Univ. of Sydney);
  Yin, Yong (Shandong Tumor Hospital, China); Feng, Dagan (The Univ. of Sydney)*

12:30-12:45 ThB24.6

Optimal Multiresolution 3D Level-Set Method for Liver Segmentation
Incorporating Local Curvature Constraints 3419-3422

Jimenez-Carretero, Daniel* (Univ. Politécnica de Madrid); Fernandez-de-Manuel, Laura (Univ. Politécnica de Madrid); Pascau, Javier (Hospital General Univ. Gregorio Marañón); Tellado, José M. (Hospital General Univ. Gregorio Marañón); Ramón, Enrique (Hospital General Univ. Gregorio Marañón); Desco, Manuel (Hospital General Univ. Gregorio Marañón); Santos, Andres (Univ. Politecnica Madrid); Ledesma-Carbayo, Maria J. (Univ. Politécnica de Madri)

ThB25: 11:15-12:45   Salon JK Marriott
2.8.33 Image Analysis in Cancer Detection (Oral Session)
Chair: Ji, Jim Xiuquan *(Texas A&M Univ.)*
Co-Chair: Madabhushi, Anant *(Rutgers Univ.)*

11:15-11:30 ThB25.1

An Algorithm for Cancer Nest Feature Extraction from Pathological Images 3423-3426

Hiroyasu, Tomoyuki (Doshisha Univ.); Yamaguchi, Hiroaki* (Doshisha Univ.); Fujita, Sosuke (Doshisha Univ.); Miki, Mitsunori (Doshisha Univ.); Yoshimi, Masato (Doshisha Univ.); Ogura, Maki (NEC); Fukumoto, Manabu (Tohoku Univ.)

11:30-11:45 ThB25.2

Detection of Prostate Cancer on Histopathology Using Color Fractals and
Probabilistic Pairwise Markov Models 3427-3430

Yu, Elaine* (Rutgers Univ.); Monaco, James (Rutgers Univ.); Tomaszewski, John (Univ. of Pennsylvania); Shih, Natalie (Univ. of Pennsylvania); Feldman, Michael (Univ. of Pennsylvania); Madabhushi, Anant (Rutgers Univ.)

11:45-12:00 ThB25.3

Automated Lymph Node Detection and Classification on Breast and
Prostate Cancer SPECT-CT Images 3431-3434

Papp, Laszlo* (Mediso Medical Imaging Systems Ltd.); Zsoter, Norbert (Mediso Medical Imaging Systems Ltd.); Loh, Charlotte (Medical Univ. of Kiel, Dept. of Nuclear Medicine); Ole, Baeumer (Medical Univ. of Kiel, Dept. of Nuclear Medicine); Egeler, Bernhard (Medical Univ. of Kiel, Dept. of Nuclear Medicine); Garai, Ildiko (Medical Univ. of Debrecen, Scanomed Ltd.); Luetzen, Ulf (Medical Univ. of Kiel, Dept. of Nuclear Medicine)

12:00-12:15 ThB25.4

Computer Aided Analysis of Epi-Illumination and Transillumination Images of
Skin Lesions for Diagnosis of Skin Cancers 3435-3438

D'Alessandro, Brian* (New Jersey Inst. of Tech.); Dhawan, Atam (New Jersey Inst. of Tech.); Mullani, Nizar (Translite, LLC)

12:15-12:30 ThB25.5

Automated Analysis of Cervix Images to Grade the Severity of Cancer 3439-3442

Vajinepalli, Pallavi* (Philips Research Asia – Bangalore); Keswarpu, Payal (PHILIPS)

12:30-12:45 ThB25.6

An Integrated Texton and Bag of Words Classifier for Identifying Anaplastic Medulloblastomas 3443-3446

Galaro, Joseph* (Rutgers Univ.); Judkins, Alexander (Children's Hospital of L.A.); Ellison, David (St. Jude Children's Research Hospital); Baccon, Jennifer (Penn State College of Medicine); Madabhushi, Anant (Rutgers Univ.)

ThB26: 11:15-12:15   Provincetown Marriott
4.4.1 Systems Models in Biology III (Minisymposium)
Chair: Tidor, Bruce *(Massachusetts Inst. of Tech.)*
Co-Chair: May, Elebeoba *(Sandia Natl. Laboratories)*

11:15-11:45 ThB26.1

Investigating the Metabolic Dynamics of Pathogenic Organisms Using BioXyce .... *

May, Elebeoba* (Sandia Natl. Laboratories)

11:45-12:15 ThB26.2

An Open, Flexible Device Model Specification Framework with Applications to Neuron Modeling .... *

Amsallem, David* (Berkeley); Roychowdhury, Jaijeet (Jaijeet Roychowdhury)

8.4.25 Haptics in Robotic Surgery (Oral Session)
Chair: Fung, Joyce *(McGill Univ.)*
Co-Chair: Mousavi, Parvin *(Queen's Univ.)*

13:00-13:15 ThC01.1
Experimental Evaluation of a Coaxial Needle Insertion Assistant with Enhanced Force Feedback **3447-3450**
  De Lorenzo, Danilo* (Politecnico di Milano); Koseki, Yoshihiko (AIST); De Momi, Elena (Politecnico di Milano); Chinzei, Kiyoyuki (Natl. Inst. of Advanced Industrial Science & Tech.); Okamura, Allison (Johns Hopkins Univ.)

13:15-13:30 ThC01.2
Assessing the Quality of Force Feedback in Soft Tissue Simulation **3451-3454**
  Basafa, Ehsan* (Johns Hopkins Univ.); Sefati, Shahin (Johns Hopkins Univ.); Okamura, Allison (Johns Hopkins Univ.)

13:30-13:45 ThC01.3
Design and Evaluation of a Multi-Modal Haptic Skin Stimulation Apparatus **3455-3458**
  Damian, Dana* (Univ. of Zurich, Johns Hopkins Univ.); Hernandez Arieta, Alejandro (Univ. of Tokyo); Okamura, Allison (Johns Hopkins Univ.)

13:45-14:00 ThC01.4
Towards an Augmented Ultrasound Guided Spinal Needle Insertion System **3459-3462**
  Sutherland, Colin* (Queen's Univ.); Hashtrudi-Zaad, Keyvan (Queen's Univ.); Abolmaesumi, Purang (UBC); Mousavi, Parvin (Queen's Univ.)

14:00-14:15 ThC01.5
Development of a Spatially Transparent Electrotactile Display and Its Performance in Grip Force Control **3463-3466**
  Yoshimoto, Shunsuke* (Osaka Univ.); Kuroda, Yoshihiro (Osaka Univ.); Imura, Masataka (Osaka Univ.); Oshiro, Osamu (Osaka Univ.)

14:15-14:30 ThC01.6
Characterization of an Air Jet Haptic Lump Display **3467-3470**
  Bianchi, Matteo* (Univ. of Pisa); Gwilliam, James (Johns Hopkins Univ.); Degirmenci, Alperen (Johns Hopkins Univ.); Okamura, Allison (Johns Hopkins Univ.)

8.10.15 New Technologies and Methodologies in Human Movement Analysis (Oral Session)
Chair: Porta, Alberto *(Univ. degli Studi di Milano)*
Co-Chair: Kulic, Dana *(Univ. of Waterloo)*

13:00-13:15 ThC02.1
Redundancy Resolution of a Human Arm for Controlling a Seven DOF Wearable Robotic System **3471-3474**
  Kim, Hyunchul* (Univ. of California Santa Cruz); Miller, Levi Makaio (Univ. of Washington); Al-Refai, Aimen (UCSC); Rosen, Jacob (Univ. of California – Santa Cruz)

13:15-13:30 ThC02.2
Detecting Changes in Human Motion Using Stochastic Distance Measures **3475-3478**
  Choudry, Muhammad* (Univ. of Waterloo); Pillar, Matthew (Univ. of Waterloo); Beach, Tyson (Univ. of Waterloo); Kulic, Dana (Univ. of Waterloo); Callaghan, Jack (Univ. of Waterloo)

13:30-13:45 ThC02.3
Joint Angle Estimation in Rehabilitation with Inertial Sensors and Its Integration with Kinect **3479-3483**
  Padilha Lanari Bó, Antônio* (Univ. de Brasília); Hayashibe, Mitsuhiro (INRIA); Poignet, Philippe (LIRMM, UMR CNRS 5506,Univ. of Montpellier II)

13:45-14:00 ThC02.4
A Concurrent Comparison of Inertia Sensor-Based Walking Speed Estimation Methods **3484-3487**
  Laudanski, Annemarie* (Queen's Univ.); Yang, Shuozhi (Queen's Univ.); Li, Qingguo (Queen's Univ.)

14:00-14:15   ThC02.5

An Optimization Algorithm for Joint Mechanics Estimate Using Inertial Measurement Unit Data During a Squat Task **3488-3491**

Bonnet, Vincent (Univ. of Rome "Foro Italico"); Mazzà, Claudia* (Univ. of Rome "Foro Italico"); Fraisse, Philippe (Univ. of Montpellier 2, France); Cappozzo, Aurelio (Univ. of Rome "Foro Italico")

14:15-14:30   ThC02.6

Using a Shoe Mounted Tri-Axial Accelerometer to Detect Kinematic Changes During Stiff Ankle Walking .. **3492-3495**

Patterson, Matt* (Univ. College Dublin); Caulfield, Brian (UCD)

ThC03: 13:00-14:30   Essex Ballroom South Westin

6.8.20 Wearable Systems for Neuro-Rehabilitation – Reaching and Grasping (Oral Session)

Chair: Veltink, Peter *(Univ. of Twente)*

Co-Chair: Lymberis, Andreas *(European Commission)*

13:00-13:15   ThC03.1

Enhancing the Performance of Upper Limb Gesture Reconstruction Sensory Fusion **3496-3499**

De Rossi, Danilo* (Univ. of Pisa); Carbonaro, Nicola (Univ. of Pisa); Tognetti, Alessandro (Univ. of Pisa); Carbonaro, Nicola (Univ. of pisa); Anania, Gaetano (Centro Piaggio – Univ. di Pisa)

13:15-13:30   ThC03.2

Load Identification During Object Handling **3500-3502**

Kortier, Henk (Univ. of Twente); Veltink, Peter* (Univ. of Twente)

13:30-13:45   ThC03.3

Wearable Smart Systems: From Technologies to Integrated Systems **3503-3506**

Lymberis, Andreas* (European Commission)

13:45-14:00   ThC03.4

A Comparison of Treatment Effects after Sensor-Based and Robot-Based Task-Oriented Arm Training in Highly Functional Stroke Patients **3507-3510**

Timmermans, Annick A.A.* (Adelante & Maastricht Univ.); Lemmens, Ryanne J.M. (Maastricht Univ.); Geers, Richard P.J. (Adelante Ctr. of Expertise in Rehabilitation and Audiology); Smeets, Rob J.E.M. (Maastricht Univ.); Seelen, Henk A.M. (Adelante Ctr. of Expertise in Rehabilitation and Audiology)

14:00-14:15   ThC03.5

Radio Frequency Identification – An Innovative Solution to Guide Dexterous Prosthetic Hands **3511-3514**

Trachtenberg, Matthew* (The Johns Hopkins Univ.); Singhal, Girish (Infinite Biomedical Technologies, LLC); Kaliki, Rahul (Univ. of Southern California); Smith, Ryan J (The Johns Hopkins Univ.); Thakor, Nitish (Johns Hopkins Univ.)

14:15-14:30   ThC03.6

Series Elastic Actuator Control of a Powered Exoskeleton **3515-3518**

Ragonesi, Daniel* (Univ. of Delaware); Agrawal, Sunil (Univ. of Delaware); Sample, Whitney (A.I. duPont Hospital for Children); Rahman, Tariq (Nemours)

ThC05: 13:00-14:30   Essex Ballroom North Westin

6.4.15 Restoring or Augmenting Impaired Sensory Function for Posture and Gait II (Oral Session)

Chair: Loughlin, Patrick *(Univ. of Pittsburgh)*

Co-Chair: Sienko, Kathleen H. *(Univ. of Michigan)*

13:00-13:15   ThC05.1

Chronic Stimulation of the Semicircular Canals Using a Multichannel Vestibular Prosthesis: Effects on Locomotion and Angular Vestibulo-Ocular Reflex in Chinchillas **3519-3523**

Sun, Daniel (Johns Hopkins); Rahman, Mehdi (Johns Hopkins Univ.); Fridman, Gene (Johns Hopkins Univ.); Dai, Chenkai (JHU); Chiang, Bryce (Johns Hopkins Univ.); Della Santina, Charles C.* (Johns Hopkins School of Medicine)

13:15-13:30   ThC05.2

The Design and Development of a Production Prototype Balance Belt **3524-3528**

Wall, Conrad* (Harvard Medical School); Lyford, Nicholas D. (CLC Consulting); Sienko, Kathleen H. (Univ. of Michigan); Balkwill, M. David (Massachusetts Eye & Ear Infirmary)

13:30-13:45 ThC05.3

The Effects of Rotational Platform Training on Balance and ADLs **3529-3532**

Wrisley, Diane* (Lynchburg College); Stephens, Marilee (Univ. of Alberta)

13:45-14:00 ThC05.4

Effects of Attractive versus Repulsive Vibrotactile Instructional Cues During Motion Replication Tasks ... **3533-3536**

Lee, Beom-Chan (Univ. of Michigan); Sienko, Kathleen H.* (Univ. of Michigan)

14:00-14:15 ThC05.5

Real Time Communication of Head Velocity and Acceleration for an
Externally Mounted Vestibular Prosthesis **3537-3541**

Phillips, James* (Univ. of Washington); Rubinstein, Jay T (Univ. of Washington)

14:15-14:30 ThC05.6

The Effect of Robot-assisted Lokomotor Training on Gait Recovery: A Multivariate Analysis **3542-3545**

Niu, Xun* (Rehabilitation Inst. of Chicago; Northwestern Univ.); Patel, Chirag (RIC/UIC); Varoqui, Deborah
(Rehabilitation Inst. of Chicago; Northwestern Univ.); Mirbagheri, Mehdi (Northwestern Univ./RIC)

ThC10: 13:00-14:30 Simmons Marriott
10.3.19 Recent Developments in mHealth (Oral Session)
Chair: Guillen, Sergio *(Inst. Itaca Valencia)*
Co-Chair: Eberle, Wolfgang *(imec)*

13:00-13:15 ThC10.1

Accessing to Electronic Medical History Using a Mobility Intra Hospital System **3546-3549**

Guillen, Sergio* (Inst. Itaca Valencia); Traver, Vicente (Inst. ITACA); Monton, Eduardo (ITACA Inst. –
Polytechnic Univ. of Valencia); Castellano, Elena (Tecnologías para la Salud y el Bienestar SA);
Valdivieso, Bernardo (Hospital Univ. La Fe); Regaña, Manuel (Agencia Valenciana de la Salud)

13:15-13:30 ThC10.2

The Importance of Biosignal Quality Detection in Mhealth Telemonitoring Applications .... ***

Lovell, Nigel* (Univ. of New South Wales); Redmond, Stephen James (Univ. of New South Wales);
Wang, Ning (Univ. of New South Wales)

13:30-13:45 ThC10.3

A Mobile Feedback System for Integrated E-Health Platforms to Improve Self-Care and
Compliance of Patients with Chronic Diseases **3550-3553**

Fioravanti, Alessio* (Technical Univ. of Madrid); Fico, Giuseppe (Technical Univ. of Madrid);
Arredondo, María Teresa (Technical Univ. of Madrid); Leuteritz, Jan-Paul (Univ. Stuttgart IAT)

13:45-14:00 ThC10.4

METABO: A New Paradigm towards Diabetes Disease Management. an Innovative Business Model **3554-3557**

Guillen, Alejandra* (Medtronic Spain); Colas, Javier (Medtronic Iberica); Fico, Giuseppe (Technical Univ. of
Madrid); Guillen, Sergio (Inst. Itaca Valencia)

14:00-14:15 ThC10.5

A Fully Integrated Continuous-Time 50-Hz Notch Filter with Center Frequency Tunability **3558-3562**

Haixi, Li* (Shenzhen Inst. of Advanced Tech. (SIAT)); Wang, Lei (Shenzhen Inst. of Advanced Tech.)

14:15-14:30 ThC10.6

Improvement of Fuzzy Vault Scheme for Securing Key Distribution in Body Sensor Network **3563-3567**

Cao, Cun-Zhang (Shenzhen Inst. of Advanced Tech., Chinese Acad. of Sciences); He, Chen-Guang (Shenzhen
Inst. of Advanced Tech., Chinese Acad. of Sciences); Bao, Shu-Di* (Shenzhen Inst. of Advance Tech., Chinese
Acad. of Sciences)

ThC11: 13:00-14:30	Wellesley Marriott

10.4.24 Personal Health Systems and mHealth: Horizons Towards 2015 (Minisymposium)
Chair: Korhonen, Ilkka *(Tampere Univ. of Tech.)*
Co-Chair: Saranummi, Niilo *(VTT Tech. Res. Ctr.)*

13:00-13:15 ThC11.1
Connected Health: Tools to Promote Healthcare Access, Quality & Efficiency .... *
  Kvedar, Joseph* (Partners HealthCare)

13:15-13:30 ThC11.2
Using ICT to Co-Produce Better Health Outcomes: A Paradigm Shift towards Health 2.0 .... *
  *Piniewski, Brigitte (PeaceHealth Laboratories); Codagnone, Cristiano (JRC Inst. for Prospective
  Technological Studies (IPTS)); Osimo, David* (Tech4i2 ltd.)*

13:30-13:45 ThC11.3
Mhealth Perspectives towards 2015 .... *
  Korhonen, Ilkka* (Tampere Univ. of Tech.)

13:45-14:00 ThC11.4
**Harnessing the Power of Platform Technologies to Enhance Decision Support
through Coordinated Care and Patient Engagement** .... *
  Le Penske, David* (Microsoft Corp.)

ThC13: 13:00-14:30	Arlington Marriott

4.7.10 Biomedical Data-Driven Modelling (Oral Session)
Chair: Balestra, Gabriella *(Pol. di Torino)*
Co-Chair: Alterovitz, Gil *(Children's Hospital Informatics Program & Tech. Harvard Medical School)*

13:00-13:15 ThC13.1
Effect of Gravity on Learning and Memory of Prism Adaptation 3568-3572
  *Kashima, Takafumi (Chubu Univ.); Wada, Yoshiro (Nara Medical Univ.); Inui, Takuo (Japan Air Self-Defense
  Force); Hirata, Yutaka* (Chubu Univ., College of Eng)*

13:15-13:30 ThC13.2
**Is the Reduction of Dimensionality to a Small Number of Features Always Necessary in Constructing
Predictive Models for Analysis of Complex Diseases or Behaviours?** 3573-3576
  Zollanvari, Amin (Children's Hospital Informatics Program at Harvard-MIT Division of Health Sciences & Tech.,
  Harvard Medical School); Saccone, Nancy L. (Dept. of Genetics, Washington Univ. School of Medicine, St.
  Louis, MO); Bierut, Laura J. (Dept. of Psychiatry, Washington Univ. School of Medicine St. Louis, MO.);
  Ramoni, Marco F. (Children's Hospital Informatics Program, Harvard-MIT Division of Health Sciences & Tech.,
  Harvard Medical School, & Par); Alterovitz, Gil (Children's Hospital Informatics Program, Harvard-MIT Division
  of Health Sciences & Tech., Harvard Medical School, Partner)*

13:30-13:45 ThC13.3
Data-Driven Prediction of Stem Cell Expansion Cultures 3577-3580
  Yin, Zhaozheng (Carnegie Mellon Univ.); Ker, Dai Fei (Carnegie Mellon Univ.); Junkers, Silvina (Carnegie
  Mellon Univ.); Kanade, Takeo (Carnegie Mellon Univ.); Chen, Mei (Carnegie Mellon Univ.);
  Weiss, Lee E. (Carnegie Mellon Univ.); Campbell, Phil G. (Carnegie Mellon Univ.)*

13:45-14:00 ThC13.4
Modeling Neuron-Glia Interactions: From Parametric Model to Neuromorphic Hardware 3581-3584
  Ghaderi, Viviane (Univ. of Southern California); Allam, Sushmita (Univ. of Southern California);
  Ambert, Nicolas (Rhenovia Pharma); Bouteiller, Jean-Marie Charles (Univ. of Southern California);
  Choma, John, Jr. (Univ. of Southern California); Berger, Theodore (Univ. of Southern California)*

14:00-14:15 ThC13.5
Quantitative Analysis of Viral Persistence and Transient Viral Load Rebound from HIV Clinical Data 3585-3588
  *Luo, Rutao (Univ. of Delaware); Piovoso, Michael (Penn State Univ. Great Valley);
  Zurakowski, Ryan* (Univ. of Delaware)*

14:15-14:30 ThC13.6

PhenOMIM: An OMIM-Based Secondary Database Purported for Phenotypic Comparison **3589-3592**

van Triest, Han J. W. (Sino-Dutch School of Biomedical & Information Eng.); Chen, Danqi (China Medical Univ., Shenyang); Ji, Xinglai (Lab. for Conservation & Utilization of Bio-Resources & Key Lab. for Microbial Resources of the Ministry of Educati); Qi, Shouliang (Sino-Dutch School of Biomedical & Information Eng.); Li-Ling, Jesse* (Sino Dutch School of Biomedical & Information Eng.)

ThC15: 13:00-14:30 Clarendon Marriott
7.2.2 Bioreactivity Effects of Living Cells (Oral Session)
Chair: Celenk, Mehmet *(Ohio Univ.)*
Co-Chair: Khademhosseini, Ali *(Harvard-MIT)*

13:00-13:15 ThC15.1

Improving the Bioactivity of Bioglass/ (PMMA-Co-MPMA) Organic/Inorganic Hybrid **3593-3596**

Ravarian, Roya* (The Univ. of Sydney, School of Chemical & Biomolecular Eng.)

13:15-13:30 ThC15.2

Nanostructured, Highly Aligned Poly(hydroxy Butyrate)electrospun Fibers for Differentiation of Skeletal and Cardiac Muscle Cells **3597-3600**

Ricotti, Leonardo* (Scuola Superiore Sant'Anna); Polini, Alessandro (NNL, Natl. Nano Tech. Lab.); Genchi, Giada Graziana (CRIM Lab, Scuola Superiore Sant'Anna); Ciofani, Gianni (Italian Inst. of Tech.); Iandolo, Donata (NNL, Natl. Nano Tech. Lab. of Istituto Nanoscienze-CNR); Mattoli, Virgilio (Scuola Superiore Sant'Anna); Menciassi, Arianna (Scuola Superiore Sant'Anna); Dario, Paolo (IIT Italian Inst. of Tech.); Pisignano, Dario (Dipartimento di Ingegneria dell'Innovazione, Univ. del Salento)

13:30-13:45 ThC15.3

An Implantable Electrical Bioreactor for Enhancement of Cell Viability **3601-3604**

Kim, Jung Hoon* (Seoul Natl. Univ.); Lee, Taehyung (Seoul Natl. Univ.); Song, Yun Mi (SNU); Kim, In Sook (Seoul Natl. Univ.); Cho, Tae Hyung (SNU); Hwang, Soon Jung (Seoul Natl. Univ.); Kim, Sung June (Seoul Natl. Univ.)

13:45-14:00 ThC15.4

First Human Hnt Astrocytes Patterned to Single Cell Resolution on Parylene-C/Silicon Dioxide Substrates **3605-3608**

Unsworth, Charles Peter* (Univ. of Auckland); Scott, Euan Graham (Univ. of Auckland); Delivopoulos, Evangelos (Univ. of Cambridge); Murray, Alan Fraser (The Univ. of Edinburgh)

14:00-14:15 ThC15.5

Cell Settling Effects on a Thermal Inkjet Bioprinter **3609-3612**

Pepper, Matthew* (Clemson Univ.); Seshadri, Vidya (Clemson Univ.); Burg, Timothy (Clemson Univ.); Booth, Brian (Clemson Univ.); Burg, Karen (Clemson Univ.); Groff, Richard E (Clemson Univ.)

14:15-14:30 ThC15.6

Microfabrication and Microfluidics-Based Patterning of Cultured Neuronal Network **3613-3616**

Takayama, Yuzo* (Univ. of Tokyo); Kotake, Naoki (The Univ. of Tokyo); Haga, Tatsuya (the Univ. of Tokyo); Suzuki, Takafumi (The Univ. of Tokyo); Mabuchi, Kunihiko (The Univ. of Tokyo)

ThC17: 13:00-14:30 Exeter Marriott
11.2.1 Novel Approaches to BME Education (Oral Session)
Chair: Wang, Xiaoqin *(Johns Hopkins Univ. School of Medicine)*
Co-Chair: Bhatia, Sujata *(Harvard Univ.)*

13:00-13:15 ThC17.1

A Disease-Centered Approach to Biomaterials Education and Medical Device Design **3617-3619**

Bhatia, Sujata* (Harvard Univ.)

13:15-13:30 ThC17.2

Tsinghua-Johns Hopkins Joint Center for Biomedical Engineering Research: Scientific and Cultural Exchange in Undergraduate Engineering **3620-3623**

Wisneski, Andrew* (Johns Hopkins Univ., Dept. of Biomedical Eng.); Huang, Lixia (Tsinghua Univ., Dept. of Biomedical Eng.); Hong, Bo (Tsinghua Univ.); Wang, Xiaoqin (Johns Hopkins Univ. School of Medicine)

13:30-13:45   **ThC17.3**

Integrative Learning through the Design of an Electrocardiogram Acquisition System **3624-3627**
Chan, Adrian (Carleton Univ.); Nizami, Shermeen* (Carleton Univ.)

13:45-14:00   **ThC17.4**

Biomedical Engineering Education in Developing Countries: Research Synthesis **3628-3630**
Douglas, Tania S* (Univ. of Cape Town)

14:00-14:15   **ThC17.5**

The Dilemma of BME Research Projects in Developing Countries: A Case Study **3631-3635**
Zahedi, Edmond* (Sharif Univ. of Tech.)

ThC19: 13:00-14:30   Salons AB Marriott
3.7.1 Wearable Sensors in Healthcare: Real Applications (Oral Session)
Chair: Puiatti, Alessandro *(Univ. of Applied Science of Southern Switzerland)*
Co-Chair: Albinali, Fahd *(MIT)*

13:00-13:15   **ThC19.1**

Design of a Wearable Physical Activity Monitoring System Using Mobile Phones and Accelerometers .. **3636-3639**
Intille, Stephen* (Northeastern Univ.)

13:15-13:30   **ThC19.2**

Real-Time Monitoring of Occupational Stress of Nurses **3640-3643**
Jovanov, Emil* (Univ. of Alabama in Huntsville); Frith, Karen H (Univ. of Alabama in Huntsville);
Anderson, E. Faye (Univ. of Alabama Huntsville); Milosevic, Mladen (Univ. of Alabama in Huntsville);
Shrove, Michael (Univ. of Alabama Huntsville)

13:30-13:45   **ThC19.3**

Smartphone-Centred Wearable Sensors Network for Monitoring Patients with Bipolar Disorder **3644-3647**
Puiatti, Alessandro* (Univ. of Applied Science of Southern Switzerland); Mudda, Steven (Univ. of Applied
Science of Southern Switzerland); Giordano, Silvia (Univ. of Applied Science of Southern Switzerland);
Majora, Oscar (CREATE-NET)

13:45-14:00   **ThC19.4**
Wearable Sensor Systems: The Challenges **3648-3651**
McAdams, Eric* (INSA Lyon); Krupaviciute, Asta (MTIC-EA4171, INSA de Lyon, Univ. de Lyon 1);
Gehin, Claudine (INSA Lyon); Grenier, Etienne (INSA Lyon); Massot, Bertrand (INSA Lyon);
Dittmar, Andre (INSA Lyon); Rubel, Paul (INSA de Lyon ; Univ. de Lyon); Fayn, Jocelyne (INSERM)

14:00-14:15   **ThC19.5**
Wrist Actigraphy for Scratch Detection in the Presence of Confounding Activities **3652-3655**
Feuerstein, Johanna* (Oregon Health & Science Univ.); Austin, Daniel (Oregon Health & Science Univ.);
Sack, Robert (Oregon Health & Science Univ.); Hayes, Tamara (Oregon Health & Science Univ.)

14:15-14:30   **ThC19.6**
Effects of BMI and Abdominal Volume on the Accuracy of Step
Count Obtained from a Tri-Axial Accelerometer **3656-3659**
Cleland, Ian* (Univ. of Ulster); Nugent, Chris (Univ. of Ulster); Finlay, Dewar (Univ. of Ulster);
Burns, William Paul (Univ. of Ulster)

ThC20: 13:00-14:30   Salons CD Marriott
3.3.24 Advances in Chemical Biosensors (Oral Session)
Chair: Voss, Andreas *(Univ. of Applied Sciences Jena)*
Co-Chair: Mazzeo, Brian A. *(Brigham Young Univ.)*

13:00-13:15   **ThC20.1**
Dielectric Spectroscopy of Molecular Interactions Based on the Avidin-Biotin Complex **3660-3663**
Mellor, Brett Lee (Brigham Young Univ.); Kellis, Nathan (Brigham Young Univ.);
Mazzeo, Brian A.* (Brigham Young Univ.)

13:15-13:30   ThC20.2

Discrimination and Characterization of Breath from Smokers and Non-Smokers via Electronic Nose and GC/MS Analysis **3664-3667**

Witt, Katharina (Univ. of Applied Sciences Jena, Dept. Medical Eng. & BioTech.); Reulecke, Sina (Univ. of Applied Sciences Jena, Dept. Medical Eng. & BioTech.); Voss, Andreas* (Univ. of Applied Sciences Jena)

13:30-13:45   ThC20.3

A Point-Of-Care Instrument for Rapid Multiplexed Pathogen Genotyping **3668-3671**

Myers, Frank* (Univ. of California, Berkeley); Henrikson, Richard (Univ. of California, Berkeley); Xu, Liyi (Univ. of California, Berkeley); Lee, Luke (UC Berkeley)

13:45-14:00   ThC20.4

Raman Based Hepatocellular Carcinoma Biomarker Detection **3672-3675**

Santiago-Cordoba, Miguel* (The Pennsylvania State Univ.); Romano, Patrick (Drexel Inst. for BioTech. & Virology Research); MacKay, Andrew (Virology Research & The Inst. for Hepatitis & Virus Research); Demirel, Melik (Penn State)

14:00-14:15   ThC20.5

Development of a Point-Of-Care Device to Quantify Serum Zinc to Aid the Diagnosis and Follow-Up of Pediatric Septic Shock **3676-3679**

Sukhavasi, Sowmya (Univ. of Cincinnati School of Electronic & Computing Systems); Jothimuthu, Preetha (Univ. of Cincinnati School of Electronic & Computing Systems); Papautsky, Ian (Univ. of Cincinnati); Beyette, Fred R* (Univ. of Cincinnati)

14:15-14:30   ThC20.6

Out-of-Plane, High Strength, Polymer Microneedles for Transdermal Drug Delivery **3680-3683**

Paul Chaudhri, Buddhadev* (IMEC/KU Leuven, Belgium); Ceyssens, Frederik (ESAT, Catholic Univ., Leuven, Belgium); Van Hoof, Chris (IMEC); Puers, Robert (Catholic Univ. of Leuven)

ThC21: 13:00-14:30   Salon E Marriott
1.4.36 Biomedical Signal Classification: Neurological Data (Oral Session)
Chair: Perreault, Eric *(Northwestern Univ.)*
Co-Chair: Nenadic, Zoran *(UC Irvine)*

13:00-13:15   ThC21.1

A Vision-Free Brain-Computer Interface (BCI) Paradigm Based on Auditory Selective Attention **3684-3687**

Kim, Do-Won (Yonsei Univ.); Cho, Jae-Hyun (Yonsei Univ.); Hwang, Han-Jeong (Yonsei Univ.); Lim, Jeong-Hwan (Yonsei Univ.); Im, Chang-Hwan* (Yonsei Univ.)

13:15-13:30   ThC21.2

Accuracy of a BCI Based on Movement-Related and Error Potentials **3688-3691**

Artusi, Xavier* (Institut de Recherche en Communications et Cybernétiquede Nantes); Niazi, Imran (Aalborg Univ.); Lucas, Marie-Françoise (Ecole Centrale de Nantes – Institut de Recherche en Communication et Cybernétique de Nantes); Farina, Dario (Bernstein Ctr. for Computational Neuroscience, Univ. Medical Ctr. Göttingen)

13:30-13:45   ThC21.3

Revealing the Neural Response to Imperceptible Peripheral Flicker with Machine Learning **3692-3695**

Porbadnigk, Anne Kerstin* (Berlin Inst. of Tech.); Scholler, Simon (TU Berlin); Blankertz, Benjamin (Berlin Inst. of Tech.); Ritz, Arnd (Philips Research Eindhoven); Born, Matthias (Philips Research Aachen, Germany); Scholl, Robert (Philips Research Aachen, Germany); Müller, Klaus-Robert (Berlin Inst. of Tech.); Curio, Gabriel (Charité – Univ. Medicine Berlin); Treder, Matthias Sebastian (Berlin Inst. of Tech.)

13:45-14:00   ThC21.4

Sensor-Fault Tolerant Control of a Powered Lower Limb Prosthesis by Mixing Mode-Specific Adaptive Kalman Filters **3696-3699**

Dutta, Anirban* (Georg-August-Univ.); Koerding, Konrad (Northwestern Univ.); Perreault, Eric (Northwestern Univ.); Hargrove, Levi (Rehabilitation Inst. of Chicago)

14:00-14:15   ThC21.5
A Pilot Study on Two Stage Decoding Strategies 3700-3703
  Jiang, Bo (Zhejiang Univ.); Wang, Rui (Zhejiang Univ.); Zhang, Qiaosheng (Zhejiang Univ.);
  Zhang, Jicai (Zhejiang Univ.); Zheng, Xiaoxiang (Zhejiang Univ.); Zhang, Shaomin (Zhejiang Univ.);
  Zhao, Ting (Zhejiang Univ.)*

14:15-14:30   ThC21.6
Matched Subspace Detector Based Feature Extraction for Sorting of Multi-Sensor Action Potentials 3704-3707
  Wu, Shun Chi (Univ. of California, Irvine); Swindlehurst, A. Lee (Univ. of California, Irvine);*
  Nenadic, Zoran (UC Irvine)

ThC23: 13:00-14:30	Salon G Marriott

**1.9.1 Addressing Complexity in Biomedical Research: Data Processing and
Mining for Large Biomedical Datasets** (Oral Session)
Chair: Chatziioannou, Aristotelis *(Natl. Hellenic Research Foundation)*
Co-Chair: Maglogiannis, Ilias *(Univ. of Central Greece)*

13:00-13:15   ThC23.1
Using Semantic Web Technologies to Manage Complexity and Change in Biomedical Data 3708-3711
  Stevens, Robert (Univ. of Manchester); Jupp, Simon (Univ. of Manchester)*

13:15-13:30   ThC23.2
Modeling Signaling Pathways in Articular Cartilage 3712-3715
  Melas, Ioannis (Natl. Technical Univ. of Athens); Chairakaki, Aikaterini (Natl. Technical Univ. of Athens); Mitsos,
  Alexander (Massachusetts Inst. of Tech.); Dailiana, Zoe (Univ. Hospital of Larissa); Provatidis, Christopher, G.
  (Natl. Technical Univ. of Athens); Alexopoulos, Leonidas (Natl. Technical Univ. of Athens)*

13:30-13:45   ThC23.3
**Unifying the Integration, Analysis and Interpretation of Multi-Omic Datasets: Exploration of the
Disease Networks of Obstructive Nephropathy in Children** 3716-3719
  Moulos, Panagiotis (NHRF); Valavanis, Ioannis (Natl. Technical Univ. of Athens); Klein, Julie (INSERM,
  Toulouse); Maglogiannis, Ilias (Univ. of Central Greece); Schanstra, Joost (INSERM, Toulouse);
  Chatziioannou, Aristotelis (Natl. Hellenic Research Foundation)*

13:45-14:00   ThC23.4
Statistical Data Mining of Streaming Motion Data for Fall Detection in Assistive Environments 3720-3723
  Tasoylis, Sotirios (Univ. of Central Greece); Doukas, Charalampos (Univ. of the Aegean);
  Maglogiannis, Ilias (Univ. of Central Greece); Plagianakos, Vassilis (Univ. of Central Greece)*

14:00-14:15   ThC23.5
EEG Complexity Drug-Induced Changes in Disorders of Consciousness: A Preliminary Report 3724-3727
  Valenza, Gaetano (Univ. of Pisa); Carboncini, Maria Chiara (Unit of Neurorehabilitation, Dept. of*
  Neuroscience, Univ. of Pisa, Italy); Virgillito, Alessandra (Unit of Neurorehabilitation, Dept. of Neuroscience,
  Univ. of Pisa, Italy); Creatini, Ilaria (Unit of Neurorehabilitation, Dept. of Neuroscience, Univ. of Pisa, Italy);
  Bonfiglio, Luca (Unit of Neurorehabilitation, Dept. of Neuroscience, Univ. of Pisa, Italy); Rossi, Bruno (Unit of
  Neurorehabilitation, Dept. of Neuroscience, Univ. of Pisa, Italy); Lanata', Antonio (Univ. of Pisa);
  Scilingo, Enzo Pasquale (Univ. of Pisa)

14:15-14:30   ThC23.6
**Recursive Least Squares Estimation of Nonlinear Multiple-Input Systems Using
Orthonormal Function Expansions** 3728-3731
  Mitsis, Georgios D. (Univ. of Cyprus); Markou, Marios (Univ. of Cyprus)*

2.1.3 MR Image Reconstruction (Oral Session)
Chair: Babacan, S. Derin *(Univ. of Illinois at Urbana-Champaign)*
Co-Chair: Pearce, John Anthony *(Univ. of Texas at Austin)*

13:00-13:15   ThC25.1
Four-Dimensional MR Cardiovascular Imaging: Method and Applications 3732-3735
   Christodoulou, Anthony* (Univ. of Illinois at Urbana-Champaign); Zhao, Bo (Univ. of Illinois at Urbana-Champaign); Zhang, Haosen (Pittsburgh NMR Ctr. for Biomedical Research); Ho, Chien (Carnegie Mellon Univ.); Liang, Zhi-Pei (Univ. of Illinois at Urbana-Champaign)

13:15-13:30   ThC25.2
Compressive Sensing Imaging with Randomized Lattice Sampling: Applications to Fast 3D MRI 3736-3739
   Ji, Jim Xiuquan* (Texas A&M Univ.)

13:30-13:45   ThC25.3
Adapting Magnetic Resonance Imaging Performance Using Nonlinear Encoding Fields 3740-3743
   Layton, Kelvin Jon* (Univ. of Melbourne); Morelande, Mark (Univ. of Melbourne); Farrell, Peter Mark (Univ. of Melbourne); Moran, Bill (Univ. of Melbourne); Johnston, Leigh A. (Univ. of Melbourne)

13:45-14:00   ThC25.4
A Joint Acquisition-Reconstruction Paradigm for Correcting Inhomogeneity
Artifacts in MR Echo Planar Imaging 3744-3750
   Dagher, Joseph* (Harvard Medical School); Meyer, F (Univ. of Colorado at Boulder)

14:00-14:15   ThC25.5
Adaptive Sampling Design for Compressed Sensing MRI 3751-3755
   Ravishankar, Saiprasad* (Univ. of Illinois at Urbana-Champaign); Bresler, Yoram (Univ. of Illinois at Urbana-Champaign)

14:15-14:30   ThC25.6
The Validation of Complete Fourier Direct MR Method for Diffusion MRI via
Biological and Numerical Phantoms 3756-3759
   Ozcan, Alpay* (Washington Univ. in St. Louis); Quirk, James (Washington Univ. in St. Louis); Wang, Yong (Washington Univ. in St. Louis); Wang, Qing (Biomedical MR Lab. Washington Univ. in St. Louis); Sun, Peng (Washington Univ. in St. Louis); Spees, William (Washington Univ. in St. Louis); Song, Sheng-Kwei (Washington Univ.)

4.4.2 Systems Biology Data Modeling I (Minisymposium)
Chair: Tidor, Bruce *(Massachusetts Inst. of Tech.)*
Co-Chair: White, Forest *(MIT)*

13:00-13:30   ThC26.1
Patient Stratification for Efficacy and Safety As Building Blocks for Personalized Medicine .... *
   de Graaf, David* (Selventa)

13:30-14:00   ThC26.2
Using Network Algorithms to Integrate 'Omic' Data and Reveal Disease Mechanisms .... *
   Fraenkel, Ernest* (MIT)

14:00-14:30   ThC26.3
Interactome Networks and Human Disease .... *
   Vidal, Marc* (Dana-Farber Cancer Inst.)

ThC27: 15:30–17:00   Provincetown Marriott
4.5.7 Systems Biology Data Modeling II (Minisymposium)
Chair: Tidor, Bruce *(Massachusetts Inst. of Tech.)*
Co-Chair: White, Forest *(MIT)*

15:30–16:00   ThC27.1
Cue-Signal-Response Analysis in Vivo .... *
    Lauffenburger, Douglas* *(Massachusetts Inst. of Tech.)*

16:00–16:30   ThC27.2
Integration of Growth Factor, MAP Kinase, and DNA Damage Signaling Networks .... *
    Yaffe, Michael* *(MIT Depts of Biology & Biological Eng.)*

16:30–17:00   ThC27.3
Biological Insight from Quantitative Analysis of Cellular Signaling Networks .... *
    White, Forest* *(MIT)*

ThP21: 15:30–17:00   America Ballroom Westin
1.2.5 Advances in Signal Processing in Physiological Systems I (Poster Session)

15:30–17:00   ThP21.1
Robust Adaptive Feedback Canceller Based on Modified Pseudo Affine Projection Algorithm 3760-3763
    Lee, Keunsang* *(Yonsei Univ.)*; Baek, Yonghyun *(Yonsei)*; Park, Young Cheol *(Yonsei Univ.)*;
    Kim, Dong W *(Samsung)*; Sohn, Junil *(Samsung Advanced Inst. of Tech.)*

15:30–17:00   ThP21.2
Reconstruction of ECG Signals in the Presence of Corruption 3764-3767
    Gartheeban, Ganeshapillai* *(Massachusetts Inst. of Tech.)*; Liu, Jessica *(MIT)*; Guttag, John *(MIT)*

15:30–17:00   ThP21.3
Stability Analysis of QRS Features to Evaluate Signal Quality for Multi-Lead QRS Detection 3768-3771
    Zhang, Zhe *(Draeger Medical Systems, Inc.)*; Chen, Yu* *(Draeger Medical System, Inc.)*

15:30–17:00   ThP21.4
Person Identification in Irregular Cardiac Conditions Using Electrocardiogram Signals 3772-3775
    Sidek, Khairul Azami* *(RMIT Univ.)*; Khalil, Ibrahim *(RMIT Univ.)*

15:30–17:00   ThP21.5
**Heart Rate Variability Analysis for Arterial Hypertension Etiological Diagnosis During
Surgical Procedures under Tourniquet** 3776-3779
    Logier, Regis* *(CHRU de Lille)*; De Jonckheere, Julien *(CHRU de Lille)*;
    Jeanne, Mathieu *(CHRU de Lille)*; Tavernier, Benoit *(CHRU de Lille)*

15:30–17:00   ThP21.6
Detection of Circaseptan Rhythm and the "Monday Effect" from Long-Term Pulse Rate Dynamics 3780-3783
    Chen, Ying* *(Univ. of Aizu)*; Chen, Wenxi *(Univ. of Aizu)*

15:30–17:00   ThP21.7
Analysis of the Vascular Sounds of the Arteriovenous Fistula's Anastomosis 3784-3787
    Munguia M., Marco* *(Natl. Univ. of Eng.)*; Mandersson, Bengt *(Lund Univ.)*

15:30–17:00   ThP21.8
Estimation of Baroreflex Sensitivity During Anesthesia Induction with Propofol 3788-3791
    Dorantes, Guadalupe *(Politecnico di Milano)*; Aletti, Federico* *(Politecnico di Milano)*; Toschi, Nicola *(Univ. Tor
    Vergata, Rome, Italy)*; Canichella, Antonio *(Univ. of Rome "Tor Vergata")*; Coniglione, Filadelfo *(Univ. of Rome
    "Tor Vergata")*; Sabato, Elisabetta *(Univ. of Rome "Tor Vergata")*; Della Badia Giussi, Florencia *(Univ. of Rome
    "Tor Vergata")*; Dauri, Mario *(Univ. of Rome "Tor Vergata")*; Sabato, Alessandro Fabrizio *(Univ. of Rome "Tor
    Vergata")*; Guerrisi, Maria *(Univ. of Rome "Tor Vergata")*; Baselli, Giuseppe *(Politecnico di Milano)*; Signorini,
    Maria G. *(Politecnico di Milano)*; Cerutti, Sergio *(Politecnico di Milano)*; Ferrario, Manuela *(Politecnico di Milano)*

15:30-17:00 ThP21.9

Plateau Waves and Baroreflex Sensitivity in Patients with Head Injury: A Case Study 3792-3795

Shahsavari, Sima* (Chalmers Univ. of Tech.); McKelvey, Tomas (Chalmers Univ. of Tech.);
Eriksson-Ritzén, Catherine (Sahlgrenska Univ. Hospital); Rydenhag, Bertil (Sahlgrenska Univ. Hospital)

15:30-17:00 ThP21.10

Investigation of Parameters Highlighting Drug Induced Small Changes of the T-Wave's Morphology for Drug Safety Studies 3796-3799

Baas, Tobias* (Karlsruhe Inst. of Tech. (KIT), Inst. of Biomedical Eng.); Graefe, Ksenija (Karlsruhe Inst. of Tech. (KIT)); Khawaja, Antoun (BIOSIGNA – Medical Diagnostics); Doessel, Olaf (Karlsruhe Inst. of Tech. (KIT))

15:30-17:00 ThP21.11

Effects of Lead Spatial Resolution on the Spectrum of Cardiac Signals: A Simulation Study 3800-3803

Beltrán Molina, Ferney Alberto (Univ. Rey Juan Carlos); Muñoz Gómez, Alejandra (Univ. Rey Juan Carlos);
Rodríguez González, Ana Belén (Rey Juan Carlos Univ.); Vinagre, Juan Jose (Univ. Rey Juan Carlos);
Requena Carrion, Jesus* (Univ. Rey Juan Carlos)

15:30-17:00 ThP21.12

A Point Process Model of Respiratory Dynamics in Early Physiological Development 3804-3807

Indic, Premananda* (Univ. of Massachusetts Medical School); Paydarfar, David (Univ. of Massachusetts
Medical School); Barbieri, Riccardo (MGH-Harvard Medical School-MIT)

15:30-17:00 ThP21.13

Noninvasive Method for Measuring Respiratory System Compliance During Pressure Support Ventilation 3808-3811

Zhao, Zhanqi* (Furtwangen Univ.); Eger, Marcus (Dräger Medical); Handzsuj, Thomas (Dräger Medical);
Ranieri, Marco (Univ. of Turin); Appendini, Lorenzo (Istituto Scientifico di Veruno); Micelli, Cosimo (KleisTEK);
Moeller, Knut (Furtwangen Univ.)

15:30-17:00 ThP21.14

Quantifying Respiratory Variation with Force Sensor Measurements 3812-3815

Paalasmaa, Joonas* (Beddit.com Ltd); Leppäkorpi, Lasse (Beddit.com Ltd);
Partinen, Markku (Vitalmed Research Ctr., Helsinki Univ. Central Hospital)

15:30-17:00 ThP21.15

Unobtrusive In-Home Assessment by Means of Everyday Computer Mouse Usage 3816-3819

Hagler, Stuart (Oregon Health & Science Univ.); Jimison, Holly* (Oregon Health & Science Univ.);
Pavel, Michael (Oregon Health & Science Univ.)

15:30-17:00 ThP21.16

Evaluation of the Respiratory Muscles Efficiency During an Incremental Flow Respiratory Test 3820-3823

Sarlabous, Leonardo* (Univ. Politècnica de Catalunya (UPC)); Torres, Abel (Univ. Politècnica de Catalunya);
Fiz Fernandez, José Antonio (Navarra Hospital); Gea, Joaquim (IMIM-Hospital del Mar, UPF, CIBERES);
Martínez-Llorens, Juana M. (IMIM-Hospital del Mar, UPF, CIBERES); Morera Prat, Jose (Hospital Univ.
Germans Trias i Pujol); Jané, Raimon (Univ. Politècnica de Catalunya)

15:30-17:00 ThP21.17

Validation of Respiratory Signal Derived from Suprasternal Notch Acceleration for Sleep Apnea Detection 3824-3827

Kheirkhah Dehkordi, Parastoo* (Simon Fraser Univ.); Marzencki, Marcin (Simon Fraser Univ.);
Tavakolian, Kouhyar (Simon Fraser Univ.); Kaminska, Bozena (Simon Fraser Univ.)

ThP22: 15:30-17:00 America Ballroom Westin
1.2.6 Advances in Signal Processing in Physiological Systems II (Poster Session)

15:30-17:00 ThP22.1

EEG Spectro-Temporal Modulation Energy: A New Feature for Automated Diagnosis of Alzheimer's Disease 3828-3831

Trambaiolli, Lucas* (Univ. Federal do ABC); Falk, Tiago (Institut Natl. de la Recherche Scientifique);
Fraga, Francisco José (Eng., Modeling & Applied Social Sciences Ctr., Univ. Federal do ABC); Anghinah,
Renato (Reference Ctr. of Behavioral Disturbances & Dementia, School of Medicine, Univ. de Sao Paulo);
Lorena, Ana Carolina (Mathematics, Computation & Cognition Ctr., Univ. Federal do ABC)

15:30-17:00   ThP22.14
Vectorial Analysis of the Electrohysterogram for Prediction of Preterm Delivery: A Preliminary Study 3880-3883
 Rabotti, Chiara* (Eindhoven Univ. of Tech.); Bijloo, Rianne (Maxima medical Ctr. Veldhoven);
 Oei, S. Guid (Maxima Medisch Centrum, Veldhoven); Mischi, Massimo (Eindhoven Univ. of Tech.)

ThP23: 15:30-17:00   America Ballroom Westin
2.5.19 Electrical Source, Impedance, Elasticity Imaging, and Other Modalities (Poster Session)

15:30-17:00   ThP23.1
Motion P3 Demonstrates Neural Nature of Motion ERPs 3884-3887
 Nolan, Hugh* (Trinity College Dublin); Butler, John (Albert Einstein College of Medicine);
 Whelan, Robert (Trinity College Dublin); Foxe, John (City College of the City Univ. of New York);
 Bülthoff, Heinrich (Max Planck Inst. for Biological Cybernetics); Reilly, Richard (Trinity College Dublin)

15:30-17:00   ThP23.2
Propagation of Electrical Field in the Brain using Electrical Intra-Cerebral Stimulations 3888-3891
 Hofmanis, Janis* (INPL, CRAN); Louis-Dorr, Valerie (Nancy-Univ.); Cecchin, Thierry (Ctr. de Recherche en
 Automatique de Nancy (CRAN), Nancy-Univ.); Caspary, Olivier (INPL, CRAN); Koessler, Laurent (CRAN)

15:30-17:00   ThP23.3
On Sparse Forward Solutions in Non-Stationary Domains for the EIT Imaging Problem 3892-3896
 Kantartzis, Panagiotis* (City Univ. London); Liatsis, Panos (City Univ.)

15:30-17:00   ThP23.4
Evaluation of EM Absorption Loss Over Breast Mass for Breast Cancer Diagnosis 3897-3900
 Elsewe, Mohamed* (Primus Diagnostics)

15:30-17:00   ThP23.5
Automatic Detection of the Seizure Onset Zone Based on Ictal EEG 3901-3904
 Gritsch, Gerhard (AIT Austrian Inst. of Tech. GmbH); Hartmann, Manfred* (AIT Austrian Inst. of Tech. GmbH);
 Perko, Hannes (Austrian Inst. of Tech.); Fürbaß, Franz (AIT Austrian Inst. of Tech. GmbH);
 Ossenblok, Pauly (Epilepsy Ctr. Kempenhaeghe); Kluge, Tilmann (Austrian Inst. of Tech.)

15:30-17:00   ThP23.6
Detection of Motor Planning and Suppression with the Help of Electroencephalograms 3905-3908
 Dieckgraeff, Anita Gretchen* (Univ. Tübingen, Wilhelm Schickard Institut für Informatik, Germany);
 Lindner, Axel (Herti-Inst. Tübingen, Germany); Rosenstiel, Wolfgang (Dept. of Computer Eng., Univ. Tübingen,
 Germany); Bogdan, Martin (Computer Eng. Dept., Univ. Leipzig & Univ. Tübingen, Germany)

15:30-17:00   ThP23.7
Electrocortical Source Imaging of Intracranial EEG Data in Epilepsy 3909-3912
 Akalin Acar, Zeynep* (Univ. of California San Diego); Palmer, Jason (UCSD); Worrell, Gregory A. (Mayo Clinic);
 Makeig, Scott (Univ. of California San Diego)

15:30-17:00   ThP23.8
Analysis of the Criteria of Activation-Based Inverse Electrocardiography Using Convex Optimization ... 3913-3916
 Erem, Burak* (Northeastern Univ.); van Dam, Peter (Radboud Univ. Medical Ctr.);
 Brooks, Dana (Northeastern Univ.)

ThP24: 15:30-17:00   America Ballroom Westin
2.6.22 Image Reconstruction and Enhancement (Poster Session)

15:30-17:00   ThP24.1
Wavelet-Based Ultrasound Image Denoising: Performance Analysis and Comparison 3917-3920
 Yousefi Rizi, Fereshteh (School of Elec. & Computer Eng., College of Eng., Univ. of Tehran);
 Ahmadi Noubari, Hossain* (Univ. of Tehran); Setarehdan, Seyed Kamaledin (Univ. of Tehran)

15:30-17:00   ThP24.2
ARM-Based Visual Processing System for Prosthetic Vision 3921-3924
 Matteucci, Paul Brendan* (Univ. of New South Wales); Byrnes-Preston, Philip (The Univ. of New South Wales);
 Chen, Spencer Chin-Yu (Univ. of New South Wales); Lovell, Nigel (Univ. of New South Wales);
 Suaning, Gregg (The Univ. of New South Wales)

15:30-17:00   ThP24.3
A Multi-Scale Nonlinear Vessel Enhancement Technique **3925-3929**
Abdollahi, Behnaz* (Univ. of Louisville); El-baz, Ayman (Univ. of Louisville); Amini, Amir (Univ. of Louisville)

15:30-17:00   ThP24.4
A Fast Mapping Method in the ISAF Reconstruction Algorithm **3930-3933**
Wang, Gongming* (Inst. of Computing Tech., Chinese Acad. of Science); Zhang, Fa (Inst. of Computing Tech., Chinese Acad. of Science); Chu, Qi (Inst. of Computing Tech., Chinese Acad. of Science); Sun, Fei (Inst. of Biophysics, Chinese Acad. of Science); Liu, Zhiyong (Inst. of Computing Tech., Chinese Acad. of Science)

15:30-17:00   ThP24.5
A Critical Review of the Effect of De-Noising Algorithms on MRI Brain Tumor Segmentation **3934-3937**
Diaz, Idanis* (Univ. of Alberta); Boulanger, Pierre (Univ. of Alberta); Greiner, Russell (Univ. of Alberta); Murtha, Albert (Cross Cancer Inst. at Univ. of Alberta)

15:30-17:00   ThP24.6
An Attempt of Microwave CT System Which Discriminates the Transmission Path by Means of Time Domain Measurement **3938-3941**
Tamura, Mutsumi* (Niigata Univ.); Ogawa, Takahiro (Niigata Univ.); Miyakawa, Michio (Niiagta Univ.)

15:30-17:00   ThP24.7
Software-Based Microwave CT System Consisting of Antennas and Vector Network Analyzer **3942-3945**
Ogawa, Takahiro* (Niigata Univ.); Miyakawa, Michio (Niiagta Univ.)

15:30-17:00   ThP24.8
Total Variation Regularization for Bioluminescence Tomography with an Adaptive Parameter Choice Approach **3946-3949**
Feng, Jinchao* (Beijing Univ. of Tech.); Jia, Kebin (Beijing Univ. of Tech.); Qin, Chenghu (Chinese Acad. of Sciences); Tian, Jie (Chinese Acad. of Sciences)

ThP25: 15:30-17:00	America Ballroom Westin
2.8.40 Advances in Retinal Image Analysis I (Poster Session)	

15:30-17:00   ThP25.1
Retinal Vessel Extraction by Combining Radial Symmetry Transform and Iterated Graph Cuts **3950-3953**
Xiang, Dehui (Inst. of Automation, Chinese Acad. of Sciences); Tian, Jie* (Chinese Acad. of Sciences); Deng, Kexin (Inst. of Automation Chinese Acad. of Sciences); Zhang, Xing (Inst. of Automation, Chinese Acad. of Sciences); Yang, Fei (Inst. of Automation, Chinese Acad. of Science); Wan, Xiaonan (Inst. of Automation, the Chinese Acad. of Sciences)

15:30-17:00   ThP25.2
Automatic Vessel Segmentation in Wide-Field Retina Images of Infants with Retinopathy of Prematurity **3954-3957**
Poletti, Enea (Univ. of Padova); Fiorin, Diego (Univ. of Padova); Grisan, Enrico* (Univ. of Padova); Ruggeri, Alfredo (Univ. of Padua)

15:30-17:00   ThP25.3
Geographic Atrophy Segmentation in Infra-Red and Auto Fluorescent Retina Images Using Supervised Learning **3958-3961**
Devisetti, Kishore (Univ. of Tennessee Health Science Ctr.); Karnowski, Thomas* (Oak Ridge Natl. Lab.); Giancardo, Luca (Univ. of Burgundy – Oak Ridge Natl. Lab); Li, Yaqin (Univ. of Tennessee Health Science Ctr.); Chaum, Edward (Univ. of Tennessee Hamilton Eye Inst)

15:30-17:00   ThP25.4
Automatic Screening of Age-Related Macular Degeneration and Retinal Abnormalities **3962-3966**
Burlina, Philippe* (Johns Hopkins Univ.); Freund, David (JHU/APL)

15:30-17:00   ThP25.5
Augmenting the Classification of Retinal Lesions Using Spatial Distribution **3967-3970**
Massey, Elizabeth* (Univ. of Lincoln); Hunter, Andrew (Univ. of Lincoln)

15:30-17:00 ThP25.6

Supervised Retinal Biometrics in Different Lighting Conditions **3971-3974**

Che Azemin, Mohd Zulfaezal* (RMIT Univ.); Kant Kumar, Dinesh (RMIT Univ.);
Sugavaneswaran, Lakshmi (Ryerson Univ.); Krishnan, Sridhar (Ryerson Univ.)

ThP26: 15:30-17:00 America Ballroom Westin
3.4.6 Advances in Physiological Monitoring III (Poster Session)

15:30-17:00 ThP26.1

Influence of the Multisine Excitation Amplitude Design for Biomedical
Applications Using Impedance Spectroscopy **3975-3978**

Sanchez, Benjamin* (Technical Univ. of Catalonia, Barcelona, SPAIN); Bragos, Ramon (Technical Univ. of
Catalonia (UPC)); Vandersteen, Gerd (Vrije Univ. Brussels, Brussels, BELGIUM)

15:30-17:00 ThP26.2

Real-Time, in Vivo Investigation of Mechanical Stimulus on Cells with
Remotely Activated, Vibrational Magnetoelastic Layers **3979-3982**

Holmes, Hallie (Michigan Technological Univ.); Tan, Ee Lim (Michigan Technological Univ.);
Ong, Keat Ghee (Michigan Tech. Univ.); Rajachar, Rupak* (Michigan Technological Univ.)

15:30-17:00 ThP26.3

Using Microelectrode Models for Real Time Cell-Culture Monitoring **3983-3986**

Yufera, Alberto* (Univ. of Seville); Daza, Paula (Univ. de Sevilla); Cañete, Daniel (Univ. of Seville)

15:30-17:00 ThP26.4

Temperature Elevation Inside Neural Tissue Illuminated by NIR Laser **3987-3989**

Abdo, Ammar* (NJIT); ERSEN, ALI (NJIT); Sahin, Mesut (New Jersey Inst. of Tech.)

15:30-17:00 ThP26.5

Measuring Movement of Denim Trousers for Garment-Integrated Sensing Applications **3990-3993**

Dunne, Lucy* (Univ. of Minnesota); gioberto, Guido (Univ. of Minnesota); Ramesh, Varun (Univ. of Minnesota);
Koo, Helen (Univ. of Minnesota)

15:30-17:00 ThP26.6

A New Proposal of Tailored Bioinstrumentation Using Rapid Prototyping and Three-Dimensional CAD –
First Trial to Develop Individually Designed Cuff-Units for Continuous Blood Pressure Measurement **3994-3997**

Ogawa, Mitsuhiro* (Kanazawa Univ.); Motoi, Kosuke (Kanazawa Univ.); Yamakoshi, Takehiro (Kanazawa
Univ.); Nogawa, Masamichi (Kanazawa Univ.); Yamakoshi, Yasuhiro (yusys Co., Ltd.);
Shibata, Masahiro (Shibaura Inst. of Tech.); Yamakoshi, Ken-ichi (Kanazawa Univ.)

15:30-17:00 ThP26.7

High-Order Sliding-Mode Control for Blood Glucose Regulation in the
Presence of Uncertain Dynamics **3998-4001**

Gallardo-Hernández, Ana Gabriela* (Univ. Nacional Autónoma de México); Fridman, Leonid (Univ. Nacional
Autónoma de Méxicco); Leder, Ron (Univ. Nacional Autonoma de Mexico); Islas-Andrade, Sergio (Unidad de
Investigación Médica en Enfermedades Metabólicas. CMN SXXI); Revilla-Monsalve, María Cristina (Unidad de
Investigación Médica en Enfermedades Metabólicas.CMN SXXI); Shtessel, Yuri (Univ. of Alabama in
Huntsville); Levant, Arie (Applied Mathematics Dept. in Tel-Aviv Univ.)

15:30-17:00 ThP26.8

Enhanced Video Images for Tympanic Membrane Characterization **4002-4005**

Cheng, Lin* (Trinity College); Liu, Jinfeng (Trinity College); Roehm, Corrie (Univ. of Connecticut Health Ctr.);
Valdez, Tulio (Connecticut Children's Medical Ctr.)

15:30-17:00 ThP26.9

Development of a Reflectance Photoplethysmographic Sensor Used for the
Assessment of Free Flap Perfusion **4006-4009**

Kyriacou, Panayiotis* (City Univ.); Pal, Sandip (Broomfield Hospital); Zaman, Tina (City Univ.)

3.6.9 Recent Developments in Wireless Sensors and Systems (Poster Session)

15:30-17:00   ThP27.1

Analysis and Design of Data Transmission Protocol for 1024-Channel Retinal Prosthesis **4010-4013**

   Chen, Kuanfu* (Univ. of California, Santa Cruz); Liu, Wentai (Univ. of California, Santa Cruz)

15:30-17:00   ThP27.2

Study of Performance and Propagation Characteristics of Wire and Planar Structures Around Human Body **4014-4017**

   Aroul, Antoine Lourdes Praveen* (Univ. of Texas at Dallas); Bhatia, Dinesh (The Univ. of Texas at Dallas)

15:30-17:00   ThP27.3

Design and Simulation of Printed Spiral Coil used in Wireless Power Transmission Systems for Implant Medical Devices **4018-4021**

   Wu, Wei (Suzhou Inst. of Biomedical Eng. & Tech.); Fang, Qiang* (RMIT Univ.)

15:30-17:00   ThP27.4

Development of Walking Analysis System Consisting of Mobile Force Plate and Motion Sensor **4022-4025**

   Adachi, Wataru* (Doshisha Univ.); Tsujiuchi, Nobutaka (Doshisha Univ.); Koizumi, Takayuki (Doshisha Univ.); Aikawa, Masataka (Doshisha Univ.); Shiojima, Kouzou (Tec Gihan Co., LTD); Tsuchiya, Youtaro (Tec Gihan Co., LTD); Inoue, Yoshio (Kochi Univ. of Tech.)

3.8.11 Recent Developments in Microfluidic Techniques, Methods and Systems (Poster Session)

15:30-17:00   ThP28.1

Spatio-Temporal Image Analysis of Particle Streaks in Micro-Channels for Low-Cost Electro-Hydrodynamic Flow Characterization **4026-4029**

   Mahanti, Prasun* (Arizona State Univ.); Taylor, Tom (Arizona State Univ.); Cochran, Douglas (Arizona State Univ.); Hayes, Mark (Arizona State Univ.); Weiss, Noah (Arizona State Univ.); Jones, Paul (Arizona State Univ.)

15:30-17:00   ThP28.2

Stimulation and Artifact-Free Extracellular Electrophysiological Recording of Cells in Suspension **4030-4033**

   Myers, Frank* (Univ. of California, Berkeley); Abilez, Oscar (Stanford Univ.); Zarins, Chris (Stanford Univ.); Lee, Luke (UC Berkeley)

15:30-17:00   ThP28.3

Shape Dependent Laplace Vortices in Deformed Liquid-Liquid Slug Flow **4034-4037**

   Kurup, G.K. (Wayne State Univ.); Basu, Amar* (Wayne State Univ.)

15:30-17:00   ThP28.4

Improvements in Design of Spectra of Multisine and Binary Excitation Signals for Multi-Frequency Bioimpedance Measurement **4038-4041**

   Land, Raul (Tallinn Univ. of Tech.); Cahill, Brian P (iba); Parve, Toomas* (Tallinn Univ. of Tech.); Annus, Paul (ELIKO); Min, Mart (Tallinn Univ. of Tech.)

15:30-17:00   ThP28.5

Broadband RF Impedance Spectroscopy in Micromachined Microfluidic Channels **4042-4045**

   Giraud-Carrier, Matthieu Christophe (Brigham Young Univ.); Moon, Kyra (Brigham Young Univ.); Teng, Eric (Brigham Young Univ.); Hawkins, Aaron (Brigham Young Univ.); Warnick, Karl (BYU); Mazzeo, Brian A.* (Brigham Young Univ.)

6.6.52 Recent Developments in Motor Learning, Neural Control, and Neuromuscular Systems (Poster Session)

15:30-17:00   ThP29.1

Motor Adaptation During Redundant Tasks with the Wrist **4046-4049**

   Formica, Domenico* (Campus Bio-Medico Univ.); Campolo, Domenico (Nanyang Technological Univ.); Taffoni, Fabrizio (Campus Bio-Medico Univ.); Keller, Flavio (Campus Bio-Medico Univ.); Guglielmelli, Eugenio (Campus Bio-Medico Univ.)

15:30-17:00   ThP210.1
Simulation and Analysis of Split Gradient Coil Performance in MRI **4149-4152**
   Liu, Limei* (The Univ. of Queensland); Sanchez Lopez, Hector (The Univ. of Queensland); Poole, Michael (The
   Univ. of Queensland); Liu, Feng (The Univ. of Queensland); Crozier, Stuart (The Univ. of Queensland)

15:30-17:00   ThP210.2
Development of a Feedback Stimulation for Drowsy Driver Using Heartbeat Rhythms **4153-4158**
   Takahashi, Issey (Nagoya City Univ.); Yokoyama, Kiyoko* (Nagoya City Univ.)

15:30-17:00   ThP210.3
Development of a Patient Simulator for Teaching and Evaluation of the Basic
Cardio-Pulmonary Reanimation Protocol **4159-4162**
   Villagomez, Carlos (Univ. Nacional Autonoma de Mexico); Suárez Escamilla, Francisco (UNAM);
   Gomez Garcia, Sinue Daniel (Univ. Nacional Autonoma de Mexico); Davila-cervantes, Andrea (Natl. Univ. of
   Mexico, Medicine Faculty); Vega-Gonzalez, Arturo (Univ. Nacional Autónoma de México);
   Gomez-Gonzalez, Juan* (Univ. Nacional Autonoma de Mexico)

15:30-17:00   ThP210.4
A Pulse Wave Simulator for Palpation in the Oriental Medicine **4163-4166**
   Shin, Ki-Young* (Korea Electorechnology Research Inst.); Jin, Seung Oh (Korea ElectroTech. Research Inst.);
   Youn, Su Hyun (Sungkyunkwan Univ.); Joo, Subin (Sungkyunkwan Univ.); Jo, Yo Han (FT Global inc.);
   Kwon, Oh Kyung (FT Global inc.); Huh, Young (Korea ElectroTech. Research Inst.)

17:15-17:30   ThD01.1
High-Frequency Limit of Neural Stimulation with ChR2 .... **4167-4170**
   Grossman, Nir (Imperial College London); Nikolic, Konstantin* (Imperial College London);
   Grubb, Matthew (King's College London); Burrone, Juan (King's College London);
   Toumazou, Christofer (Imperial College London); Degenaar, Patrick (Imperial College London)

17:30-17:45   ThD01.2
Comparing Linear and Quadratic Models of the Human Auditory Aystem Using EEG **4171-4174**
   Power, Alan (Trinity Ctr. for BioEng.); Reilly, Richard (Trinity College Dublin);
   Lalor, Edmund* (Trinity College Dublin)

17:45-18:00   ThD01.3
Assessing Neuronal Interactions of Cell Assemblies During General Anesthesia **4175-4178**
   Chen, Zhe* (Harvard Medical School/MIT); Vijayan, Sujith (Boston Univ.); Ching, ShiNung (Massachusetts
   General Hospital, Massachusetts Inst. of Tech.); Hale, Greg (Massachusetts Inst. of Tech.);
   Flores, Francisco Javier (Massachusetts General Hospital); Wilson, Matthew (MIT);
   Brown, Emery N (MGH-Harvard Medical School-MIT)

18:00-18:15   ThD01.4
Modulations in the Oscillatory Activity of the Globus Pallidus Internus Neurons
During a Behavioral Task – a Point Process Analysis **4179-4182**
   Saxena, Shreya* (Johns Hopkins Univ.); Gale, John (Cleveland Clinic, Dept. of Neuroscience & Ctr. for
   Neurological Restoration, Cleveland, Ohio, USA.); Eskandar, Emad (Massachusetts General Hospital);
   Sarma, Sridevi V. (Johns Hopkins Univ.)

18:15-18:30   ThD01.5
Learning of Spatial Relationships between Observed and Imitated Actions Allows Invariant Inverse
Computation in the Frontal Mirror Neuron System **4183-4186**
   Oh, Hyuk* (Univ. of Maryland, College Park); Gentili, Rodolphe (Univ. of Maryland; School of Public Health);
   Reggia, James (Univ. of Maryland-College Park); Contreras-Vidal, José (Univ. of Maryland)

18:30-18:45 ThD01.6

Synaptic Weighting for Physiological Responses in Recurrent Spiking Neural Networks **4187-4190**

Herzfeld, David* (Marquette Univ.); Beardsley, Scott (Marquette Univ.)

ThD02: 17:15-18:45 St. George CD Westin
6.2.26 Brain-Machine Interfaces: I (Oral Session)
Chair: Micera, Silvestro *(École Polytechnique Fédérale de Lausanne)*
Co-Chair: Oweiss, Karim *(Michigan State Univ.)*

17:15-17:30 ThD02.1

**An Automatic Ocular Artifacts Removal Method Based on Wavelet-Enhanced
Canonical Correlation Analysis** **4191-4194**

Zhao, Chunyu (Drexel Univ.); Qiu, Tianshuang* (Dalian Univ. of Tech.)

17:30-17:45 ThD02.2

**High-Density EEG and Independent Component Analysis Mixture Models Distinguish
Knee Contractions from Ankle Contractions** **4195-4198**

Gwin, Joseph Toliver* (Univ. of Michigan); Ferris, Daniel (Univ. of Michigan)

17:45-18:00 ThD02.3

Calibrating EEG-Based Motor Imagery Brain-Computer Interface from Passive Movement **4199-4202**

Ang, Kai Keng (Inst. for Infocomm Research); Guan, Cuntai (Inst. for Infocomm Research);
Wang, Chuanchu (Inst. for Infocomm Research); Phua, Koksoon (Inst. for Infocomm Research);
Tan, Adrian Hock Guan (Inst. for Infocomm Research); Chin, Zheng Yang (Inst. for Infocomm Research)*

18:00-18:15 ThD02.4

Eye Fixation Related Potentials in a Target Search Task **4203-4206**

Healy, Graham* (Dublin City Univ.); Smeaton, Alan (Dublin City Univ.)

18:15-18:30 ThD02.5

**Comparisons between Linear and Nonlinear Methods for Decoding
Motor Cortical Activities of Monkey** **4207-4210**

*Xu, Kai (Zhejiang Univ.); Wang, Yueming (Zhejiang Univ.); Zhang, Shaomin (Zhejiang Univ.);
Zhao, Ting (Zhejiang Univ.); Wang, Yiwen (Zhejiang Univ.); Chen, Weidong (Zhejiang Univ.);
Zheng, Xiaoxiang* (Zhejiang Univ.)*

18:30-18:45 ThD02.6

**Behavioral Rehabilitation of the Eye Closure Reflex in Senescent Rats Using a Real-Time Biosignal
Acquisition System** **4211-4214**

Prueckl, Robert (g.tec medical Eng. GmbH); Taub, Aryeh H (Psychobiology Research Unit, Dept. of
Psychology, Tel Aviv Univ.); Herreros, Ivan (SPECS – Lab. of Synthetic Perceptive, Emotive & Cognitive
Systems, Univ. Pompeu Fabra); Hogri, Roni (Psychobiology Research Unit, Dept. of Psychology,TelAviv Univ.);
Magal, Ari (Psychobiology Research Unit, Dept. of Psychology, Tel Aviv Univ.); Bamford, Simeon A (Istituto
Superiore di Sanità, Rome, Italy); Giovannucci, Andrea (SPECS – Lab. of Synthetic Perceptive, Emotive &
Cognitive Systems, Univ. Pompeu Fabra); Ofek Almog, Rakefet (Faculty of Eng., Tel Aviv Univ.);
Shacham-Diamand, Yosi (Faculty of Eng., Tel Aviv Univ.); Verschure, Paul F M J (SPECS, ICREA & Univ.
Pompeu Fabra); Mintz, Matti (Psychobiology Research Unit, Dept. of Psychology, Tel Aviv Univ.);
Scharinger, Josef (Johannes Kepler Univ.); Silmon, Angela (Newcastle Univ.);
Guger, Christoph (g.tec medical Eng. GmbH)*

ThD03: 17:15-18:45 Essex Ballroom South Westin
6.2.10 Brain-Machine Interfaces: Non-Invasive Approaches (Oral Session)
Chair: Millán, José del R. *(Swiss Federal Inst. of Tech. Lausanne)*
Co-Chair: He, Bin *(Univ. of Minnesota)*

17:15-17:30 ThD03.1

Improved BCI Performance with Sequential Hypothesis Testing **4215-4218**

Liu, Rong (Dalian Univ. of Tech.); Newman, Geoffrey (Johns Hopkins Univ.); Ying, Sarah (Johns Hopkins Univ.
School of Medicine); Thakor, Nitish (Johns Hopkins Univ.)*

17:30-17:45   ThD03.2

Brisk Movement Imagination for the Non-Invasive Control of Neuroprostheses: A First Attempt 4219-4222

Müller-Putz, Gernot* (Graz Univ. of Tech.); Ofner, Patrick (Graz Univ. of Tech., Inst. for Knowledge Discovery); Kaiser, Vera (Graz Univ. of Tech., Inst. for Knowledge Discovery); Clauzel, Guillaume (Graz Univ. of Tech., Inst. for Knowledge Discovery); Neuper, Christa (Graz Univ. of Tech.)

17:45-18:00   ThD03.3

Design Principles for Noninvasive Brain-Machine Interfaces 4223-4226

Contreras-Vidal, José* (Univ. of Maryland); Bradberry, Trent (Univ. of Maryland)

18:00-18:15   ThD03.4

Brain-Controlled Telepresence Robot by Motor-Disabled People 4227-4230

Tonin, Luca (Swiss Federal Inst. of Tech., Lausanne); Carlson, Tom (Swiss Federal Inst. of Tech., Lausanne); Leeb, Robert (Ecole Polytechnique Fédérale de Lausanne); Millán, José del R.* (Swiss Federal Inst. of Tech., Lausanne)

18:15-18:30   ThD03.5

EEG Single-Trial Classification of Visual, Auditive and Vibratory Feedback Potentials in Brain-Computer Interfaces 4231-4234

López-Larraz, Eduardo* (Univ. of Zaragoza); Creatura, Marco (Bit&Brain Technologies); Iturrate, Iñaki (Univ. of Zaragoza); Montesano, Luis (Univ. de Zaragoza); Minguez, Javier (Zaragoza Univ.)

18:30-18:45   ThD03.6

Goal Selection vs. Process Control in Non-Invasive Brain-Computer Interface 4235-4238

Royer, Audrey S* (Univ. of Minnesota); Rose, Minn L (Univ. of Minnesota); He, Bin (Univ. of Minnesota)

ThD05:   17:15-18:45   Essex Ballroom North Westin
6.3.32 Motor Neuroprostheses II (Oral Session)
Chair: Durand, Dominique *(Case Western Res. Univ.)*
Co-Chair: Chan, Adrian *(Carleton Univ.)*

17:15-17:30   ThD05.1

Estimating Bladder Pressure from Sacral Dorsal Root Ganglia Recordings 4239-4242

Bruns, Tim M.* (Univ. of Pittsburgh); Gaunt, Robert (Univ. of Pittsburgh); Weber, Douglas (Univ. of Pittsburgh)

17:30-17:45   ThD05.2

Performance of Electromyography Recorded Using Textile Electrodes in Classifying Arm Movements 4243-4246

Li, Guanglin* (Shenzhen Inst. of Advanced Tech.); Geng, Yanjuan (Shenzhen Inst. of Advanced Tech.); Tao, Dandan (Shenzhen Inst. of Advanced Tech.)

17:45-18:00   ThD05.3

A Multi-Modal Approach for Hand Motion Classification Using Surface EMG and Accelerometers 4247-4250

Fougner, Anders* (Norwegian Univ. of Science & Tech.); Scheme, Erik (Univ. of New Brunswick); Chan, Adrian (Carleton Univ.); Englehart, Kevin (Univ. of New Brunswick); Stavdahl, Oyvind (Norwegian Univ. of Science & Tech.)

18:00-18:15   ThD05.4

An Algorithm for Source Signal Extraction from the Peripheral Nerve 4251-4254

Tang, Yuang* (Case Western Reserve Univ.); Wodlinger, Brian (Univ. of Pittsburgh); Durand, Dominique (Case Western Reserve Univ.)

18:15-18:30   ThD05.5

Improving the Performance of a Neural-Machine Interface for Artificial Legs Using Prior Knowledge of Walking Environment 4255-4258

Dou, Zhi (Univ. of Rhode Island); Zhang, Fan (Univ. of Rhode Island); Nunnery, Michael (Nunnery Orthotic & Prosthetic Technologies, LLC); Huang, He* (Univ. of Rhode Island)

18:30-18:45   ThD05.6

An EMG-Controlled Neuroprosthesis for Daily Upper Limb Support: A Preliminary Study 4259-4262

Ambrosini, Emilia* (Politecnico di Milano); Ferrante, Simona (Politecnico di Milano); Tibiletti, Marta (Politecnico di Milano); Schauer, Thomas (Univ. of Berlin); Klauer, Christian (Technische Univ. Berlin); Ferrigno, Giancarlo (Politecnico di Milano); Pedrocchi, Alessandra (Politecnico di Milano)

5.1.4 Ballistocardiography: Advances and New Perspectives from Space Missions (Oral Session)
Chair: Di Rienzo, Marco *(Fondazione Don Carlo Gnocchi)*
Co-Chair: Migeotte, Pierre-François *(Royal Military Acad.)*

17:15-17:30   ThD11.1
A Wearable System for the Seismocardiogram Assessment in Daily Life Conditions **4263-4266**
  Di Rienzo, Marco* (Fondazione Don Carlo Gnocchi); Meriggi, Paolo (Fondazione Don Gnocchi); Rizzo, Francesco (Fondazione Don C. Gnocchi ONLUS); Vaini, Emanuele (Polo Tecnologico, Fondazione Don Carlo Gnocchi); Faini, Andrea (Univ. degli Studi Milano-Bicocca); Merati, Giampiero (Univ. of Milan); Parati, Gianfranco (Univ. degli Studi di Milano-Bicocca); Castiglioni, Paolo (Fondazione Don Carlo Gnocchi ONLUS)

17:30-17:45   ThD11.2
Three-Dimensional Ballistocardiography in Microgravity: A Review of past Research **4267-4270**
  De Ridder, Sven* (Royal Military Acad. of Belgium); Migeotte, Pierre-François (Royal Military Acad.); Neyt, Xavier (Royal Military Acad.); Prisk, Gordon Kim (Univ. of California, San Diego)

17:45-18:00   ThD11.3
Three Dimensional Ballistocardiography: Methodology and Results from
Microgravity and Dry Immersion **4271-4274**
  Migeotte, Pierre-François* (Royal Military Acad.); Tank, Jens (Hannover Medical School); Pattyn, Nathalie (Royal Military Acad., Brussels, Belgium); Funtova, Irina I. (IMBP Moscow, Russia); Baevsky, Roman M. (IMBP Moscow, Russia); Neyt, Xavier (Royal Military Acad.); Prisk, Gordon Kim (Univ. of California, San Diego)

18:00-18:15   ThD11.4
Infrasonic Cardiac Signals: Complementary Windows to Cardiovascular Dynamics **4275-4278**
  Tavakolian, Kouhyar* (Simon Fraser Univ.); Ngai, Brandon (Simon Fraser Univ.); Blaber, Andrew Philip (Simon Fraser Univ.); Kaminska, Bozena (Simon Fraser Univ.)

18:15-18:30   ThD11.5
Ballistocardiography – A Method Worth Revisiting **4279-4282**
  Giovangrandi, Laurent* (Stanford Univ.); Inan, Omer (Stanford Univ.); Wiard, Richard M. (Stanford Univ.); Etemadi, Mozziyar (Stanford Univ.); Kovacs, Gregory T.A. (Stanford Univ.)

18:30-18:45   ThD11.6
Cardiac Sounds from a Wearable Device for Sternal Seismocardiography **4283-4286**
  Castiglioni, Paolo* (Fondazione Don Carlo Gnocchi ONLUS); Meriggi, Paolo (Fondazione Don Gnocchi); Rizzo, Francesco (Fondazione Don C. Gnocchi ONLUS); Vaini, Emanuele (Polo Tecnologico, Fondazione Don Carlo Gnocchi); Faini, Andrea (Univ. degli Studi Milano-Bicocca); Parati, Gianfranco (Univ. degli Studi di Milano-Bicocca); Merati, Giampiero (Univ. of Milan); Di Rienzo, Marco (Fondazione Don Carlo Gnocchi)

5.2.7 Modeling Cardiovascular Hemodynamics for Clinical Applications (Oral Session)
Chair: Sunagawa, Kenji *(Kyushu Univ.)*
Co-Chair: Chbat, Nicolas *(Philips Res. North America)*

17:15-17:30   ThD12.1
A Comparative Study on Extra-Corporal Circulation Control **4287-4290**
  Baumgartner, Benedikt* (Technical Univ. Munich); Mendoza Garcia, Alejandro (Technical Univ. Munich); Eichhorn, Stefan (German Heart Ctr.); Schreiber, Ulrich (German Heart Ctr.); Knoll, Alois (Technical Univ. Munich)

17:30-17:45   ThD12.2
Robust, Beat-To-Beat Estimation of the True Pulse Transit Time from Central and
Peripheral Blood Pressure or Flow Waveforms Using an Arterial Tube-Load Model **4291-4294**
  Zhang, Guanqun (Michigan State Univ.); Gao, Mingwu (Michigan State Univ.); Mukkamala, Ramakrishna* (Michigan State Univ.)

17:45-18:00   ThD12.3

Impact of Baroreflex on Venous Return Surface **4295-4296**

Sakamoto, Takafumi* (Kyushu Univ.); Murayama, Yoshinori (Kyushu Univ.); Tanaka, Atsushi (Kyushu Univ. Graduate School of Medical Sciences, Japan); Sakamoto, Kazuo (Kyushu Univ.); Tobushi, Tomoyuki (Kyushu Univ.); Saku, Keita (Kyushu Univ.); Hosokawa, Kazuya (Kyushu Univ. Graduate School of Medical Sciences); Onitsuka, Ken (Kyushu Univ.); Fujino, Takeo (Kyushu Univ.); Sunagawa, Kenji (Kyushu Univ.)

18:00-18:15   ThD12.4

**Reduction of Myocardial Oxygen Demand by Controlling Heart Rate and
Hemodynamics Simultaneously by Novel Circulatory Model** **4297-4300**

Sugimachi, Masaru* (Natl Cardio Ctr. Research Inst); Uemura, Kazunori (Natl. Cardio. Ctr. Research Inst); Kawada, Toru (Nat. Cerebral & Cardiovascular Ctr. Res Inst); Shishido, Toshiaki (Natl. Cardiovascular Ctr. Research Inst.); Sunagawa, Kenji (Kyushu Univ.)

18:15-18:30   ThD12.5

Physiological Control of the Hemodynamic Properties of Rotary Blood Pumps .... *****

Mason, David Glen* (Univ. of Queensland); Stevens, Michael Charles (Univ. of Queensland); Gregory, Shaun David (Queensland Univ. of Tech.); Timms, Daniel Lee (Bivacor Pty Ltd); Wilson, Stephen (Univ. of Queensland); Pearcy, Mark (Queensland Univ. of Tech.); Fraser, John F. (Prince Charles Hospital, Brisbane, Queensland)

18:30-18:45   ThD12.6

**Hemodynamic Modeling of the Cardiovascular System Using Mock Circulation
Loops to Test Cardiovascular Devices** **4301-4304**

Timms, Daniel Lee* (Bivacor Pty Ltd); Gregory, Shaun David (Queensland Univ. of Tech.); Stevens, Michael Charles (Univ. of Queensland); Fraser, John F. (Prince Charles Hospital, Brisbane, Queensland)

ThD13: 17:15-18:45   Arlington Marriott

4.5.2 Models of Organs, Tissues, and Medical Devices (Oral Session)

Chair: Doessel, Olaf *(Karlsruhe Inst. of Tech. (KIT))*

Co-Chair: Akay, Metin *(Univ. of Houston)*

17:15-17:30   ThD13.1

The Response of Hepatocyte Cell Volume to Hyperthermia and Its Role in Oedema **4305-4308**

O'Neill, David Patrick* (Univ. of Oxford); Peng, Tingying (Univ. of Oxford); Payne, Stephen John (Univ. of Oxford)

17:30-17:45   ThD13.2

Patient Specific Modeling and Prediction of Stress/Strain for Surgical Guidance **4309-4313**

Burlina, Philippe* (Johns Hopkins Univ.)

17:45-18:00   ThD13.3

Mechanistic Modeling of Drug Elimination by the Liver Using Local Volume Averaging Method **4314-4317**

Izadifar, Mohammad* (Division of Biomedical Eng., Univ. of Saskatchewan); Baik, Oon-Doo (Univ. of Saskatchewan); Alcorn, Jane (Univ. of Saskatchewan)

18:00-18:15   ThD13.4

Comprehensive Mechanism-Based Antibody Pharmacokinetic Modeling **4318-4323**

Chabot, Jeffrey* (Pfizer, Inc.); Dettling, Danielle (Pfizer, Inc.); Jasper, Paul (RES Group, Inc.); Gomes, Bruce (Pfizer, Inc.)

18:15-18:30   ThD13.5

A Framework for Personalization of Computational Models of the Human Atria **4324-4328**

Doessel, Olaf* (Karlsruhe Inst. of Tech. (KIT)); Krueger, Martin Wolfgang (Karlsruhe Inst. of Tech.); Weber, Frank Michael (Inst. of Biomedical Eng., Karlsruhe Inst. of Tech.); Schilling, Christopher (Univ. Karlsruhe (TH)); Schulze, Walther H. W. (Karlsruhe Inst. of Tech. (KIT), Inst. of Biomedical Eng.); Seemann, Gunnar (Karlsruhe Inst. of Tech.)

18:30-18:45   ThD13.6

Geometric Modeling of Pelvic Organs **4329-4332**

Bay, Thierry* (Lab. of Info. & Systems Sciences (LSIS)); Chambelland, Jean-Christophe (Lab. of Info. & Systems Sciences (LSIS)); Raffin, Romain (Lab. of Info. & Systems Sciences (LSIS)); Daniel, Marc (Lab. of Info. & Systems Sciences (LSIS)); Bellemare, Marc-Emmanuel (Univ. Paul Cézanne)

ThD15: 17:15-18:45   Clarendon Marriott
7.4.1 Cellular Force Transduction (Minisymposium)
Chair: Jacot, Jeffrey G *(Rice Univ./Texas Children's Hospital)*
Co-Chair: Lee, Juliet *(Univ. of Connecticut)*

17:15-17:30   ThD15.1

High Cell Aspect Ratio Alters Stem Cell Traction Stresses and Lineage .... *****

Engler, Adam* (Univ. of California, San Diego)

17:30-17:45   ThD15.2

Single Cell-Mediated Collagen Reorganization in 3D Matrices **4333-4335**

Carey, Shawn P. (Cornell Univ.); Kraning-rush, Casey (Cornell Univ.); Reinhart-King, Cynthia A.* (Cornell Univ.)

17:45-18:00   ThD15.3

The Effect of Substrate Stiffness on Cardiomyocyte Action Potential and Calcium Current .... *****

Myers, Jackson (Rice Univ.); Jacot, Jeffrey G* (Rice Univ./Texas Children's Hospital)

18:00-18:15   ThD15.4

**Insights into Mechanosensing and the Biomechanics of Cell Motility Revealed by
Highly Flexible Traction Force Assays** .... *****

Lee, Juliet* (Univ. of Connecticut)

18:15-18:30   ThD15.5

Driving Intracellular Tension by Extracellular Matrix Mechanics .... *****

Janmey, Paul* (Univ. of Pennsylvania)

ThD19: 17:15-18:45   Salons AB Marriott
3.4.3 Physiological Monitoring III (Oral Session)
Chair: Tamura, Toshiyo *(Chiba Univ.)*
Co-Chair: Lubecke, Victor *(Univ. of Hawaii Manoa)*

17:15-17:30   ThD19.1

**Pulse Pressure Monitoring through Cardiac Motion Detection Using 2.45 GHz
Microwave Doppler Radar** **4336-4339**

Singh, Aditya (Univ. of Hawaii at Manoa); Lubecke, Victor (Univ. of Hawaii Manoa);
Boric-Lubecke, Olga (Univ. of Hawaii Manoa)*

17:30-17:45   ThD19.2

A Novel System for Continuous Peripheral Arterial Pressure-Volume Loop Measurement **4340-4343**

Shyu, Liang-Yu (Chung Yuan Christian Univ.); Tsai, Meng-Chieh (Chung Yuan Christian Univ.);
Yeih, Dong-Feng (Division of Cardiology, Dept. of Internal Medicine at the Natl. Taiwan Univ. Hospital);
Hu, Wei-Chih (Chung Yuan Christian Univ.)*

17:45-18:00   ThD19.3

Adaptive Control with Self-Tuning for Non-Invasive Beat-By-Beat Blood Pressure Measurement **4344-4347**

Nogawa, Masamichi* (Kanazawa Univ.); Ogawa, Mitsuhiro (Kanazawa Univ.); Yamakoshi, Takehiro (Kanazawa Univ.); Tanaka, Shinobu (Kanazawa Univ.); Yamakoshi, Ken-ichi (Kanazawa Univ.)

18:00-18:15   ThD19.4

Electro-Optical Plethysmography for Non-Invasive Estimation of Hemoglobin Concentration **4348-4351**

Phillips, Justin* (City Univ. London); Hickey, Michelle (City Univ.); Kyriacou, Panayiotis (City Univ.)

18:15-18:30   ThD19.5

**Investigation of Pulse Oximeter Failure Rates During Artificial Hypoperfusion Utilising a
Custom Made Multimode Pulse Oximetery Sensor** **4352-4355**

Muhammad, Shafique (City Univ. London); Kyriacou, Panayiotis* (City Univ.); Pal, Sandip (Broomfield Hospital)

18:30-18:45   ThD19.6

Refinement and Evaluation of a Hydraulic Bed Sensor **4356-4360**

Heise, David* (Lincoln Univ.); Rosales, Licet (Univ. of Missouri); Skubic, Marjorie (Univ. of Missouri); Devaney, Michael (Univ. of Missouri)

ThD20: 17:15-18:45   Salons CD Marriott
1.6.40 Adaptive and Kalman Filtering (Oral Session)
Chair: Sabatini, Angelo Maria *(Scuola Superiore Sant'Anna)*
Co-Chair: McNames, James *(Portland State Univ.)*

17:15-17:30   ThD20.1

Photoplethysmograph Quality Estimation through Multichannel Filtering **4361-4364**

Silva, Ikaro* (Massachusetts Inst. of Tech.); Lee, Joon (MIT); Mark, Roger (Massachusetts Inst. of Tech.)

17:30-17:45   ThD20.2

Tracking Single Dynamic MEG Dipole Sources Using the Projected Extended Kalman Filter **4365-4368**

Yao, Yuchen* (Univ. of California, Irvine); Swindlehurst, A. Lee (Univ. of California, Irvine)

17:45-18:00   ThD20.3

A Hidden Markov Model-Based Technique for Gait Segmentation Using a Foot-Mounted Gyroscope **4369-4373**

Mannini, Andrea* (Scuola Superiore Sant'Anna); Sabatini, Angelo Maria (Scuola Superiore Sant'Anna)

18:00-18:15   ThD20.4

On-Line Apnea-Bradycardia Detection Using Hidden Semi-Markov Models **4374-4377**

Altuve, Miguel* (Univ. de Rennes 1 & Simon Bolivar Univ.); Carrault, Guy (Univ. de Rennes 1); Beuchée, Alain (Rennes Univ. Hospital & INSERM U642); Pladys, Patrick (Ctr. Hospitalier Univ.); Hernández, Alfredo I (Univ. de Rennes 1 & INSERM U642)

18:15-18:30   ThD20.5

Objective Measure of Upper Extremity Motor Impairment in Parkinson's Disease with Inertial Sensors **4378-4381**

Hoffman, Jeffrey* (Portland State Univ.); McNames, James (Portland State Univ.)

ThD21: 17:15-18:45   Salon E Marriott
1.9.43 Data Mining in Biosignals (Oral Session)
Chair: Verschure, Paul F.M.J. *(Lab. of Synthetic Perceptive, Emotive & Cognitive Sys., ICREA & Univ. Pompeu Fabra)*
Co-Chair: Stashuk, Daniel William *(Univ. of Waterloo)*

17:15-17:30   ThD21.1

Ordering Samples Along Environmental Gradients Using Particle Swarm Optimization **4382-4385**

Essinger, Steven* (Drexel Univ.); Polikar, Robi (Rowan Univ.); Rosen, Gail (Drexel Univ.)

17:30-17:45   ThD21.2

Monitoring the Depth of Anesthesia from Rat EEG Using Modified Shannon Entropy Analysis **4386-4389**

Yoon, Young-Gyu* (KAIST Inst.); Kim, Tae-Ho (KAIST); Jeong, Dae-Woong (KAIST); Park, Sang-Hyun (KAIST Inst.)

17:45-18:00   ThD21.3

Portable Driver Drowsiness Prediction Device and Method **4390-4393**

Chang, Kuang-I* (Industrial Tech. Research Inst.); Lee, Yen-Hsien (Industrial Tech. Research Inst.); Su, Yu-Jen (Industrial Tech. Research Inst.); Lin, Hong-Dun (Industrial Tech. Research Inst.); Chuang, Bor-Nian (Industrial Tech. Research Inst.)

18:00-18:15   ThD21.4

**A Method for Detecting and Editing MUPTs Contaminated by False Classification
Errors During EMG Signal Decomposition** **4394-4397**

Parsaei, Hossein* (Univ. of Waterloo); Stashuk, Daniel William (Univ. of Waterloo)

18:15-18:30   ThD21.5

Atrial Fibrillation Source Identification **4398-4401**

Vaizurs, Raja Sarath Chandra Prasad* (Univ. of South Florida); Sankar, Ravi (Univ. of South Florida); Leonelli, Fabio (Univ. of South Florida & Veterans Administration Hospital)

18:30-18:45   ThD21.6

Quantification of Velocity Anisotropy During Gastric Electrical Arrhythmia 4402-4405

Du, Peng* (The Univ. of Auckland); O'Grady, Greg (The Univ. of Auckland); Paskaranandavadivel, Niranchan (Auckland BioEng. Inst., The Univ. of Auckland, New Zealand); Angeli, Timothy Robert (Auckland BioEng. Inst., Univ. of Auckland); Christopher, Lahr (The Division of Digestive Diseases, Univ. ofMississippi Medical Ctr., Jackson, MS, USA); Abell, Thomas (The Division of Digestive Diseases, Univ. of Mississippi Medical Ctr., Jackson, MS, USA); Cheng, Leo K (The Univ. of Auckland); Pullan, Andrew (Univ. of Auckland)

ThD22: 17:15-18:45   Salon F Marriott
1.10.44 Independent Component Analysis (Oral Session)
Chair: Nakao, Mitsuyuki *(Tohoku Univ.)*
Co-Chair: Holobar, Ales *(Univ. of Maribor, Faculty of Elec. Eng. & Computer Science)*

17:15-17:30   ThD22.1

Aberrant Auditory Evoked Responses in Schizophrenia: Evidence from Single-Trial Analysis 4406-4409

Iyer, Darshan* (NEUROMetrix, Inc.); Boutros, Nashaat (Wayne State Univ.); Zouridakis, George (Univ. of Houston)

17:30-17:45   ThD22.2

**Separation of Multiunit Signals by Independent Component Analysis in
Complex-Valued Time-Frequency Domain** 4410-4413

Shiraishi, Yasushi* (Tohoku Univ.); Katayama, Norihiro (Tohoku Univ.); Karashima, Akihiro (Tohoku Univ.); Nakao, Mitsuyuki (Tohoku Univ.)

17:45-18:00   ThD22.3

**Reconstructing ECG Precordial Leads from a Reduced Lead Set Using
Independent Component Analysis** 4414-4417

Ostertag, Michael Henry* (Rochester Inst. of Tech.); Tsouri, Gill R (RIT)

18:00-18:15   ThD22.4

**Functional Network Connectivity During Rest and Task: Comparison of
Healthy Controls and Schizophrenic Patients** 4418-4421

Arbabshirani, Mohammad Reza* (The MIND Research Network/Univ. of New Mexico); Calhoun, Vince (The Mind Research Network/Univ. of New Mexico)

18:15-18:30   ThD22.5

Assessment of Artefact Suppression by ICA and Spatial Filtering on Reduced Sets of EEG Signals 4422-4425

Divjak, Matjaz* (Univ. of Maribor); Zazula, Damjan (Univ. of Maribor); Holobar, Ales (Univ. of Maribor, Faculty of Elec. Eng. & Computer Science)

18:30-18:45   ThD22.6

**Light-Weight Single Trial EEG Signal Processing Algorithms:
Computational Profiling for Low Power Design** 4426-4430

Ahmadi, Ali* (Embedded Systems & Signal Processing Lab, Dept. of Elec. Eng., Univ. of Texas at Dallas)

ThD23: 17:15-18:45   Salon G Marriott
1.2.28 Biomedical Modeling and Simulation: Motion Analysis (Oral Session)
Chair: Kearney, Robert Edward *(McGill Univ.)*
Co-Chair: Morin, Evelyn *(Queen's Univ.)*

17:15-17:30   ThD23.1

**Estimation of the Gain and Threshold of the Stretch Reflex with a
Novel Subspace Identification Algorithm** 4431-4434

Jalaleddini, Kian* (McGill Univ.); Kearney, Robert Edward (McGill Univ.)

17:30-17:45   ThD23.2

Forearm Motion Discrimination Technique Using Real-Time EMG Signals 4435-4438

Mizuno, Haruaki* (Doshisha Univ.); Tsujiuchi, Nobutaka (Doshisha Univ.); Koizumi, Takayuki (Doshisha Univ.)

17:45-18:00   ThD23.3

Joint Angle-Based EMG Amplitude Calibration **4439-4442**

Hashemi, Javad* (Queen's Univ.); Hashtrudi-Zaad, Keyvan (Queen's Univ.); Mousavi, Parvin (Queen's Univ.); Morin, Evelyn (Queen's Univ.)

18:00-18:15   ThD23.4

A CPG Synergy Model for Evaluation of Human Finger Tapping Movements **4443-4448**

Shima, Keisuke* (Hiroshima Univ.); Tamura, Yasuhiro (Hiroshima Univ.); Tsuji, Toshio (Hiroshima Univ.); Kandori, Akihiko (Hitachi Ltd.); Sakoda, Saburo (Toneyama Natl. Hospital)

18:15-18:30   ThD23.5

Fall Algorithm Development Using Kinematic Parameters Measured from Simulated Falls Performed in a Quasi-Realistic Environment Using Accelerometry **4449-4452**

Bourke, Alan* (Univ. of Limerick); Torrent, Marc (Technical Research Ctr. for Dependency Care & Autonomous Living – CETpD Technical Univ. of Catalonia – UPC Edifici Ne); Parra, Xavier (Technical Research Ctr. for Dependency Care & Autonomous Living – CETpD Technical Univ. of Catalonia – UPC Edifici Ne); Catala, Andreu (Technical Research Ctr. for Dependency Care & Autonomous Living – CETpD Technical Univ. of Catalonia – UPC Edifici Ne); Nelson, John (Univ. of Limerick)

18:30-18:45   ThD23.6

Robust Identification of Multi-Joint Human Arm Impedance Based on Dynamics Decomposition: A Modeling Study **4453-4456**

Kang, Sang Hoon (Rehabilitation Inst. of Chicago; Northwestern Univ.); Zhang, Li-Qun* (Northwestern Univ.)

ThD24: 17:15-18:45   Salon HI Marriott
2.7.28 Image Visualization, Retrieval and Forensic (Oral Session)
Chair: Balestra, Gabriella *(Pol. di Torino)*
Co-Chair: Feng, Dagan *(The Univ. of Sydney)*

17:15-17:30   ThD24.1

Ground Surface Segmentation for Navigation with a Low Resolution Visual Prosthesis **4457-4460**

McCarthy, Chris* (NICTA); Barnes, Nick (NICTA Canberra Research Ctr.); Lieby, Paulette (Natl. ICT Australia)

17:30-17:45   ThD24.2

Acquisition and Interactive 3D Exploration of the Internal Structure of a Dissected Specimen **4461-4464**

Serres, Barthelemy* (Univ. François Rabelais of Tours); Zemmoura, Ilyess (CHU de Tours); Destrieux, Christophe (Dept. of medicine, Univ. of Tours); Venturini, Gilles (Univ. François Rabelais of Tours)

17:45-18:00   ThD24.3

Real-Time Retrieval of Similar Videos with Application to Computer-Aided Retinal Surgery **4465-4468**

Quellec, Gwenole* (TELECOM Bretagne); Lamard, Mathieu (Univ. de Bretagne Occidentale); Cazuguel, Guy (Institut Telecom/Telecom Bretagne); Roux, Christian (TELECOM Bretagne – INSERM); Cochener, Béatrice (CHU Morvan)

18:00-18:15   ThD24.4

Thoracic Image Matching with Appearance and Spatial Distribution **4469-4472**

Song, Yang* (Univ. of Sydney); Cai, Weidong (Univ. of Sydney); Eberl, Stefan (Royal Prince Alfred Hospital); Fulham, Michael (Royal Prince Alfred Hospital); Feng, Dagan (The Univ. of Sydney)

18:15-18:30   ThD24.5

Blind Forensics in Medical Imaging Based on Tchebichef Image Moments **4473-4476**

Huang, Hui (INSERM, GET ENST Bretagne); Coatrieux, Gouenou (Institut Telecom – Telecom Bretagne – Inserm); Shu, Huazhong (Southeast Univ.); Luo, Limin (Univ. of Southeast); Roux, Christian* (TELECOM Bretagne – INSERM)

18:30-18:45   ThD24.6

Reversible Watermarking Based on Invariant Image Classification and Dynamical Error Histogram Shifting **4477-4480**

Pan, Wei (Telecom Bretagne); Coatrieux, Gouenou (Institut Telecom – Telecom Bretagne – Inserm); Cuppens, Nora (Telecom Bretagne); Cuppens, Frédéric (Telecom Bretagne); Roux, Christian* (TELECOM Bretagne – INSERM)

2.8.35 Image Classification for Grading Anomalies (Oral Session)
Chair: Fotiadis, Dimitrios I. *(Univ. of Ioannina)*
Co-Chair: Bonmassar, Giorgio *(Harvard Medical School)*

17:15-17:30   ThD25.1
Focal Edge Association to Glaucoma Diagnosis **4481-4484**
   Cheng, Jun* (Inst. for Infocomm Research, AStar); Liu, Jiang (Inst. for Infocomm Research, A STAR); Wong, Damon (Inst. for Infocomm Research); Tan, Ngan Meng (A*STAR, Inst. for Infocomm Research); Lee, Beng Hai (Inst. for Infocomm Research); Cheung, Carol (Singapore Eye Research Inst.); Baskaran, Mani (Singapore Eye Research Inst.); Wong, Tien Yin (Natl. Univ. of Singapore); Aung, Tin (Singapore Eye Research Inst.)

17:30-17:45   ThD25.2
Atherosclerotic Plaque Characterization in Optical Coherence Tomography Images **4485-4488**
   Athanasiou, Lambros (Univ. of Ioannina); Exarchos, Themis P.* (Unit of Medical Tech & Intelligent Info); Naka, Katerina (Univ. of Ioannina); Michalis, Lampros (Univ. of Ioannina); Prati, Francesco (San Giovanni Hospital); Fotiadis, Dimitrios I. (Univ. of Ioannina)

17:45-18:00   ThD25.3
Atheromatic™: Symptomatic vs. Asymptomatic Classification of Carotid Ultrasound Plaque Using a Combination of HOS, DWT & Texture **4489-4492**
   Acharya, Rajendra (NgeeAnn Polytechnic); Faust, Oliver (Ngee Ann Polytechnic); Sree, Vinitha (Nanyang Technological Univ.); Ang, Peng Chuan Alvin (Ngee Ann Polytechnic); Krishnamurthi, Ganapathy* (Mayo Clinic); Seabra, Jose Carlos (Instituto Superior Tecnico NIF 501 507 930); Sanches, J. Miguel (IST(NIF:501507930)); Suri, Jasjit (Biomedical Technologies)

18:00-18:15   ThD25.4
Probabilistic Lung Nodule Classification with Belief Decision Trees **4493-4498**
   Zinovev, Dmitriy* (DePaul Univ.); Feigenbaum, Jonathan (DePaul Univ.); Furst, Jacob D. (DePaul Univ.); Raicu, Daniela S. (DePaul Univ.)

18:15-18:30   ThD25.5
Classification of Alzheimer's Disease from Structural MRI Using Sparse Logistic Regression with Optional Spatial Regularization **4499-4502**
   Rao, Anil* (GlaxoSmithKline); Lee, Ying (Natl. Univ. of Singapore); Gass, Achim (Depts. of Neurology & Neuroradiology, Univ. Hospital, Basel, Switzerland); Monsch, Andreas (Memory Clinic, Dept. of Geriatrics, Univ. Hospital, Basel, Switzerland)

18:30-18:45   ThD25.6
Automated Scoring of Liver Fibrosis through Combined Features from Different Collagen Groups **4503-4506**
   Xu, Shuoyu* (Singapore-MIT Alliance); Tai, Dean (Histoindex Pte.Ltd.); Wee, Aileen (Natl. Univ. Hospital); Welsch, Roy (Massachusetts Inst. of Tech.); So, Peter (MIT); Yu, Hanry (Natl. Univ. of Singapore); Rajapakse, J C (Nanyang Technical Univ.)

Friday, 2 September 2011

8.4.10 Human Machine Interfaces and Robotics Applications (Oral Session)
Chair: Okamura, Allison *(Johns Hopkins Univ.)*
Co-Chair: Li, Qingguo *(Queen's Univ.)*

08:00-08:15   FrA01.1
Gradual Anisometric-Isometric Transition for Human-Machine Interfaces **4507-4510**
   Gibo, Tricia* (Johns Hopkins Univ.); Rotella, Michele (Johns Hopkins Univ.); Bastian, Amy (Kennedy Krieger Inst.); Okamura, Allison (Johns Hopkins Univ.)

08:15-08:30   FrA01.2
Lower-Limb-Driven Energy Harvesting: Preliminary Analysis **4511-4514**
   Zhang, Jun-tian* (Queen's Univ., Kingston); Li, Qingguo (Queen's Univ.)

08:30-08:45 FrA01.3

Development and Evaluation of a Social Robot Platform for Therapy in Autism 4515-4518

Mazzei, Daniele (Univ. of Pisa); Lazzeri, Nicole (Univ. of Pisa, InterDept.al Research Ctr. E.Piaggio.); Billeci, Lucia (Univ. of Pisa, InterDept.al Research Ctr. E.Piaggio.); Igliozzi, Roberta (Univ. di Pisa, IRCCS Stella Maris); Mancini, Alice (Univ. di Pisa, IRCCS Stella Maris); Ahluwalia, Arti (Pisa Univ.); Muratori, Filippo (Univ. of Pisa, IRCCS Fondazione Stella Maris); De Rossi, Danilo* (Univ. of Pisa)

08:45-09:00 FrA01.4

Development of Support System to Handle Ultrasound Probe by Coordinated Motion with Medical Robot 4519-4522

Masuda, Kohji* (Tokyo Univ. A&T); Takachi, Yuuki (Tokyo Univ. of Agri & Tech); Urayama, Yasuhiro (Tokyo Univ. of Agri & Tech); Yoshinaga, Takashi (Tokyo Univ. of Agriculture & Tech.)

09:00-09:15 FrA01.5

Estimation of Mental Workload Using Saccadic Eye Movements in a Free-Viewing Task 4523-4529

Tokuda, Satoru* (Nagoya Univ.); Obinata, Goro (Nagoya Univ.); Palmer, Evan (Wichita State Univ.); Chaparro, Alex (Wichita State Univ.)

09:15-09:30 FrA01.6

Gesture Recognition in Upper-Limb Prosthetics: A Viability Study Using Dynamic Time Warping and Gyroscopes 4530-4533

Dermitzakis, Konstantinos* (Univ. of Zurich); Hernandez Arieta, Alejandro (Univ. of Tokyo); Pfeifer, Rolf (Univ. of Zurich)

FrA02: 08:00-09:30 St. George CD Westin
8.6.26 Virtual Reality for Robotic Surgery (Oral Session)
Chair: Fung, Joyce *(McGill Univ.)*
Co-Chair: Hu, Yaoping *(The Univ. of Calgary)*

08:00-08:15 FrA02.1

Designing an Active Motor Skill Learning Platform with a Robot-Assisted Laparoscopic Trainer 4534-4537

Lee, Chun Siong (Natl. Univ. of Singapore); Yang, Liangjing (Natl. Univ. of Singapore); Yang, Tao (Inst. of Infocomm Research); Chui, Chee Kong (Natl. Univ. of Singapore); Liu, Jiang (Inst. for Infocomm Research, A STAR); Huang, Weimin (Inst. for Infocomm Research, Agency for Science Tech. & Research); Su, Yi (Inst. of High Performance Computing); Chang, Stephen KY* (Natl. Univ. of Singapore)

08:15-08:30 FrA02.2

Pilot Study on Effectiveness of Simulation for Surgical Robot Design Using Manipulability 4538-4541

Kawamura, Kazuya* (Waseda Univ.); Seno, Hiroto (Waseda Univ.); Kobayashi, Yo (Waseda Univ.); Fujie, Masakatsu G. (Waseda Univ.)

08:30-08:45 FrA02.3

Pilot Study of Design Method for Surgical Robot Using Workspace Reproduction System 4542-4545

Seno, Hiroto* (Waseda Univ.); Kawamura, Kazuya (Waseda Univ.); Kobayashi, Yo (Waseda Univ.); Fujie, Masakatsu G. (Waseda Univ.)

08:45-09:00 FrA02.4

A Viscoelastic Model of a Breast Phantom for Real-Time Palpation 4546-4549

Widmer, Antoine (Univ. of Calgary); Hu, Yaoping* (The Univ. of Calgary)

09:00-09:15 FrA02.5

Integration of Biomechanical Parameters in Tetrahedral Mass-Spring Models for Virtual Surgery Simulation 4550-4554

Sala, Alessandro (Univ. of Pisa); Turini, Giuseppe* (Univ. of Pisa); Ferrari, Mauro (Univ. of Pisa); Mosca, Franco (Univ. of Pisa); Ferrari, Vincenzo (Universià di Pisa)

09:15-09:30 FrA02.6

Next-Generation Micromanipulator for Computer-Assisted Laser Phonomicrosurgery 4555-4559

Mattos, Leonardo* (IIT – Istituto Italiano di Tecnologia); Dellepiane, Massimo (Univ. of Genoa – ENT Dept.); Caldwell, Darwin G. (Italian Inst. of Tech.)

08:00-08:15   FrA03.1
A gaze independent spelling based on Rapid Serial Visual Presentation 4560-4563
  Acqualagna, Laura* (Berlin Institut of Tech.); Blankertz, Benjamin (Berlin Inst. of Tech.)

08:15-08:30   FrA03.2
Integrating the Spatial Profile of the N200 Speller for Asynchronous Brain-Computer Interfaces 4564-4567
  Zhang, Dan (Tsinghua Univ.); Honglai, Xu (Tsinghua Univ.); Wu, Wei (Tsinghua Univ.);
  Gao, Shangkai (Tsinghua Univ.); Hong, Bo* (Tsinghua Univ.)

08:30-08:45   FrA03.3
An Auditory BCI Using Virtual Sound Field 4568-4571
  Gao, Haiyang (Tsinghua Univ.); Ouyang, Minhui (Tsinghua Univ.); Zhang, Dan (Tsinghua Univ.);
  Hong, Bo* (Tsinghua Univ.)

08:45-09:00   FrA03.4
Multimodal Human-Machine Interface Based on a Brain-Computer Interface and
an Electrooculography Interface 4572-4575
  Ianez, Eduardo (Univ. Miguel Hernandez de Elche); Ubeda, Andres (Univ. Miguel Hernandez de Elche);
  Azorín, José M.* (Univ. Miguel Hernández de Elche)

09:00-09:15   FrA03.5
EEG Auditory Steady State Responses Classification for the Novel BCI 4576-4579
  Higashi, Hiroshi* (Tokyo Univ. of Agriculture & Tech.); Rutkowski, Tomasz (Univ. of Tsukuba); Washizawa,
  Yoshikazu (RIKEN); Cichocki, Andrzej (BSI RIKEN); Tanaka, Toshihisa (Tokyo Univ. of Agriculture & Tech.)

09:15-09:30   FrA03.6
Performance Optimization of ERP-Based BCIs Using Dynamic Stopping 4580-4583
  Schreuder, Martijn* (Berlin Inst. of Tech.); Höhne, Johannes (Berlin Inst. of Tech.); Treder, Matthias Sebastian
  (Berlin Inst. of Tech.); Blankertz, Benjamin (Berlin Inst. of Tech.); Tangermann, Michael (Berlin Inst. of Tech.)

08:00-08:15   FrA05.1
Asynchronous Decoding of Grasp Aperture from Human ECoG During a Reach-To-Grasp Task 4584-4587
  Fifer, Matthew* (Johns Hopkins Univ.); Mollazadeh, Mohsen (Johns Hopkins Univ.);
  Acharya, Soumyadipta (Johns Hopkins Univ.); Thakor, Nitish (Johns Hopkins Univ.);
  Crone, Nathan E. (Johns Hopkins Univ., School of Medicine)

08:15-08:30   FrA05.2
Towards a Non-Invasive Brain-Machine Interface System to Restore Gait Function in Humans 4588-4591
  Presacco, Alessandro (Univ. of Maryland, College Park); Forrester, Larry (Univ. of Maryland School of
  Medicine); Contreras-Vidal, José* (Univ. of Maryland)

08:30-08:45   FrA05.3
Dynamic Brain Machine Interface: A Novel Paradigm for Bidirectional Interaction
between Brains and Dynamical Systems 4592-4595
  Szymanski, Francois, Daniel (Italian Inst. of Tech.); Semprini, Marianna* (Italian Inst. of Tech.); Mussa-Ivaldi,
  Ferdinando (Rehabilitation Inst. of Chicago); Fadiga, Luciano (Univ. degli Studi di Ferrara, Ferrara, Italia);
  Panzeri, Stefano (Italian Inst. of Tech.); Vato, Alessandro (Fondazione Istituto Italiano di Tecnologia)

08:45-09:00   FrA05.4

Single-Trial Classification of Feedback Potentials within Neurofeedback Training with an EEG Brain-Computer Interface **4596-4599**

López-Larraz, Eduardo* (Univ. of Zaragoza); Iturrate, Iñaki (Univ. of Zaragoza); Escolano, Carlos (Univ. of Zaragoza); García, Isabel (Bit&Brain Technologies); Montesano, Luis (Univ. de Zaragoza); Minguez, Javier (Zaragoza Univ.)

09:00-09:15   FrA05.5

A Subject-Independent Brain-Computer Interface based on Smoothed, Second-Order Baselining **4600-4604**

Reuderink, Boris* (Univ. of Twente); Farquhar, Jason (Radboud Univ.); Poel, Mannes (Univ. of Twente); Nijholt, Anton (Univ. of Twente)

09:15-09:30   FrA05.6

Neuron Selection for Decoding Dexterous Finger Movements **4605-4608**

Kahn, Kevin* (Johns Hopkins Univ.); Schieber, Marc (Univ. of Rochester); Thakor, Nitish (Johns Hopkins Univ.); Sarma, Sridevi V. (Johns Hopkins Univ.)

FrA07: 08:00-09:30   Boylston Marriott
6.10.21 Massively Parallel Neural Processing (Oral Session)
Chair: Obeid, Iyad *(Temple Univ.)*
Co-Chair: Principe, Jose *(Univ. of Florida)*

08:00-08:15   FrA07.1

Massively Parallel Neural Signal Processing: System-On-Chip Design with FPGAs **4609-4612**

Balasubramanian, Karthikeyan* (Temple Univ.); Obeid, Iyad (Temple Univ.)

08:15-08:30   FrA07.2

FPGA Implementation of Hardware Processing Modules As Coprocessors in Brain-Machine Interfaces **4613-4616**

Zheng, Xiaoxiang* (Zhejiang Univ.); Wang, Dong (Zhejiang Univ.); Hao, Yaoyao (Zhejiang Univ.); Zhu, Xiaoping (Zhejiang Univ.); Zhao, Ting (Zhejiang Univ.); Wang, Yiwen (Zhejiang Univ.); Chen, Yaowu (Zhejiang Univ.); Chen, Weidong (Zhejiang Univ.)

08:30-08:45   FrA07.3

Modular Particle Filtering FPGA Hardware Architecture for Brain Machine Interfaces **4617-4620**

Mountney, John* (Temple Univ.); Obeid, Iyad (Temple Univ.); Silage, Dennis (Elec. & Computer Eng. Temple Univ.)

08:45-09:00   FrA07.4

An Information-Theoretic Approach to Motor Decoding with a Reconfigurable Parallel Architecture **4621-4624**

Craciun, Stefan (Univ. of Florida); Brockmeier, Austin* (Univ. of Florida); George, Alan (Univ. of Florida); Lam, Herman (Univ. of Florida); Principe, Jose (Univ. of Florida)

09:00-09:15   FrA07.5

Using General-Purpose Graphic Processing Units for BCI Systems **4625-4628**

Wilson, J. Adam* (Univ. of Cincinnati)

09:15-09:30   FrA07.6

Development of a BCI Master Switch Based on Single-Trial Detection of Contingent Negative Variation Related Potentials **4629-4632**

Kato, Yasuhiro, X* (Tamagawa Univ.); Yonemura, Tomoko (Osaka Univ., Graduate School of Information Science & Tech.); Samejima, Kazuyuki (Tamagawa Univ., Brain Science Inst.); Maeda, Taro (Osaka Univ., Graduate School of Information Science & Tech.); Ando, Hideyuki (Osaka Univ., Graduate School of Information Science & Tech.)

FrA09: 08:00-09:30   Regis Marriott
6.10.9 Recovering Neural Information from Peripheral Nerves (Oral Session)
Chair: Durand, Dominique *(Case Western Res. Univ.)*
Co-Chair: Micera, Silvestro *(École Polytechnique Fédérale de Lausanne)*

08:00-08:15   FrA09.1

Control of Neural Interfacing in Peripheral Nerves through Regenerative Molecular Guidance **4633-4636**

Romero-Ortega, Mario Ignacio* (Univ. of Texas at Arlington)

08:15-08:30   FrA09.2
Activities on PNS Neural Interfaces for the Control of Hand Prostheses **4637-4640**
Carpaneto, Jacopo (Scuola Superiore Sant'Anna); Cutrone, Annarita (Scuola Superiore Sant'Anna);
Bossi, Silvia (Scuola Superiore Sant'Anna); Sergi, Pier Nicola (Scuola Superiore Sant'Anna); Citi, Luca
(MGH/Harvard Medical School); Rigosa, Jacopo (Scuola Superiore Sant'Anna); Rossini, Paolo Maria (Campus
Biomedico Univ.); Micera, Silvestro* (École Polytechnique Fédérale de Lausanne)

08:30-08:45   FrA09.3
Recording Sensory and Motor Information from Peripheral Nerves with Utah Slanted Electrode Arrays **4641-4644**
Clark, Gregory* (Univ. of Utah); Ledbetter, Noah (Univ. of Utah); Warren, David (Univ. of Utah);
Harrison, Reid (Univ. of Utah)

08:45-09:00   FrA09.4
A Framework for the Discrimination of Neural Pathways Using Multi-Contact Nerve Cuff Electrodes **4645-4648**
Zariffa, Jose* (Univ. of British Columbia); Nagai, Mary (Inst. of Biomaterials & Biomedical Eng., Univ. of
Toronto); Schuettler, Martin (Univ. of Freiburg); Stieglitz, Thomas (Univ. of Freiburg);
Daskalakis, Jeff (Schizophrenia Program, Dept. of Psychiatry, Ctr. for Addiction & Mental Health,
Faculty of Medicine, Univ. of Toro); Popovic, Milos R. (Univ. of Toronto)

09:00-09:15   FrA09.5
A Summary of the Theory of Velocity Selective Neural Recording **4649-4652**
Taylor, John* (Univ. of Bath); Donaldson, Nicholas de Neufville (Univ. College London);
Clarke, Christopher (Univ. of Bath); Schuettler, Martin (Univ. of Freiburg)

09:15-09:30   FrA09.6
Recovery of Neural Activity from Nerve Cuff Electrodes **4653-4656**
Wodlinger, Brian (Univ. of Pittsburgh); Durand, Dominique* (Case Western Reserve Univ.)

FrA11: 08:00-09:30   Wellesley Marriott
5.5.3 Systems Bioengineering in the Cardiac Myocyte (Oral Session)
Chair: Greenstein, Joseph L. *(The Johns Hopkins Univ.)*
Co-Chair: de Jongh Curry, Amy *(The Univ. of Memphis)*

08:00-08:15   FrA11.1
Regression Methods for Parameter Sensitivity Analysis:
Applications to Cardiac Arrhythmia Mechanisms **4657-4660**
Sobie, Eric* (Mount Sinai School of Medicine); Sarkar, Amrita (Mount Sinai School of Medicine)

08:15-08:30   FrA11.2
Automated Image Analysis of Cardiac Myocyte Ca2+ Dynamics **4661-4664**
Amanfu, Robert K. (Univ. of Virginia); Muller, James B. (Univ. of Virginia);
Saucerman, Jeffrey J.* (Univ. of Virginia)

08:30-08:45   FrA11.3
CaMKII-Dependent Activation of Late INa Contributes to Cellular Arrhythmia in a
Model of the Cardiac Myocyte **4665-4668**
Hashambhoy, Yasmin (Johns Hopkins Univ.); Winslow, Raimond (Johns Hopkins Univ.);
Greenstein, Joseph L* (The Johns Hopkins Univ.)

08:45-09:00   FrA11.4
Interactions between Cardiac Fibrosis Spatial Pattern and Ionic Remodeling on
Electrical Wave Propagation **4669-4672**
Comtois, Philippe* (Univ. of Montreal & Montreal Heart Inst.); Nattel, Stanley (Montreal Heart Inst.)

09:00-09:15   FrA11.5
Metabolic Control Analysis Applied to Mitochondrial Networks **4673-4676**
Cortassa, Sonia* (Johns Hopkins Univ.); Aon, Miguel (Johns Hopkins Univ.); O'Rourke, Brian (Johns Hopkins
Univ.); Winslow, Raimond (Johns Hopkins Univ.)

09:15-09:30 FrA11.6

Stochastic Simulation of Cardiac Calcium Dynamics and Waves **4677-4680**

Hoang-Trong, Tuan (George Mason Univ.); Williams, George S. B. (Univ. of Maryland);
Chikando, Aristide C. (Univ. of Maryland); Sobie, Eric (Mount Sinai School of Medicine);
Lederer, W. Jonathan (Univ. of Maryland); Jafri, M. Saleet* (George Mason Univ.)

FrA12: 08:00-09:30 Suffolk Marriott
5.7.5 Adaptive and Parametric Filtering of Cardiovascular Signals (Oral Session)
Chair: Laguna, Pablo *(Zaragoza Univ. & CIBER-BBN)*
Co-Chair: Tarvainen, Mika *(Univ. of Eastern Finland)*

08:00-08:15 FrA12.1

Statistical Model for Cardiovascular Signals with Independent Respiratory
Modulation for Tracking Pulse Pressure Variation **4681-4684**

McNames, James* (Portland State Univ.); Kim, Sunghan (Univ. of California, Los Angeles);
Aboy, Mateo (Oregon Inst. of Tech.)

08:15-08:30 FrA12.2

Atrial Fibrillation Detection Using Time-Varying Coherence Function and Shannon Entropy **4685-4688**

Lee, Jinseok (Worcester Polytechnic Inst.); McManus, David (Univ. of Massachusetts Medical Ctr.);
Chon, Ki* (Worcester Polytechnic Inst.)

08:30-08:45 FrA12.3

Time-Frequency Phase Differences and Phase Locking to Characterize Dynamic
Interactions between Cardiovascular Signals **4689-4692**

Orini, Michele* (Univ. of Zaragoza); Bailon, Raquel (Univ. of Zaragoza); Mainardi, Luca (Politecnico di Milano);
Laguna, Pablo (Zaragoza Univ. & CIBER-BBN)

08:45-09:00 FrA12.4

Detection and Removal of Ventricular Ectopic Beats in Atrial Fibrillation Recordings via
Principal Component Analysis **4693-4696**

Martinez Rodrigo, Arturo* (Univ. de Castilla-La Mancha); Alcaraz Martinez, Raul (Univ. of Castilla-La Mancha);
Rieta, J. J. (Univ. Politecnica de Valencia)

09:00-09:15 FrA12.5

Hypoglycemia Detection Based on Cardiac Repolarization Features **4697-4700**

Lipponen, Jukka* (Univ. of Eastern Finland); Kemppainen, Jukka (Turku Univ. Hospital, Dept. of
ClinicalPhysiology & Nuclear Medicine, Turku, Finland); Karjalainen, Pasi, A (Univ. of Eastern Finland);
Laitinen, Tomi (Kuopio Univ. Hospital); Mikkola, Hannu (Turku Univ. Hospital); Kärki, Tarmo (Turku Univ.
Hospital); Tarvainen, Mika (Univ. of Eastern Finland)

09:15-09:30 FrA12.6

T Waves Segmentation and Analysis Using Inverse Normalized Integrals **4701-4704**

Meste, Olivier* (UNSA-CNRS); Janusek, Dariusz (Inst of Biocybernetics & Biomed Engr); Kania, Michal (Inst of
Biocybernetics & Biomed Engr); Maniewski, Roman (Inst of Biocybernetics & Biomed Engr)

FrA13: 08:00-09:30 Arlington Marriott
4.6.12 Computational Approaches for Studying Neural Mechanisms in Anesthesia and Sleep (Oral Session)
Chair: Ching, ShiNung *(Massachusetts General Hospital, Massachusetts Inst. of Tech.)*
Co-Chair: Chen, Zhe *(Harvard Medical School/MIT)*

08:00-08:15 FrA13.1

Bayesian Analysis of Trinomial Data in Behavioral Experiments and Its Application to
Human Studies of General Anesthesia **4705-4708**

Wong, Kin Foon Kevin* (Massachusetts General Hospital); Smith, Anne (Univ. of California Davis);
Pierce, Eric (MGH/Harvard Medical School); Harrell, Priscilla Grace (MGH-Harvard Medical School);
Walsh, John (Massachusetts General Hospital); Salazar, Andres F. (Massachusetts General Hospital);
Tavares, Casie (Massachusetts General Hospital); Cimenser, Aylin (Massachusetts General Hospital);
Prerau, Michael (Massachusetts General Hospital); Mukamel, Eran A (Univ. of California, San Diego);
Sampson, Aaron (Massachusetts General Hospital); Purdon, Patrick (Massachusetts General Hospital);
Brown, Emery N (MGH-Harvard Medical School-MIT)

08:15-08:30   FrA13.2

Understanding the Effects of Anesthetic Agents on the EEG through Neural Field Theory **4709-4712**

Foster, Brett Lucas* (Stanford Univ.); Bojak, Ingo (School of Psychology (CN-CR), Univ. of Birmingham); Liley, David Tibor Julian (Swinburne Univ. of Tech.)

08:30-08:45   FrA13.3

Modeling the Temporal Architecture of Rat Sleep-Wake Behavior **4713-4716**

Diniz Behn, Cecilia (Univ. of Michigan); Booth, Victoria* (Univ. of Michigan)

08:45-09:00   FrA13.4

Estimating Integrated Information with TMS Pulses During Wakefulness, Sleep, and under Anesthesia **4717-4720**

Balduzzi, David* (Max Planck Inst. for Intelligent Systems)

09:00-09:15   FrA13.5

Near-Real-Time Connectivity Estimation for Multivariate Neural Data **4721-4724**

Smith, Anne* (Univ. of California Davis); Fall, Christopher P (Univ. of Illinois at Chicago); Sornborger, Andrew T (Univ. of Georgia)

09:15-09:30   FrA13.6

Robust Time-Varying Multivariate Coherence Estimation: Application to Electroencephalogram Recordings During General Anesthesia **4725-4728**

Wong, Kin Foon Kevin (Massachusetts General Hospital); Mukamel, Eran A (Univ. of California, San Diego); Salazar, Andres F. (Massachusetts General Hospital); Pierce, Eric (MGH/Harvard Medical School); Harrell, Priscilla Grace (MGH-Harvard Medical School); Walsh, John (Massachusetts General Hospital); Sampson, Aaron (Massachusetts General Hospital); Brown, Emery N (MGH-Harvard Medical School-MIT); Purdon, Patrick L* (Massachusetts General Hospital)

FrA15:   08:00-09:30   Clarendon Marriott
7.2.1 Tailoring Biomaterial Properties for Regenerative Medicine (Oral Session)
Chair: Goldstein, Aaron *(Virginia Polytechnic Inst.)*
Co-Chair: Kaplan, David *(Tufts Univ.)*

08:00-08:15   FrA15.1

Polymer-Hydrogel Hybrid Scaffolds: An Effective Graft System for Bone Tissue Engineering .... *

Nukavarapu, Syam* (Univ. of Connecticut)

08:15-08:30   FrA15.2

Vascularization of Biomimetic Hydrogels for Tissue Engineering Applications .... *

Moon, James* (MIT); West, Jennifer (Rice Univ.)

08:30-08:45   FrA15.3

Keratin Biomaterials in Biomedical Applications .... *

Gaines, Carmen* (Wake Forest Inst. for Regenerative Medicine); Van Dyke, Mark (Wake Forest Inst. for Regenerative Medicine)

08:45-09:00   FrA15.4

Bioengineered Polymers for Scaffolds in Regenerative Medicine .... *

Kaplan, David* (Tufts Univ.)

09:00-09:15   FrA15.5

Responsive Hydrogels for Controlling Signals within the Microenvironment of Progenitor Cells .... *

Kloxin, April* (Univ. of Delaware)

09:15-09:30   FrA15.6

Designing Materials to Modulate the Healing Response in Mechanically Active Soft Tissues .... *

Wagner, William R* (Univ. of Pittsburgh)

9.3.1 Patient Monitoring Devices and Techniques (Oral Session)
Chair: Panescu, Dorin *(NewCardio, Inc.)*
Co-Chair: Tamura, Toshiyo *(Chiba Univ.)*

08:00-08:15   FrA16.1
A Continuous, Wearable, and Wireless Heart Monitor Using Head Ballistocardiogram (BCG) and Head Electrocardiogram (ECG) **4729-4732**
  He, David Da* (Massachusetts Inst. of Tech.); Winokur, Eric S. (Massachusetts Inst. of Tech.); Sodini, Charles G. (Massachusetts Inst. of Tech.)

08:15-08:30   FrA16.2
A Portable Autonomous Multisensory Intervention Device (PAMID) for Early Detection of Anxiety and Agitation in Patients with Cognitive Impairment **4733-4736**
  Rajasekaran, Sathish (Oakland Univ.); Luteran, Chris (oakland Univ.); Qu, Hongwei* (Oakland Univ.); Riley-Doucet, Cheryl (Oakland Univ., MI)

08:30-08:45   FrA16.3
A Portable Inertial Sensing-Based Spinal Motion Measurement System for Low Back Pain Assessment ... **4737-4740**
  Lee, Jung Keun* (Simon Fraser Univ.); Desmoulin, Geoffrey (Univ. of Calgary, Mechanical & Manufacturing Eng.; Associate Research Director, Optima Health Solutions Int'l (KKT); Khan, Aslam (Founder, Optima Health Solutions Int'l (KKT Intl.)); Park, Edward J. (Simon Fraser Univ.)

08:45-09:00   FrA16.4
Wireless Monitoring of Reconstructed 12-Lead ECG in Atrial Fibrillation Patients Enables Differential Diagnosis of Recurrent Arrhythmias **4741-4744**
  Vukajlovic, Dejan (Dedinje Cardiovascular Inst., Belgrade, Serbia); Gussak, Ihor (NewCardio, Inc); George, Samuel (NewCardio, Inc); Bojovic, Bosko (NewCardio, Inc); Ljupco, Hadzievski (NewCardio, Inc); Stojanovic, Bojan (Klinika Petkovic, Belgrade, Serbia); Angelkov, Lazar (Dedinje Cardiovascular Inst. , Belgrade, Serbia); Panescu, Dorin* (NewCardio, Inc.)

09:00-09:15   FrA16.5
Low-Cost and Disposable Pressure Sensor Mat for Non-Invasive Sleep and Movement Monitoring Applications **4745-4748**
  Abraham, Jose* (Kimberly Clark); Sullivan, Shawn (Kimberly-Clark Corp.); Ranganathan, Sridhar (Kimberly-Clark Corp.)

09:15-09:30   FrA16.6
Privacy versus Autonomy: A Trade Off Model for Smart Home Monitoring Technologies **4749-4752**
  Townsend, Daphne* (Carleton Univ.); Knoefel, Frank-Dietrich (SCO Health Service); Goubran, Rafik A. (Carleton Univ.)

11.1.6 Researchers and Companies Involved in Biomedical Device Innovation (Minisymposium)
Chair: Arredondo Waldmeyer, María Teresa *(Univ. Pol. de Madrid)*
Co-Chair: Bastos, Teodiano *(Univ. Federal do Espírito Santo)*

08:00-08:15   FrA17.1
Robotic Wheelchair Commanded by SSVEP, Motor Imagery and Word Generation **4753-4756**
  Bastos, Teodiano* (Univ. Federal do Espírito Santo); Müller, Sandra Mara Torres (Federal Univ. of Espirito Santo)

08:15-08:30   FrA17.2
AmI for Health: Chronic Disease Management **4757-4760**
  Arredondo, María Teresa* (Technical Univ. of Madrid); Pastor, Laura (Univ. Politécnica de Madrid); Fico, Giuseppe (Technical Univ. of Madrid)

08:30-08:45   FrA17.3
Sustainable Biomedical Engineering for the Masses .... *****
  Kant Kumar, Dinesh* (RMIT Univ.)

08:45-09:00   FrA17.4

Innovation in the Biomechanical Assessment of Footwear for International Airlines Personnel .... *
Zequera Diaz, Martha Lucia* (Pontificia Univ. Javeriana)

FrA19: 08:00-09:30   Salons AB Marriott
3.9.23 Micro and Nano Technology (Oral Session)
Chair: Meng, Ellis *(Univ. of Southern California)*
Co-Chair: Ruggiero, Carmelina *(Univ. of Genova)*

08:00-08:15   FrA19.1
Platinum Microwire for Subdural Electrocorticography Over Human Neocortex:
Millimeter-Scale Spatiotemporal Dynamics **4761-4765**
Kellis, Spencer* (Univ. of Utah); Greger, Bradley (Univ. of Utah); Hanrahan, Sara (Univ. of Utah);
House, Paul (Univ. of Utah); Brown, Richard (Univ. of Utah)

08:15-08:30   FrA19.2
Characterization of Functional Biointerface on Silicon Nanowire MOSFET **4766-4769**
Lin, Shu-Ping* (Natl. Chung Hsing Univ.); Chi, Tien-Yin (Inst. of Biomedical Eng., Natl. Chung Hsing Univ.);
Kang, Yu-Shan (Inst. of Biomedical Eng., Natl. Chung Hsing Univ.); Liu, Mao-Chen (Natl. Nano Device
Laboratories, Hsinchu 300, Taiwan)

08:30-08:45   FrA19.3
Direct Sequencing of DNA Motifs with Encoding Nanoparticles **4770-4773**
Fernandez, Renny (Univ. of Utah); Mastrangelo, Carlos* (Univ. of Utah)

08:45-09:00   FrA19.4
A Nanoelectromechanical Biosensor Based on Precise Quantification and Control of DNA Orientation **4774-4775**
Spuhler, Philipp* (Boston Univ.); Sola, Laura (CNR); Zhang, Xirui (Boston Univ.); Monroe, Margo (Boston
Univ.); Greenspun, Joseph (Boston Univ.); Chiari, Marcella (CNR); Unlu, Selim (Boston Univ.)

09:00-09:15   FrA19.5
Calibrating the Photo-Thermal Response of Magneto-Fluorescent Gold Nanoshells **4776-4779**
Biswal, Nrusingh Charan (Baylor College of Medicine); Ayala-Orozco, Ciceron (Rice Univ.);
Halas, Naomi J. (Rice Univ.); Joshi, Amit* (Baylor College of Medicine)

FrA20: 08:00-09:30   Salons CD Marriott
3.2.16 Bioelectric Sensing (Oral Session)
Chair: Dokmeci, Mehmet R. *(Northeastern Univ.)*
Co-Chair: Mason, Andrew *(Michigan State Univ.)*

08:00-08:15   FrA20.1
Can Driven-Right-Leg Circuits Increase Interference in ECG Amplifiers? **4780-4783**
Gomez-Clapers, Joan* (Univ. Politècnica de Catalunya); Serrano, Ernesto (Univ. Politècnica de Catalunya);
Casanella, Ramon (Univ. Politècnica de Catalunya); Pallas-Areny, Ramon (Univ. Politecnica de Catalunya)

08:15-08:30   FrA20.2
The Design of CMOS General-Purpose Analog Front-End Circuit with Tunable Gain and
Bandwidth for Biopotential Signal Recording Systems **4784-4787**
Chen, Wei-Ming (Natl. Chiao Tung Univ.); Yang, Wen-Chia (Natl. Chiao Tung Univ.); Tsai, Tzung-Yun (Natl.
Chiao Tung Univ.); Chiueh, Herming* (Natl. Chiao Tung Univ.); Wu, Chung-Yu (Natl. Chiao Tung Univ.)

08:30-08:45   FrA20.3
Design of a High Sensitive Double-Gate Field-Effect Transistor Biosensor for DNA Detection **4788-4791**
Islam, Md. Saiful* (Deakin Univ.); Kouzani, Abbas Z. (Deakin Univ.)

08:45-09:00   FrA20.4
A Bio-Impedance Probe to Assess Liver Steatosis During Transplant Surgery **4792-4795**
Probert Smith, Penny J* (Univ. of Oxford); You, Fusheng (Fourth Military Medical Univ.);
Silva, Michael (Oxford Radcliffe Hospitals NHS Trust); Vogel, Thomas (Univ. of Munster)

09:00-09:15   FrA20.5

Rapid Impedance Measurement of Tethered Bilayer Lipid Membrane Biosensors **4796-4799**

Mu, Xiaoyi* (Michigan State Univ.); Rairigh, Daniel (Michigan State Univ.); Liu, Xiaowen (Michigan State Univ.); Mason, Andrew (Michigan State Univ.)

09:15-09:30   FrA20.6

Design of a Novel Digital Phantom for EIT System Calibration **4800-4803**

Li, Nan* (Univ. of Sussex)

FrA21: 08:00-09:30   Salon E Marriott
1.1.21 Time-Scale and Wavelets Analysis (Oral Session)
Chair: Chapotot, Florian *(Univ. of Chicago)*
Co-Chair: Thomsen, Carsten Eckhart *(Univ. of Copenhagen)*

08:00-08:15   FrA21.1

Using DWT for ECG Motion Artifact Reduction with Noise-Correlating Signals **4804-4807**

Kirst, Malte* (FZI Research Ctr. for Information Tech); Glauner, Bastian (FZI Research Ctr. for Information Tech); Ottenbacher, Joerg Mathias (Univ. of Karlsruhe)

08:15-08:30   FrA21.2

HRV analysis in local anesthesia using Continuous Wavelet Transform (CWT) **4808-4811**

Shafqat, Kamran* (City Univ.); Kyriacou, Panayiotis (City Univ.); Pal, Sandip (Broomfield Hospital); Kumari, Santhi (Broomfield Hospital)

08:30-08:45   FrA21.3

Wavelet Based Data Analysis for Implantable Pulse Oximetric Sensors **4812-4815**

Ruh, Dominic* (Univ. of Freiburg); Fiala, Jens (Univ. of Freiburg, Dept. of Microsystems Eng., Lab. for Micro-optics); Zappe, Hans (Univ. of Freiburg, Dept. of Microsystems Eng., Lab. for Micro-optics); Seifert, Andreas (Univ. of Freiburg)

08:45-09:00   FrA21.4

Symmetrical Modified Dual Tree Complex Wavelet Transform for
Processing Quadrature Doppler Ultrasound Signals **4816-4819**

Serbes, Gorkem* (Bahcesehir Univ.); Aydin, Nizamettin (Yildiz Technical Univ.)

09:00-09:15   FrA21.5

Generic Single-Channel Detection of Absence Seizures **4820-4823**

Petersen, Eline Borch* (Technical Univ. of Denmark); Duun-Henriksen, Jonas (Technical Univ. of Denmark); Mazzaretto, Andrea (Technical Univ. of Denmark); Kjaer, Troels Wesenberg (Rigshospitalet); Thomsen, Carsten Eckhart (Univ. of Copenhagen); Sorensen, Helge B D (Technical Univ. of Denmark)

09:15-09:30   FrA21.6

Automated Detection of Sleep EEG Slow Waves Based on Matching
Pursuit Using a Restricted Dictionary **4824-4827**

Picot, Antoine* (Univ. of Chicago); Whitmore, Harry (Univ. of Chicago); Van Cauter, Eve (Univ. of Chicago); Chapotot, Florian (Univ. of Chicago)

FrA22: 08:00-09:30   Salon F Marriott
1.2.1 Resolving Signal Complexity in Diverse Rehabilitation Applications (Oral Session)
Chair: Nawab, Syed Hamid *(Boston Univ.)*
Co-Chair: Englehart, Kevin *(Univ. of New Brunswick)*

08:00-08:15   FrA22.1

Improving Myoelectric Pattern Recognition Positional Robustness Using
Advanced Training Protocols **4828-4831**

Englehart, Kevin* (Univ. of New Brunswick); Scheme, Erik (Univ. of New Brunswick); Biron, Katerina (Univ. of New Brunswick)

08:15-08:30   FrA22.2

Resolving Signal Complexities for Ambulatory Monitoring of Motor Function in Parkinson's Disease **4832-4835**

Roy, Serge* (Boston Univ.); Cole, Bryan (Boston Univ.); Gilmore, Donald (Boston Univ.); De Luca, Carlo J. (Boston Univ.); Nawab, Syed Hamid (Boston Univ.)

08:30-08:45   FrA22.3

Decomposition of the Surface EMG Signal **4836-4839**

De Luca, Carlo J.* (Boston Univ.); Chang, Shey-Sheen (Boston Univ.); Roy, Serge (Boston Univ.);
Nawab, Syed Hamid (Boston Univ.)

08:45-09:00   FrA22.4

What Is IPUS and How Does It Help Resolve BioSignal Complexity? **4840-4843**

Nawab, Syed Hamid* (Boston Univ.); Cole, Bryan (Boston Univ.)

09:00-09:15   FrA22.5

Continuous Monitoring of Functional Activities Using Wearable,
Wireless Gyroscope and Accelerometer Technology **4844-4847**

Wagenaar, Robert C.* (Boston Univ.); Sapir, Inbal (ScD in Rehabiliation Sciences, Boston Univ.);
Zhang, Yuting (Boston Univ.); Markovic, Stacey (Northeastern Univ./Boston Univ.); Vaina, Lucia (Brain & Vision
Research Lab, Boston Univ. Dept. of Biomedical Eng., Boston, MA & Harvard Medical School, Ma);
Little, Thomas D.C. (Dept. Elec. & Computer Eng., Boston Univ.)

09:15-09:30   FrA22.6

Signal Acquisition and Processing Techniques for SEMG Based Silent Speech Recognition **4848-4851**

Meltzner, Geoffrey S.* (BAE Systems); Colby, Glen (BAE Systems); Deng, Yunbin (BAE Systems);
Heaton, James (Massachusetts General Hospital & Harvard Medical School)

FrA23:   08:00-09:30   Salon G Marriott
2.6.21 Image Enhancement and Filtering (Oral Session)
Chair: Wang, Yi *(Cornell Univ.)*
Co-Chair: Pearce, John Anthony *(Univ. of Texas at Austin)*

08:00-08:15   FrA23.1

Identification and Attenuation of Physiological Noise in fMRI Using Kernel Techniques **4852-4855**

Song, Xiaomu* (Widener Univ.); Chen, Nan-kuei (Duke Univ.); Gaur, Pooja (Duke Univ.)

08:15-08:30   FrA23.2

Hexagonal Adaptive Filtering on Compound Ultrasound Images **4856-4859**

Contreras Ortiz, Sonia Helena* (Univ. of Connecticut); Chiu, Tsuicheng (Univ. of Connecticut);
Fox, Martin (Univ. of Connecticut)

08:30-08:45   FrA23.3

Digital Image Processing for Visual Prosthesis: Filtering Implications **4860-4863**

Barriga-Rivera, Alejandro* (Univ. of New South Wales); Suaning, Gregg (The Univ. of New South Wales)

08:45-09:00   FrA23.4

A Novel Method for Informative Frame Selection in Wireless Capsule Endoscopy Video **4864-4867**

Fan, Yichen* (The Chinese Univ. of Hong Kong); Meng, Max Q.-H. (The Chinese Univ. of Hong Kong);
Li, Baopu (The Chinese Univ. of Hong Kong)

09:00-09:15   FrA23.5

Vision Correction for Computer Users Based on Image Pre-Compensation with Changing Pupil Size **4868-4871**

Huang, Jian* (Florida Intl. Univ.); Barreto, Armando (Florida Intl. Univ.);
Alonso Jr., Miguel (Miami-Dade College); Adjouadi, Malek (Florida Intl. Univ.)

09:15-09:30   FrA23.6

Alternating Direction Method of Multipliers Applied to 3D Light Sheet Fluorescence
Microscopy Image Deblurring Using GPU Hardware **4872-4875**

de Vieilleville, François* (Univ. de Toulouse, IRIT UMR CNRS 5505, France); Weiss, Pierre (Univ. de Toulouse,
IMT UMR CNRS 5219, Toulouse, France); Lobjois, Valérie (ITAV, UMS 3039 CRT-RIV, Toulouse, France);
Kouamé, Denis (Univ. de Toulouse, IRIT UMR CNRS 5505)

4.3.1 Control in Synthetic Biology I (Minisymposium)
Chair: Tidor, Bruce *(Massachusetts Inst. of Tech.)*
Co-Chair: Lu, Timothy *(Massachusetts Inst. of Tech.)*

09:30-10:00   FrA27.1
Scalable and Tunable Platforms for Engineering Synthetic Gene Circuits .... *
   Lu, Timothy* *(Massachusetts Inst. of Tech.)*

10:00-10:30   FrA27.2
Construction of Synthetic Organisms through Large-Scale Genome Engineering .... *
   Wang, Harris* *(Wyss Inst. for Biologically Inspired Eng., Harvard Univ.)*

10:30-11:00   FrA27.3
EDA to BDA .... *
   Densmore, Douglas* *(Boston Univ.)*

FrP11: 09:30-11:00   America Ballroom Westin
1.2.7 Advances in Signal Processing in Physiological Systems III (Poster Session)

09:30-11:00   FrP11.1
Health Status Detection for Patients in Physiological Monitoring 4921-4924
   Chen, Dongmei* *(The Chinese Univ. of Hong Kong)*; Meng, Max Q.-H. *(The Chinese Univ. of Hong Kong)*

09:30-11:00   FrP11.2
Service Oriented Architecture to Support Real-Time Implementation of
Artifact Detection in Critical Care Monitoring 4925-4928
   Nizami, Shermeen* *(Carleton Univ.)*; Green, James R. *(Carleton Univ.)*;
   McGregor, Carolyn *(Univ. of Ontario Inst of Tech.)*

09:30-11:00   FrP11.3
Algorithms for Characterizing Brain Metabolites in Two-Dimensional
in Vivo MR Correlation Spectroscopy 4929-4934
   Cocuzzo, Daniel* *(The Charles Stark Draper Lab.)*; Keshava, Nirmal *(Draper Lab.)*; Lin, Alexander P.
   (Brigham & Women's Hospital); Ramadan, Saadallah *(Brigham & Women's Hospital)*;
   Mountford, Carolyn *(Brigham & Women's Hospital)*

09:30-11:00   FrP11.4
Fall Detection Algorithm for the Elderly Using Acceleration Sensors on the Shoes 4935-4938
   Sim, Soo Young* *(Seoul Natl. Univ.)*; Jeon, Hyo Seon *(Seoul Natl. Univ.)*; Chung, Gih Sung *(Seoul Natl. Univ.)*;
   Kim, Sang Kyong *(Seoul Natl. Univ.)*; Kwon, Sungjun *(Seoul Natl. Univ.)*; Park, Kwang S. *(Seoul Natl. Univ.)*

09:30-11:00   FrP11.5
Rotary Spectra Analysis Applied to Static Stabilometry 4939-4942
   Chiaramello, Emma *(Politecnico di Torino, Italy)*; Knaflitz, Marco* *(Politecnico di Torino)*;
   Agostini, Valentina *(Politecnico di Torino)*

09:30-11:00   FrP11.6
A Methodology for Validating Artifact Removal Techniques for fNIRS 4943-4946
   Sweeney, Kevin Thomas* *(NUI Maynooth)*; Ayaz, Hasan *(Drexel Univ.)*; Ward, Tomas *(NUI Maynooth)*;
   Izzetoglu, Meltem *(Drexel Univ.)*; McLoone, Sean F. *(Natl. Univ. of Ireland, Maynooth)*;
   Onaral, Banu *(Drexel Univ.)*

09:30-11:00   FrP11.7
Detecting Failures of the Glucose Sensor-Insulin Pump System:
Improved Overnight Safety Monitoring for Type-1 Diabetes 4947-4950
   Facchinetti, Andrea* *(Univ. of Padova)*; Del Favero, Simone *(Univ. of Padova, Padova, Italy)*;
   Sparacino, Giovanni *(Univ. of Padova)*; Cobelli, Claudio *(Univ. of Padova)*

09:30-11:00 FrP11.8

Mapping Small Intestine Bioelectrical Activity Using High-Resolution Printed-Circuit-Board Electrodes 4951-4954

Angeli, Timothy Robert* (Auckland BioEng. Inst., Univ. of Auckland); O'Grady, Gregory (Univ. of Auckland); Erickson, Jon (Washington & Lee Univ.); Du, Peng (The Univ. of Auckland); Paskaranandavadivel, Niranchan (Auckland BioEng. Inst., The Univ. of Auckland, New Zealand); Bissett, Ian (The Univ. of Auckland); Cheng, Leo K (The Univ. of Auckland); Pullan, Andrew (Univ. of Auckland)

09:30-11:00 FrP11.9

Effects of Windowing and Zero-Padding on Complex Resonant Recognition Model for Protein Sequence Analysis 4955-4958

Chrysostomou, Charalambos* (De Montfort Univ.); Seker, Huseyin (Bio-Health Informatics Research Group); Aydin, Nizamettin (Yildiz Technical Univ.)

09:30-11:00 FrP11.10

Development of a Device for Measuring the Sensitivity Area of Coil Arrays for Magnetic Induction Measurements 4959-4962

Cordes, Axel* (RWTH Aachen); Aguiar Santos, Susana (RWTH Aachen Univ.); Leonhardt, Steffen (RWTH Aachen Univ.)

09:30-11:00 FrP11.11

A Computational Framework for the Standardization of Motion Analysis Exploiting Wearable Inertial Sensors 4963-4966

Turcato, Andrea* (Univ. of Pavia); Ramat, Stefano (Univ. di Pavia)

FrP12: 09:30-11:00 America Ballroom Westin

1.2.9 Biomedical Signal Classification I (Poster Session)

09:30-11:00 FrP12.1

Real-Time Wearable Telecardiology from Representative Signals 4967-4971

Meli, Christopher* (RMIT Univ.); Fernandez, George (RMIT Univ.); Khalil, Ibrahim (RMIT Univ.)

09:30-11:00 FrP12.2

Statistical Approach for the Detection of Motion/Noise Artifacts in Photoplethysmogram 4972-4975

Selvaraj, Nandakumar* (Worcester Polytechnic Inst.); Mendelson, Yitzhak (Worcester Polytechnic Inst.); Shelley, Kirk H. (Dept. of Anesthesiology, Yale Univ.); Silverman, David G. (Dept. of Anesthesiology, Yale Univ.); Chon, Ki (Worcester Polytechnic Inst.)

09:30-11:00 FrP12.3

Characterization of Typical and Atypical Atrial Flutter Loops from the Vectorcardiogram 4976-4979

Castells, Francisco* (Univ. Politécnica de Valencia); Meste, Olivier (UNSA-CNRS); Quesada, Aurelio (Hospital General Univ. de Valencia); Guillem, Maria S. (Univ. Politecnica de Valencia); Climent, Andreu M. (Univ. Politecnica de Valencia); Millet, Jose (Univ. Politecnica de Valencia)

09:30-11:00 FrP12.4

A Time Domain Based Classifier for ECG Pattern Recognition 4980-4983

Shorten, Gavin* (Trinity College Dublin); Burke, Martin J. (Trinity College Dublin)

09:30-11:00 FrP12.5

Premature Ventricular Beat Classification Using a Dynamic Bayesian Network 4984-4987

Oliveira, Lorena Sophia Campos* (Federal Univ. of Vales do Jequitinhonha e Mucuri); Andreao, Rodrigo (Federal Inst. of Espirito Santo); Sarcinelli-Filho, Mario (Federal Univ. of Espirito Santo)

09:30-11:00 FrP12.6

How the Choice of Samples for Building Arrhythmia Classifiers Impact Their Performances 4988-4991

Luz, Eduardo* (Univ. Federal de Ouro Preto); Menotti, David (Univ. Federal de Ouro Preto)

09:30-11:00 FrP12.7

Detection of Atrial Fibrillation from Non Episodic ECG Data: A Review of Methods 4992-4995

Sahoo, Sujit Kumar* (Nanyang Technological Univ.); Lu, Wenmiao (NTU); Teddy, Sintiani Dewi (Inst. for Infocomm Research); Kim, Desok (Korea Advanced Inst. of Science & Tech.); Feng, Mengling (Inst. for Infocomm Research)

09:30-11:00 FrP12.8

Feature Extraction in Time-Frequency Signal Analysis by Means of Matched Wavelets As a Feature Generator **4996-4999**

Kostka, Pawel Stanislaw (Silesian Univ. of Tech.); Tkacz, Ewaryst (Silesian Univ. of Tech, Inst of Electron)*

09:30-11:00 FrP12.9

Classification of English Vowels Using Speech Evoked Potentials **5000-5003**

Sadeghian, Amir (Carleton Univ.); Dajani, Hilmi (Univ. of Ottawa); Chan, Adrian (Carleton Univ.)*

09:30-11:00 FrP12.10

Breast Density Characterization Using Texton Distributions **5004-5007**

Petroudi, Styliani (Univ. of Oxford); Brady, Michael (Univ. of Oxford)*

09:30-11:00 FrP12.11

Retinal Vessel Extraction Using a Piecewise Gaussian Scaled Model **5008-5011**

Zhu, Tao (AT&T); Schaefer, Gerald (Loughborough Univ.)*

09:30-11:00 FrP12.12

Compression of Surface Myoelectric Signals Using MP3 Encoding **5012-5015**

Chan, Adrian (Carleton Univ.)*

FrP13: 09:30-11:00 America Ballroom Westin
1.5.15 Connectivity and Causality (Poster Session)

09:30-11:00 FrP13.1

Testing the Asymptotic Statistic for the Assessment of the Significance of Partial Directed Coherence Connectivity Patterns **5016-5019**

Toppi, Jlenia (Univ. of Rome "Sapienza"); Astolfi, Laura (Univ. of Rome); Babiloni, Fabio (Univ. of Rome);
Vecchiato, Giovanni (Univ. of Rome Sapienza)*

09:30-11:00 FrP13.2

Localization of Ictal Onset Zones in Lennox-Gastaut Syndrome Using Directed Transfer Function Method **5020-5023**

Cho, Jae-Hyun (Yonsei Univ.); Jung, YoungJin (Yonsei Univ.); Kang, Hoon-Chul (Yonsei Univ.);
Kim, Heung Dong (Yonsei Univ.); Im, Chang-Hwan (Yonsei Univ.)*

09:30-11:00 FrP13.3

Maximum Multiple-Correlation Beamformer for Estimating Source Connectivities in Electromagnetic Brain Activities **5024-5027**

Chan, Hui-Ling (Natl. Chiao Tung Univ.); Chen, Yong-Sheng (Natl. Chiao Tung Univ.);
Chen, Li-Fen (Natl. Yang-Ming Univ.)*

09:30-11:00 FrP13.4

EEG Preprocessing for Synchronization Estimation and Epilepsy Lateralization **5028-5031**

*Velez-Perez, Hugo (CUCEI-UDG); Romo-Vazquez, Rebeca (CUCEI-UDG); Ranta, Radu (Nancy-Univ.);
Louis-Dorr, Valerie* (Nancy-Univ.); Hofmanis, Janis (INPL, CRAN);
Maillard, Louis (Nancy-Univ., CNRS & Ctr. Hospitalier Univ. de Nancy)*

09:30-11:00 FrP13.5

Wavelet Frequency-Temporal Relative Phase Pattern Analysis for Intermuscular Synchronization of Dynamic Surface EMG Signals **5032-5035**

Chan, Calvin W.Y. (Queen's Univ.); Almosnino, Sivan (Queen's Univ.); Morin, Evelyn (Queen's Univ.)*

09:30-11:00 FrP13.6

Statistical Threshold for Nonlinear Granger Causality Computation in Motor Intention Analysis **5036-5039**

*Liu, MengTing (Louisiana Tech Univ.); Kuo, Ching-Chang (Louisiana Tech Univ.);
Chiu, Alan Wing Lun* (Louisiana Tech Univ.)*

09:30-11:00   FrP14.1
Automatic Skull Stripping in MRI Based on Morphological Filters and Fuzzy C-Means Segmentation 5040-5043

Gambino, Orazio (Univ. degli Studi di Palermo); Daidone, Enrico (Univ. degli studi di Palermo);
Sciortino, Matteo (Univ. degli studi di Palermo); Pirrone, Roberto* (Univ. degli studi di Palermo);
Ardizzone, Edoardo (Univ. degli studi di Palermo)

09:30-11:00   FrP14.2
**Automatic Detection of Cortical and PSC Cataracts Using Texture and
Intensity Analysis on Retro-Illumination Lens Images ....** 5044-5047

Chow, Yew Chung (Natl. Univ. of Singapore); Gao, Xinting* (Inst. for Infocomm Research); Li, Huiqi (Inst. for
Infocomm Research); Lim, Joo Hwee (Inst. for Infocomm Research); Sun, Ying (Natl. Univ. of Singapore);
Wong, Tien Yin (Natl. Univ. of Singapore)

09:30-11:00   FrP14.3
Bayesian Model Evidence for Order Selection and Correlation Testing 5048-5051

Johnston, Leigh A.* (Univ. of Melbourne); Mareels, Iven (Melbourne Univ., Australia);
Egan, Gary (Howard Florey Inst.)

09:30-11:00   FrP14.4
A New Spatially Constrained NMF with Application to FMRI 5052-5055

Ferdowsi, Saideh* (Univ. of Surrey); Abolghasemi, Vahid (Univ. of Surrey);
Makki Abadi, Bahador (Univ. of Surrey); Sanei, Saeid (Univ. of Surrey)

09:30-11:00   FrP14.5
**Assessment of Functional and Structural Connectivity between
Motor Cortex and Thalamus using fMRI and DWI ....** 5056-5059

Jaberzadeh Ansari, Amir Hossein* (Tehran Univ. of Medical Sciences); Rahimi, Maryam (Tehran Univ. of
Medical Sciences); Oghabian, Mohammad Ali (Tehran Univ. of Medical Sciences)

09:30-11:00   FrP14.6
An fMRI Study of Abrupt-Awake Episodes during Behavioral Microsleeps 5060-5063

Chou, Yu-Hsiang (Natl. Chiao Tung Univ.); Chuang, Chun-Chao (Chung Shan Medical Univ.); Zao, John Kar-Kin*
(Natl. Chiao Tung Univ.); Ko, Li-Wei (Natl. Chiao-Tung Univ.); Lin, Chin-Teng (Natl. Chiao-Tung Univ.)

09:30-11:00   FrP14.7
A Generalized Estimating Equations Approach for Resting-State Functional MRI Group Analysis 5064-5067

D'Angelo, Gina* (Washington Univ. School of Medicine); Lazar, Nicole (The Univ. of Georgia);
Eddy, William (Carnegie Mellon Univ.); Morris, John (Washington Univ. School of Medicine);
Sheline, Yvette (Washington Univ. School of Medicine)

09:30-11:00   FrP14.8
Composite Features for Automatic Diagnosis of Intervertebral Disc Herniation from Lumbar MRI 5068-5071

Ghosh, Subarna* (State Univ. of New York at Buffalo); Alomari, Raja' (Univ. at Buffalo, SUNY);
Chaudhary, Vipin (Wayne State Univ.); Dhillon, Gurmeet (Proscan Imaging Buffalo)

09:30-11:00   FrP14.9
An Improved Classification Scheme for Chromosomes with Missing Data 5072-5075

Poletti, Enea (Univ. of Padova); Ruggeri, Alfredo (Univ. of Padua); Grisan, Enrico* (Univ. of Padova)

09:30-11:00   FrP14.10
Contactless Abnormal Gait Detection 5076-5079

Nghiem, Anh Tuan* (Univ. de Montreal, Canada); Auvinet, Edouard (Univ. de Montréal);
Multon, Franck (M2S – Univ. de Rennes 2); Meunier, Jean (Univ. de Montreal)

09:30-11:00   FrP14.11
**Interplay between Bias Field Correction, Intensity Standardization, and
Noise Filtering for T2-Weighted MRI ....** 5080-5083

Palumbo, Daniel (Rutgers Univ.); Yee, Brian* (Rutgers Univ.); O'Dea, Patrick (Rutgers Univ.);
Leedy, Shane (Rutgers Univ.); Madabhushi, Anant (Rutgers Univ.); Viswanath, Satish (Rutgers Univ.)

09:30-11:00   FrP14.34

Contour Detection of Atherosclerotic Plaques in IVUS Images Using
Ellipse Template Matching and Particle Swarm Optimization **5174-5177**

   Zhang, Qi* (Shanghai Univ.); Wang, Yuanyuan (Fudan Univ.); Ma, Jianying (Fudan Univ.);
   Shi, Jun (Shanghai Univ.)

09:30-11:00   FrP14.35

Automated Cavity Detection of Infectious Pulmonary Tuberculosis in Chest Radiographs **5178-5181**

   Xu, Tao (Univ. of Alberta); Cheng, Irene (Univ. of Alberta); Mandal, Mrinal* (Univ. of Alberta)

FrP15: 09:30-11:00   America Ballroom Westin
6.8.54 Advances in Wearable Systems for Neurorehabilitation (Poster Session)

09:30-11:00   FrP15.1

Us'em: The User-Centered Design of a Device for Motivating Stroke Patients to
Use Their Impaired Arm-Hand in Daily Life Activities **5182-5187**

   Markopoulos, Panos* (Eindhoven Univ. of Tech.); Timmermans, Annick A.A. (Adelante & Maastricht Univ.);
   Beursgens, Luuk (Netherlands); van Donselaar, Rik (Univ. of Tech. Eindhoven);
   Seelen, Henk A.M. (Adelante Ctr. of Expertise in Rehabilitation and Audiology)

09:30-11:00   FrP15.2

Multidimensional Control Using a Mobile-Phone Based Brain-Muscle-Computer Interface **5188-5194**

   Vernon, Scott (Univ. of California Davis); Joshi, Sanjay* (Univ. of California, Davis)

09:30-11:00   FrP15.3

Repeatability of the Accelerometric-Based Method to Detect Step Events for
Hemiparetic Stroke Patients **5195-5198**

   Lee, Hyo Ki (Yonsei Univ.); Kim, Joohan (Yonsei Univ.); Myoung, Hyoun Seok (Yonsei Univ.);
   Lee, Junghun (Yonsei Univ.); Lee, Kyoung Joung* (Yonsei Univ.)

09:30-11:00   FrP15.4

A Real-Time Auditory Feedback System for Retraining Gait **5199-5202**

   Maulucci, Ruth* (MOCO, inc.); Eckhouse, Richard (MOCO, inc.)

09:30-11:00   FrP15.5

Wireless Vibrotactile Feedback System for Postural Balance Improvement **5203-5206**

   Tino, Anita (Ryerson Univ.); Carvalho, Melanie (Ryerson Univ.); Preto, Nelson (Ryerson Univ.);
   Valter McConville, Kristiina M.* (Ryerson Univ.)

09:30-11:00   FrP15.6

A Special Purpose Embedded System for Neural Machine Interface for Artificial Legs **5207-5210**

   Zhang, Xiaorong* (Univ. of Rhode Island); Huang, He (Univ. of Rhode Island);
   Yang, Qing (Univ. of Rhode Island)

09:30-11:00   FrP15.7

Characterizing Walking Activity in People with Stroke **5211-5214**

   Fulk, George* (Clarkson Univ.); Lopez-Meyer, Paulo (The Univ. of Alabama);
   Sazonov, Edward (Univ. of Alabama)

09:30-11:00   FrP15.8

Elbow Functional Compensation Using a Lightweight Magnetorheological Clutch **5215-5218**

   Martin Clemente, Alejandro Ivan* (Carlos III Univ. of Madrid); Copaci, Dorin-Sabin (Univ. Carlos III de Madrid);
   Flores Caballero, Antonio (Univ. Carlos III de Madrid); Moreno Lorente, Luis (Univ. Carlos III de Madrid);
   Blanco Rojas, Dolores (Univ. Carlos III de Madrid)

09:30-11:00   FrP15.9

Sensor-Enabled RFID System for Monitoring Arm Activity in Daily Life **5219-5223**

   Barman, Joydip* (Univ. of Alabama, Birmingham); Uswatte, Gitendra (Univ. of Alabama, Birmingham); Sarkar,
   Nilanjan (Vanderbilt Univ.); Ghaffari, Touraj (ActiveWave Inc); Sokal, Brad (Univ. of Alabama, Birmingham)

09:30-11:00   FrP15.10

A Neck Mounted Interface for Sensing the Swallowing Activity Based on Swallowing Sound **5224-5227**

   Nagae, Masahiro* (Univ. of Tsukuba); Suzuki, Kenji (Univ. of Tsukuba)

09:30-11:00   FrP15.11

Development and Evaluation of Vision Rehabilitation Devices **5228-5231**

Luo, Gang (Harvard Medical School); Peli, Eli (Harvard Medical School)*

FrP16:   09:30-11:00   America Ballroom Westin
10.3.12 mHealth, eHealth and Telehealth (Poster Session)

09:30-11:00   FrP16.1

A New Safety Support System for Wandering Elderly Persons **5232-5235**

Matsuoka, Shingo (Intl. Trinity College); Ogawa, Hidekuni (Hiroshima Inst. of Tech.);
Maki, Hiromichi (Hiroshima Inst. of Tech.); Yonezawa, Yoshiharu (Hiroshima Inst. of Tech.);
Caldwell, Morton (Caldwell Biomedical Electronics)*

09:30-11:00   FrP16.2

Development of a Mobile Phone Based Ophthalmoscope for Telemedicine **5236-5239**

*Worst, Christo (Stellenbosch Univ.); Blanckenberg, Mike (Stellenbosch Univ.);
Scheffer, Cornie* (Stellenbosch Univ.)*

09:30-11:00   FrP16.3

Towards Remote Evaluation of Movement Disorders via Smartphones **5240-5243**

Kostikis, Nikolaos (Univ. of Macedonia, Greece); Hristu-Varsakelis, Dimitrios (Univ. of Macedonia, Greece);
Arnaoutoglou, Marianthi (Aristotle Univ. of Thessaloniki); Kotsavasiloglou, Christos (Not applicable);
Baloyannis, Stavros (Aristotle Univ. of Thessaloniki)*

09:30-11:00   FrP16.4

ContextProvider: Context Awareness for Medical Monitoring Applications **5244-5247**

Mitchell, Michael (Florida State Univ.); Meyers, Christopher (Florida State Univ.);
Wang, An-I Andy (Florida State Univ.); Tyson, Gary (Florida State Univ.)*

09:30-11:00   FrP16.5

The PLR-DTW Method for ECG Based Biometric Identification **5248-5251**

Shen, Jun (Shenzhen Inst. of Advanced Tech., Chinese Acad. of Sciences); Bao, Shu-Di (Shenzhen Inst. of
Advance Tech., Chinese Acad. of Sciences); Yang, Li-Cai (Shan Dong Univ.)*

09:30-11:00   FrP16.6

Change-of-State Determination to Recognize Mobility Activities using a Blackberry Smartphone **5252-5255**

Wu, HuiHsien (Univ. of Ottawa); Lemaire, Edward (The Ottawa Hospital Rehab Ctr.);
Baddour, Natalie (Univ. of Ottawa)*

09:30-11:00   FrP16.7

**Mobile Energy Expenditure Tracking System Based on Heart Rate and
Motion Providing Extra Extensions for Personalized Care** **5256-5259**

Chen, Hong-Hui (Natl. Taiwan Univ.); Chen, Yu-Hsin (Natl. Taiwan Univ.);
Chen, Tung-Chien (Natl. Taiwan Univ.); Chen, Liang-Gee (NTU)*

09:30-11:00   FrP16.8

Validation of Heart Rate Extraction through an Iphone Accelerometer **5260-5263**

Kwon, Sungjun (Seoul Natl. Univ.); Lee, Jeongsu (Seoul Natl. Univ.); Park, Kwang S. (Seoul Natl. Univ.)*

09:30-11:00   FrP16.9

The Potential of Internet of M-Health Things "m-IoT" for Non-Invasive Glucose Level Sensing **5264-5266**

*Istepanian, Robert (Kingston Univ. London); Hu, Sijung (Loughborough Univ.);
Philip, Nada (Kingston Univ.); Sungoor, Ala* (Kingston Univ. London)*

09:30-11:00   FrP16.10

Sleep, Mood and Sociability in a Healthy Population **5267-5270**

Moturu, Sai Thejasvee (Massachusetts Inst. of Tech.)*

09:30-11:00   FrP16.11

**Education, Reregistration, and Recommendation Effect of Iphone
Poomsae Education App in Taekwondo Academy** **5271-5274**

*Ha, In Suk (Chungbuk Natl. Univ.); Lee, Seung Il (Seoul Natl. Univ.); Cha, Eun Jong (Chungbuk Natl. Univ.);
Lee, Tae Soo* (Chungbuk Natl. Univ.)*

09:30-11:00   FrP16.12

Design of an Unobtrusive Wireless Sensor Network for Nighttime Falls Detection **5275-5278**
  Zhang, Zhaonan (The Univ. of New South Wales); Kapoor, Udyant (The Univ. of New South Wales);
  Narayanan, Michael Ravi (Univ. of New South Wales); Lovell, Nigel* (Univ. of New South Wales);
  Redmond, Stephen James (Univ. of New South Wales)

09:30-11:00   FrP16.13

A Web-Based Image Viewer for Multiple PET-CT Follow-Up Studies **5279-5282**
  Haraguchi, Daiki (Univ. of Sydney); Kim, Jinman (Univ. of Sydney); Kumar, Ashnil* (Univ. of Sydney);
  Constantinescu, Liviu (Univ. of Sydney); Wen, Lingfeng (Univ. of Sydney); Feng, Dagan (The Univ. of Sydney)

09:30-11:00   FrP16.14

Mental Health Promotion System **5283-5286**
  Farooq, Umar* (Kyung Hee Univ.); Jang, Dae-Geun (Korea Advanced Inst. of Science & Tech.);
  Jang, Jae-Keun (Kyung Hee Univ.); Park, Seung-Hun (Kyung Hee Univ.)

09:30-11:00   FrP16.15

Online Survey System for Image-Based Clinical Guideline Studies Using the Delphi Method **5287-5290**
  Teng, Chia-Chi* (Brigham Young Univ.)

FrP17: 09:30-11:00   America Ballroom Westin
10.5.14 Recent Developments in Ambient Assisted Living and Smart Homes (Poster Session)

09:30-11:00   FrP17.1

The SWEET-HOME Project: Audio Technology in Smart Homes to Improve Well-Being and Reliance **5291-5294**
  Vacher, Michel (CNRS); Istrate, Dan (ESIGETEL); Portet, Francois (Grenoble Inst. of Tech.);
  Joubert, Thierry (THEORIS); Chevalier, Thierry (Technosens); Smidtas, Serge (Camera Contact);
  Meillon, Brigitte (LIG); Lecouteux, Benjamin (LIG); Sehili, Mohamed El Amine* (ESIGETEL);
  Chahuara, Pedro (LIG); Méniard, Sylvain (LIG)

09:30-11:00   FrP17.2

Assessing Task Compliance Following Mobile Phone-Based Video Reminders **5295-5298**
  O'Neill, Sonja* (Univ. of Ulster); Parente, Guido (Univ. of Ulster); Donnelly, Mark (Univ. of Ulster);
  Nugent, Chris (Univ. of Ulster); Beattie, Mark Paul (Univ. of Ulster); McClean, Sally (Univ. of Ulster);
  Scotney, Bryan (Univ. of Ulster); Mason, Sarah (Queen's Univ.); Craig, David (Queen's Univ. Belfast)

09:30-11:00   FrP17.3

Nighttime In-Home Action Monitoring for Elder-Care **5299-5302**
  Zhou, Zhongna* (Univ. of Missouri, Columbia, MO); Stone, Erik (Univ. of Missouri); Skubic, Marjorie (Univ. of
  Missouri); Keller, James M (Univ. of Missouri); He, Zhihai (Univ. of Missouri)

09:30-11:00   FrP17.4

A Web Based Tool for Storing and Visualising Data Generated within a Smart Home **5303-5306**
  McDonald, Heather* (Univ. of Ulster); Nugent, Chris (Univ. of Ulster); Moore, George (Univ. of Ulster);
  Finlay, Dewar (Univ. of Ulster); Hallberg, Josef (Luleå Univ. of Tech.)

09:30-11:00   FrP17.5

Usage Monitoring of Electrical Devices in a Smart Home **5307-5310**
  Rahimi, Saba (Graduate student at Carleton Univ.); Chan, Adrian* (Carleton Univ.);
  Goubran, Rafik A. (Carleton Univ.)

09:30-11:00   FrP17.6

DigiSpenser – a GSM-Based Drug Management and Compliance Monitoring System **5311-5314**
  Schukat, Michael* (Natl. Univ. of Ireland, Galway); Rudroju, Bhaskar (Natl. Univ. of Ireland, Galway)

09:30-11:00   FrP17.7

Indoor Waypoint Navigation via Magnetic Anomalies **5315-5318**
  Riehle, Timothy H* (Koronis Biomed. Technologies Corp.); Anderson, Shane (Koronis Biomedical
  Technologies); Lichter, Patrick (Koronis Biomedical Technologies); Condon, John (Advanced Medical
  Electronics); Sheikh, Suneel (ASTER Labs, Inc.); Hedin, Daniel (Advanced Medical Electronics)

09:30-11:00   FrP17.8
An Affordable Compact Humanoid Robot for Autism Spectrum Disorder Interventions in Children 5319-5322

Alexander, Elizabeth (Worcester Polytechnic Inst.); Dickstein-Fischer, Laurie (Northeastern Univ.);
Yan, Xiaoan (Worcester Polytechnic Inst.); Su, Hao (Worcester Polytechnic Inst.);
Fischer, Gregory* (Worcester Polytechnic Inst.)

09:30-11:00   FrP17.9
A Sensor for Monitoring Pulse Rate, Respiration Rhythm, and Body Movement in Bed 5323-5326

Yamana, Yusuke* (Hiroshima Inst. of Tech.); Tsukamoto, Sosuke (Hiroshima Inst. of Tech.);
Mukai, Koji (Hiroshima Inst. of Tech.); Maki, Hiromichi (Hiroshima Inst. of Tech.);
Ogawa, Hidekuni (Hiroshima Inst. of Tech.); Yonezawa, Yoshiharu (Hiroshima Inst. of Tech.)

09:30-11:00   FrP17.10
**Multidisciplinary Approach for Developing a New Robotic System for
Domiciliary Assistance to Elderly People** 5327-5330

Cavallo, Filippo* (Scuola Superiore Sant'Anna); Aquilano, Michela (Scuola Superiore Sant'Anna);
Bonaccorsi, Manuele (Scuola Superiore Sant'Anna); Mannari, Irene (Scuola Superiore Sant'Anna);
Carrozza, Maria Chiara (Scuola Superiore Sant'Anna); Dario, Paolo (IIT Italian Inst. of Tech.)

09:30-11:00   FrP17.11
**Development of a Platform to Combine Sensor Networks and Home Robots to
Improve Fall Detection in the Home Environment** 5331-5334

Della Toffola, Luca (Harvard Medical School); Patel, Shyamal* (Harvard Medical School); Chen, Bor-rong
(Harvard Univ.); Ozsecen, Yalgin (Dept. of PM&R, Harvard Medical School); Puiatti, Alessandro (Univ. of
Applied Science of Southern Switzerland); Bonato, Paolo (Harvard Medical School)

09:30-11:00   FrP17.12
**A Touchscreen-Equipped Medicine Case As a Medical Interface for Assisting an
Elderly Person in Medication Management** 5335-5338

Suzuki, Takuo* (Univ. of Tsukuba); Jose, Yuta (Univ. of Tsukuba); Nakauchi, Yasushi (Univ. of Tsukuba)

09:30-11:00   FrP17.13
Using Participatory Design in a Health Information System 5339-5342

Teixeira, Leonor* (Aveiro Univ.); Saavedra, Vasco (Aveiro Univ.); Ferreira, Carlos Manuel Santos (Aveiro
Univ.); Sousa Santos, Beatriz (Aveiro Univ.)

09:30-11:00   FrP17.14
**HoCoS: Home Companion Software. a Service Oriented Solution for Elderly Home
Accompanying and Remote Healthcare Monitoring** 5343-5346

Dhouib, Mohamed Achraf* (ESIGETEL); Bougueroua, Lamine (Univ.); Istrate, Dan (ESIGETEL);
Pino, Maribel (Organization); Bernard, Catherine (Univ.)

FrB01: 11:15-12:45   St. George AB Westin
8.4.2 Assistive Technology for Human Communication (Oral Session)
Chair: Stepp, Cara (Boston Univ.)
Co-Chair: Heaton, James (Massachusetts General Hospital & Harvard Medical School)

11:15-11:30   FrB01.1
Investigating Tactile Event Recognition in Child-Robot Interaction for Use in Autism Therapy 5347-5351

Amirabdollahian, Farshid (The Univ. of Hertfordshire); Robins, Ben* (The Univ. of Hertfordshire);
Dautenhahn, Kerstin (the Univ. of Hertfordshire); Ji, Ze (the Univ. of Hertfordshire)

11:30-11:45   FrB01.2
Development of a Wireless Electromyographically Controlled Electrolarynx Voice Prosthesis 5352-5355

Heaton, James* (Massachusetts General Hospital & Harvard Medical School); Robertson, Mark (Griffin
Laboratories, Inc.); Griffin, Cliff (Griffin Laboratories, Inc.)

11:45-12:00   FrB01.3
Measuring Gaze of Children with Autism Spectrum Disorders in Naturalistic Interactions 5356-5359

Noris, Basilio* (Ecole Polytechnique Fédérale de Lausanne); Barker, Mandy (CHUV);
Nadel, Jacqueline (Univ. Pierre & Marie Curie, Emotion Ctr.); Billard, Aude (EPFL, LASA)

12:00-12:15 FrB01.4
Brain-Machine Interfaces for Real-Time Speech Synthesis **5360-5363**
Guenther, Frank* (Boston Univ.); Brumberg, Jonathan (Boston Univ.)

12:15-12:30 FrB01.5
Message Formulation, Organization, and Navigation Schemes for Icon-Based Communication Aids **5364-5367**
Patel, Rupal* (Northeastern Univ.)

12:30-12:45 FrB01.6
Social Robots for Health Applications **5368-5371**
Breazeal, Cynthia* (MIT)

FrB02: 11:15-12:45 St. George CD Westin
8.6.24 Robotic and Computer-Assisted Surgery (Oral Session)
Chair: Martel, Sylvain *(Ec. Pol. de Montreal)*
Co-Chair: Mahvash, Mohsen *(Harvard Univ.)*

11:15-11:30 FrB02.1
Toward a Hybrid Snake Robot for Single-Port Surgery **5372-5375**
Mahvash, Mohsen* (Harvard Univ.); Zenati, Marco (Harvard Medical School)

11:30-11:45 FrB02.2
Inertial Navigation System for Bladder Endoscopy **5376-5379**
Behrens, Alexander (RWTH Aachen Univ.); Grimm, Jonathan (RWTH Aachen Univ.);
Gross, Sebastian (RWTH Aachen Univ.); Aach, Til (RWTH Aachen Univ.)*

11:45-12:00 FrB02.3
Target Motion Predictions for Pre-Operative Planning During Needle-Based Interventions **5380-5385**
Misra, Sarthak (Univ. of Twente); de Korte, Chris (Univ. Children's Hospital);
Abayazid, Momen (Univ. of Twente); op den Buijs, Jorn (Univ. of Twente)*

12:00-12:15 FrB02.4
Development and Evaluation of an Identification Method for the Biomechanical
Parameters Using Robotic Force Measurements, Medical Images, and FEA **5386-5391**
Hoshi, Takeharu (Waseda Univ.); Tsukune, Mariko (Waseda Univ.); Kobayashi, Yo (Waseda Univ.);
Miyashita, Tomoyuki (Waseda Univ.); Fujie, Masakatsu G. (Waseda Univ.)*

12:15-12:30 FrB02.5
A MRI-Based Platform for Catheter Navigation **5392-5395**
Vonthron, Manuel (Ecole Polytechnique de Montréal); Lalande, Viviane (Ecole Polytechnique de Montréal);
Martel, Sylvain (Ecole Polytechnique de Montreal)*

12:30-12:45 FrB02.6
Gaze-Contingent Autofocus System for Robotic-Assisted Minimally Invasive Surgery **5396-5399**
Clancy, Neil (Hamlyn Ctr. for Robotic Surgery, Imperial College London); Mylonas, George (Imperial College
London); Yang, Guang-Zhong (Imperial College London); Elson, Daniel S. (Imperial College London)*

FrB03: 11:15-12:45 Essex Ballroom South Westin
6.1.25 Tissue-Electrode Interface (Oral Session)
Chair: Lal, Amit *(Cornell Univ.)*
Co-Chair: Fantini, Sergio *(Tufts Univ.)*

11:15-11:30 FrB03.1
Flexible Organic Electronics for Use in Neural Sensing **5400-5403**
Bink, Hank (Univ. of Pennsylvania); Lai, Yuming (Univ. of Pennsylvania); Saudari, Sangameshwar (Univ. of
Pennsylvania); Helfer, Brian (Univ. of Connecticut); Viventi, Jonathan (Univ. of Pennsylvania); Van der Spiegel,
Jan (Univ. of Pennsylvania); Litt, Brian (Univ. of Pennsylvania); Kagan, Cherie (Univ. of Pennsylvania)*

11:30-11:45   FrB03.2

High-Porous Platinum Electrodes for Functional Electrical Stimulation **5404-5407**

  Boretius, Tim* (Univ. of Freiburg); Jurzinsky, Tilman (Albert-Ludwigs-Univ. of Freiburg); Köhler, Christian (Lab.
  for MEMS Applications, Dept. of Microsystems Eng. – IMTEK, Univ. of Freiburg, Georges-Koehler-Allee);
  Kerzenmacher, Sven (Univ. of Freiburg – IMTEK); Hillebrecht, Harald (Albert-Ludwig-Univ. Freiburg, Inst. of
  Inorganic Chemistry, Germany); Stieglitz, Thomas (Univ. of Freiburg)

11:45-12:00   FrB03.3

'Capacitive' Pulse Shapes for Platinum Cuff Electrodes **5408-5411**

  Woods, Virginia* (Imperial College London); Triantis, Iasonas F. (Univ. College London);
  Agathos, Catherine (Imperial College London); Toumazou, Christofer (Imperial College London)

12:00-12:15   FrB03.4

In Vivo Polymerization of Poly(3, 4-Ethylenedioxythiophene) (PEDOT) in Rodent Cerebral Cortex **5412-5415**

  Wilks, Seth* (Purdue Univ.); Woolley, Andrew (Purdue Univ.); Ouyang, Liangqi (Univ. of Delaware);
  Martin, David C (Univ. of Michigan); Otto, Kevin (Purdue Univ.)

12:15-12:30   FrB03.5

Electrical Performance of Penetrating Microelectrodes Chronically Implanted in Cat Cortex **5416-5419**

  Kane, Sheryl Rose (EIC Laboratories); Cogan, Stuart* (EIC Laboratories, Inc.); Plante, Timothy D. (EIC
  Laboratories); Ehrlich, Julia (EIC Laboratories); McCreery, D (HuntingtonMedicalResearchInst.)

12:30-12:45   FrB03.6

Bioelectrical Enhancement in Tissue-Electrode Coupling with Metamorphic-Stage
Insertions for Insect Machine Interfaces **5420-5423**

  Bozkurt, Alper* (North Carolina State Univ.); Gilmour, Robert (Cornell Univ.); Lal, Amit (Cornell Univ.)

FrB05: 11:15-12:45   Essex Ballroom North Westin
6.2.30 Brain-Machine Interfaces: Decoders II (Oral Session)
Chair: Perreault, Eric *(Northwestern Univ.)*
Co-Chair: Carmena, Jose M. *(Univ. of California, Berkeley)*

11:15-11:30   FrB05.1

Classification of Multichannel ECoG Related to Individual Finger Movements with
Redundant Spatial Projections **5424-5427**

  Onaran, Ibrahim* (Bilkent Univ.); Ince, Nuri Firat (Univ. of Minnesota); Çetin, Enis (Bilkent Univ.)

11:30-11:45   FrB05.2

Dealing with Noisy Gaze Information for a Target-dependent Neural Decoder **5428-5431**

  Corbett, Elaine* (Northwestern Univ.); Sachs, Nicholas (Northwestern Univ.);
  Kording, Konrad (Northwestern Univ.); Perreault, Eric (Northwestern Univ.)

11:45-12:00   FrB05.3

Continuous Movement Decoding Using a Target-Dependent Model with EMG Inputs **5432-5435**

  Sachs, Nicholas* (Northwestern Univ.); Corbett, Elaine (Northwestern Univ.); Miller, Lee (Northwestern Univ.);
  Perreault, Eric (Northwestern Univ.)

12:00-12:15   FrB05.4

Exploring Time-Scales of Closed-Loop Decoder Adaptation in Brain-Machine Interfaces **5436-5439**

  Orsborn, Amy* (Univ. of California Berkeley); Dangi, Siddharth (Univ. of California, Berkeley);
  Moorman, Helene (UC Berkeley); Carmena, Jose M. (Univ. of California, Berkeley)

12:15-12:30   FrB05.5

The Tracking of Reaches in Three-Dimensions **5440-5443**

  Wong, Yan Tat* (New York Univ.); Hagan, Maureen Ann (New York Univ.);
  Markowitz, David (New York Univ.); Pesaran, Bijan (New York Univ.)

12:30-12:45   FrB05.6

Reconstructing Hand Kinematics During Reach to Grasp Movements from
Electroencephalographic (EEG) Signals **5444-5447**

  Agashe, Harshavardhan* (Univ. of Maryland-College Park); Contreras-Vidal, José (Univ. of Maryland)

11:15-11:30   FrB07.1
Development of a Self-Contained Accelerometry Based System for Control of Functional Electrical Stimulation in Hemiplegia 5448-5451
  Foglyano, Kevin* (Cleveland FES Ctr.); Schnellenberger, John (Cleveland APT Ctr.);
  Kobetic, Rudi (Louis Stokes Veterans Affairs Medical Ctr.)

11:30-11:45   FrB07.2
Preliminary Design of a Terrain Recognition System 5452-5455
  Zhang, Fan* (Univ. of Rhode Island); Fang, Zheng (Huazhong Univ. of Science & Tech.);
  Liu, Ming (Univ. of Rhode Island); Huang, He (Univ. of Rhode Island)

11:45-12:00   FrB07.3
Towards a Movement Quantification System Capable of Automatic Evaluation of Upper Limb Motor Function after Neurological Injury 5456-5460
  Bento, Virgílio* (Univ. of Aveiro); Tedim Cruz, Vítor (Hospital São Sebastião, Santa Mariada Feira, Portugal);
  Ribeiro, David (Univ. of Aveiro); Cunha, João Paulo Silva (Univ. of Aveiro)

12:00-12:15   FrB07.4
A Clinical Trial of a Prototype of Wireless Surface FES Rehabilitation System in Foot Drop Correction 5461-5464
  Miura, Naoto* (Tohoku Univ., Graduate School of Eng., Japan); Watanabe, Takashi (Tohoku Univ.);
  Akasaka, Kiyokazu (Saitama Medical Univ. Graduate School of Medicine);
  Suzuki, Tatsuto (Maizuru Natl. College of Tech.)

12:15-12:30   FrB07.5
Command Detection and Classification in Tongue Drive Assistive Technology 5465-5468
  Banan Sadeghian, Elnaz* (Georgia Inst. of Tech.); Huo, Xueliang (Georgia Inst. of Tech.);
  Ghovanloo, Maysam (Georgia Inst. of Tech.)

12:30-12:45   FrB07.6
Tests of Wireless Wearable Sensor System in Joint Angle Measurement of Lower Limbs 5469-5472
  Watanabe, Takashi* (Tohoku Univ.); Saito, Hiroki (Tohoku Univ.)

11:15-11:30   FrB09.1
Influence of White Matter Conductivity Anisotropy on Electric Field Strength Induced by Electroconvulsive Therapy 5473-5476
  Lee, Won Hee* (Columbia Univ.); Deng, Zhi-De (Columbia Univ.); Laine, Andrew (Columbia Univ.);
  Lisanby, Sarah (Columbia Univ./New York State Psychiatric Inst.); Peterchev, Angel V (Duke Univ.)

11:30-11:45   FrB09.2
Optical Stimulation of Visual Cortex with Pulsed 620-Nm RED Light 5477-5479
  Hou, Wensheng* (BioEng. Inst of Chongqing Univ.); Mou, Zongxia (Biomedical Eng., Chongqing Univ., China)

11:45-12:00   FrB09.3
A Dual-Shank Neural Probe Integrated with Double Waveguides on Each Shank for Optogenetic Applications 5480-5483
  Im, Maesoon* (Univ. of Michigan); Cho, Il-Joo (Korea Inst. of Science & Tech. (KIST)); Wu, Fan (Univ. of Michigan); Wise, Kensall (Univ. of Michigan, Ann Arbor); Yoon, Euisik (Univ. of Michigan)

12:00-12:15   FrB09.4
Electroconvulsive Therapy Simulations Using an Anatomically-Realistic Head Model 5484-5487
  Bai, Siwei* (Univ. of New South Wales); Loo, Colleen (School of Psychiatry, Univ. of New South Wales);
  Dokos, Socrates (Univ. of New South Wales)

12:15-12:30 FrB09.5

Electric Fields in Hippocampus Due to Transcranial Focal Electrical Stimulation via Concentric Ring Electrodes 5488-5491

Besio, W. G. (Univ. of Rhode Island); Hadidi, Ruba (Univ. of Rhode Island); Makeyev, Oleksandr* (Univ. of Rhode Island); Luna-Munguía, Hiram (Ctr. for Research & Advanced Studies); Rocha, Luisa (Ctr. for Research & Advanced Studies)

12:30-12:45 FrB09.6

Effect of White Matter Anisotropy in Modeling Electroconvulsive Therapy 5492-5495

Bai, Siwei* (Univ. of New South Wales); Loo, Colleen (School of Psychiatry, Univ. of New South Wales); Dokos, Socrates (Univ. of New South Wales)

FrB11: 11:15-12:45 Wellesley Marriott
5.7.1 Cardiovascular Signal Processing and Modeling: Monitoring in Critical Care Applications (Oral Session)
Chair: Ferrario, Manuela (Pol. di Milano)
Co-Chair: Chon, Ki (Worcester Pol. Inst.)

11:15-11:30 FrB11.1

Cardiac Output Monitoring by Long Time Interval Analysis of a Radial Arterial Blood Pressure Waveform with Correction for Arterial Compliance Changes Using Pulse Transit Time 5496-5498

Moslehpour, Mohsen (Michigan State Univ.); Zhang, Guanqun (Michigan State Univ.); Mukkamala, Ramakrishna* (Michigan State Univ.)

11:30-11:45 FrB11.2

Early Detection of Spontaneous Blood Loss Using Amplitude Modulation of Photoplethysmogram 5499-5502

Selvaraj, Nandakumar (Worcester Polytechnic Inst.); Scully, Christopher G (Worcester Polytechnic Inst.); Shelley, Kirk H. (Dept. of Anesthesiology, Yale Univ.); Silverman, David G. (Dept. of Anesthesiology, Yale Univ.); Chon, Ki* (Worcester Polytechnic Inst.)

11:45-12:00 FrB11.3

Continuous Multiorgan Variability Monitoring in Critically Ill Patients – Complexity Science at the Bedside 5503-5506

Seely, Andrew JE* (Ottawa Hospital Research Inst.); Bravi, Andrea (Ottawa Hospital Research Inst.); Green, Geoffrey (OHRI)

12:00-12:15 FrB11.4

Photoplethysmographic Variability Analysis in Critical Care – Current Progress and Future Challenges 5507-5510

Chan, Gregory S H* (The Univ. of New South Wales); Middleton, Paul MacConachie (Univ. of New South Wales); Lovell, Nigel (Univ. of New South Wales)

12:15-12:30 FrB11.5

Alteration of Autonomic Blood Pressure Control During Hemodialysis in Peripheral Vascular Disease Patients 5511-5514

Ion Titapiccolo, Jasmine (Politecnico di Milano); Cerutti, Sergio (Politecnico di Milano); Garzotto, Francesco (Dep. Nephrology Dialysis & Transplantation, San Bortolo Hospital); Cruz, Dinna (Dep. Nephrology Dialysis & Transplantation, San BortoloHospital); Moissl, Ulrich (Fresenius Medical Care, Deutschland, GmbH); Tetta, Ciro (Ulrich.Moissl@fmc-ag.com); Signorini, Maria G. (Politecnico di Milano); Ronco, Claudio (Dep. Nephrology Dialysis & Transplantation, San Bortolo Hospital); Ferrario, Manuela* (Politecnico di Milano)

12:30-12:45 FrB11.6

Predictive Monitoring for Early Detection of Subacute Potentially Catastrophic Illnesses in Critical Care 5515-5518

Moorman, J Randall* (Univ. of Virginia); Rusin, Craig G (Univ. of Virginia); Lee, Hoshik (College of William & Mary); Guin, Lauren E (Univ. of Virginia); Clark, Matthew T (Univ. of Virginia); Delos, John B (College of William & Mary); Kattwinkel, John (Univ. of Virginia); Lake, Douglas E (Univ. of Virginia)

5.7.2 Advances in Signal Processing for Atrial Fibrillation Analysis (Oral Session)
Chair: Di Rienzo, Marco *(Fondazione Don Carlo Gnocchi)*
Co-Chair: Nademanee, Koonlawee *(Pacific Rim Electrophysiology Res. Inst.)*

11:15-11:30   FrB12.1
Validation of Surface Atrial Fibrillation Organization Indicators through Invasive Recordings 5519-5522
   Alcaraz Martinez, Raul (Univ. of Castilla-La Mancha); Hornero, Fernando (General Univ. Hospital of Valencia);
   Rieta, J. J.* (Univ. Politecnica de Valencia)

11:30-11:45   FrB12.2
Pathogenesis of AF: Impact on Intracardiac Signals 5523-5526
   Shah, Ashok* (Hopital Cardiologique du Haut Leveque); Dubois, Rémi (ESPCI-ParisTech); Miyazaki, Shinsuke
   (Hopital Cardiologique du Haut Leveque); Jadidi, Amir (Hopital Haut leveque); Scherr, Daniel (Hopital Haut
   Leveque); Wilton, Stephen B (Hopital Haut Leveque); Roten, Laurent (Hopital Haut Leveque); Pascale, Patrizio
   (Hopital Haut Leveque); Pedersen, Michala (Hopital Haut Leveque); Derval, Nicolas (Hopital Haut Leveque);
   Knecht, Sebastien (Hopital Haut Leveque); Sacher, Frederic (Hopital Haut Leveque); Jais, Pierre (Hopital Haut
   Leveque); Narayan, Sanjiv (The Univ. of California, San Diego); Hocini, Meleze (Hopital Cardiologique du Haut
   Leveque); Haissaguerre, Michel (Hopital Cardiologique du Haut Leveque)

11:45-12:00   FrB12.3
A Time-Domain Approach for the Identification of Atrial Fibrillation Drivers 5527-5530
   Ravelli, Flavia* (Univ. of Trento); Masè, Michela (Univ. of Trento)

12:00-12:15   FrB12.4
Non-Invasive Prediction of Catheter Ablation Outcome in Persistent Atrial
Fibrillation by Exploiting the Spatial Diversity of Surface ECG 5531-5534
   Meo, Marianna* (Laboratoire I3S Universitè Nice); Zarzoso, Vicente (Univ. Nice Sophia Antipolis – CNRS);
   Meste, Olivier (UNSA-CNRS); Latcu, Decebal Gabriel (Ctr. Hospitalier Princesse Grace);
   Saoudi, Nadir (Princesse Grace Medical Ctr. Monaco)

12:15-12:30   FrB12.5
Propagation Pattern Analysis During Atrial Fibrillation Based on the Adaptive Group LASSO 5535-5538
   Richter, Ulrike* (Lund Univ.); Faes, Luca (Univ. of Trento); Ravelli, Flavia (Univ. of Trento);
   Sornmo, Leif (Lund Univ.)

12:30-12:45   FrB12.6
Mapping of Complex Fractionated Atrial Electrograms As Target Sites for AF Ablation 5539-5542
   Nademanee, Koonlawee* (Pacific Rim Electrophysiology Research Inst.)

4.6.11 Analysis of High-Throughput Systems Biology Data (Oral Session)
Chair: Stamoulis, Catherine *(Harvard Medical School)*
Co-Chair: Dai, Yang *(Univ. of Illinois at Chicago)*

11:15-11:30   FrB13.1
Discovery of Lung Cancer Pathways Using Reverse Phase Protein Microarray and
Prior-Knowledge Based Bayesian Networks 5543-5546
   Kim, Dong-Chul* (Univ. of Texas at Arlington); Gao, Jean (Univ. of Texas)

11:30-11:45   FrB13.2
An Evolutionary Optimization Strategy Using Graphics Processing Units to Efficiently
Investigate Gene-Gene Interactions in Genetic Association Studies 5547-5550
   Fontanarosa, Joel* (Univ. of Illinois at Chicago); Dai, Yang (Univ. of Illinois at Chicago)

11:45-12:00   FrB13.3
A Disease Annotation Study of Gene Signatures in a Breast Cancer Microarray Dataset 5551-5554
   Gypas, Foivos (Technical Univ. of Crete); Bei, Ekaterini (Technical Univ. of Crete); Zervakis, Michalis*
   (Technical Univ. of Crete, Greece); Sfakianakis, Stelios (Foundation for Research & Tech. Hellas)

12:00-12:15   FrB13.4

Detection of Copy Number Variation Using Scale Space Filtering **5555-5558**

Lee, Jongkeun (Hallym Univ.); Kim, Baeksop (Hallym Univ.); Yoon, Jeehee* (Hallym Univ.);
Lee, Unjoo (Hallym Univ.)

12:15-12:30   FrB13.5

Nearest Hyperplane Distance Neighbor Clustering Algorithm Applied to
Gene Co-Expression Analysis in Alzheimer's Disease **5559-5562**

Dua, Prerna* (Louisiana Tech Univ.); Pasluosta, Cristian Federico (Louisiana Tech Univ.);
Lukiw, Walter (Louisiana State Univ. Health Sciences Ctr.)

12:30-12:45   FrB13.6

Estimation of Correlations between Copy Number Variants in Non-Coding DNA **5563-5566**

Stamoulis, Catherine* (Harvard Medical School)

FrB15: 11:15-12:45   Clarendon Marriott
7.3.1 Biomimetics and Patterned Biomaterials (Minisymposium)
Chair: Khademhosseini, Ali *(Harvard-MIT)*
Co-Chair: Davis, Michael *(Emory Univ.)*

11:15-11:30   FrB15.1

Microengineered Hydrogels for Stem Cell Bioengineering and Tissue Regeneration .... *****

Khademhosseini, Ali* (Harvard-MIT)

11:30-11:45   FrB15.2

3D Co-Culture Systems with On-Demand Release Capabilities .... *****

Temenoff, Johnna* (Georgia Tech)

11:45-12:00   FrB15.3

Spatiotemporal Control of Cell Fate and Cardiac Differentiation **5567-5568**

Davis, Michael E. (Emory Univ.)

12:00-12:15   FrB15.4

Multiplex Biomaterial Cues: Beyond Engineering Cells and towards a Therapy .... *****

Sung, Hak-Joon* (Vanderbilt Univ.)

FrB16: 11:15-12:45   Darthmouth Marriott
9.6.7 Targeted Image-Guided Cancer Therapies (Oral Session)
Chair: Masuda, Kohji *(Tokyo Univ. A&T)*
Co-Chair: Zhang, Tianhao *(The Univ. of Western Ontario)*

11:15-11:30   FrB16.1

Optimization-Based Dosimetry Planning for Brachytherapy **5569-5572**

Zhang, Tianhao* (The Univ. of Western Ontario); Patel, Rajni (London Health Sciences Ctr.)

11:30-11:45   FrB16.2

Ultrasound Enhanced Delivery of Macromolecular Agents in Brain Tumor Rat Model **5573-5576**

Yang, Feng-Yi* (Natl. Yang-Ming Univ.); Horng, Shih-Cheng (Chaoyang Univ. of Tech.)

11:45-12:00   FrB16.3

Heating Mechanisms in Gold Nanoparticles at Radio Frequencies **5577-5580**

Pearce, John Anthony* (Univ. of Texas at Austin); Cook, Jason (The Univ. of Texas at Austin)

12:00-12:15   FrB16.4

Experimental Characterization of Intrapulse Tissue Conductivity Changes for Electroporation **5581-5584**

Neal, II, Robert E.* (Virginia Polytechnic Inst. & State Univ.); Garcia, Paulo, A. (Virginia Tech – Wake
Forest Univ.); Robertson, John (Virginia-Maryland Regional College of Veterinary Medicine);
Davalos, Rafael (Virginia Tech)

12:15-12:30   FrB16.5

Laser Interstitial Thermotherapy for Pancreatic Tumor Ablation:
Theoretical Model and Experimental Validation **5585-5588**

Saccomandi, Paola (Univ. Campus Bio-Medico of Rome); Schena, Emiliano* (Univ. of Rome Campus Bio-Medico); Di Matteo, Francesco Maria (Univ. Campus Bio-Medico of Rome); Pandolfi, Monica (Univ. Campus Bio-Medico of Rome); Martino, Margareth (Univ. Campus Bio-Medico of Rome); Roberta, Rea (Univ. Campus Bio-Medico of Rome); Silvestri, Sergio (Univ. Campus Bio-Medico)

12:30-12:45   FrB16.6

Dependence of Aggregate Formation of Microbubbles upon Ultrasound Condition and Exposure Time **5589-5592**

Koda, Ren* (Graduate School of Bio-Applications & Systems Eng., Tokyo Univ. of Agriculture & Tech.); Watarai, Nobuyuki (Tokyo Univ. of A&T); Nakamoto, Ryusuke (Tokyo Univ. A&T); Ohta, Taku (Graduate School of Bio-Applications & Systems Eng., Tokyo Univ. of Agriculture & Tech.); Masuda, Kohji (Tokyo Univ. A&T); Miyamoto, Yoshitaka (Nagoya Univ.); Chiba, Toshio (Natl. Ctr. for Child Health & Development)

FrB17: 11:15-12:45   Exeter Marriott

11.1.7 Entrepreneurship and Innovation: Regulatory Issues and Commercialization (Minisymposium)
Chair: Haemmerich, Dieter *(Medical Univ. of South Carolina)*
Co-Chair: Brenan, Colin *(CIMIT)*

11:15-11:30   FrB17.1

SBIR/STTR Funding: When, How, and How Much? .... *****

Haemmerich, Dieter* (Medical Univ. of South Carolina)

11:30-11:45   FrB17.2

Medical Product Development: Combining the Fun (Development) with the
Necessary (Regulatory Compliance) .... *****

Panescu, Dorin* (NewCardio, Inc.)

11:45-12:00   FrB17.3

Realities of Biomedical Product Liability: E.g. Implantables and TASER Weapons .... *****

Kroll, Mark* (Univ. of Minnesota)

12:00-12:15   FrB17.4

The Center for Integration of Medicine and Innovative Technologies (CIMIT):
A Proven Model to Speed the Cycle of Healthcare Innovation **5593-5593**

Brenan, Colin* (CIMIT)

FrB19: 11:15-12:45   Salons AB Marriott

3.6.8 Wireless Sensors and Systems (Oral Session)
Chair: Lymberis, Andreas *(European Commission)*
Co-Chair: Warren, Steve *(Kansas State Univ.)*

11:15-11:30   FrB19.1

Magneto-Harmonic Pressure Sensor for Biomedical Applications **5594-5597**

Tan, Ee Lim (Michigan Technological Univ.); Ong, Keat Ghee* (Michigan Tech. Univ.)

11:30-11:45   FrB19.2

In-Mouth Antenna for Tongue Controlled Wireless Devices: Characteristics and Link-Loss **5598-5601**

Chandra, Rohit* (Lund Univ.); Johansson, Anders (Lund Univ.)

11:45-12:00   FrB19.3

Comparison of TOA and RSS Based Techniques for RF Localization Inside Human Tissue **5602-5607**

Khan, Umair I.* (Elec. & Computer Eng., Worcester Polytechnic Inst.); Pahlavan, Kaveh (Elec. & Computer Eng., Worcester Polytechnic Inst.); Makarov, Sergey (Elec. & Computer Eng., Worcester Polytechnic Inst.)

12:00-12:15   FrB19.4

A Daily Living Activity Remote Monitoring System for Solitary Elderly People **5608-5611**

Maki, Hiromichi* (Hiroshima Inst. of Tech.); Ogawa, Hidekuni (Hiroshima Inst. of Tech.); Matsuoka, Shingo (Intl. Trinity College); Yonezawa, Yoshiharu (Hiroshima Inst. of Tech.); Caldwell, Morton (Caldwell Biomedical Electronics)

12:15-12:30 FrB19.5

Wirelessly Powered Stimulator and Recorder for Neuronal Interfaces **5612-5616**

Nag, Sudip* (Indian Inst. of Tech. Bombay); Sharma, Dinesh (Indian Inst. of Tech. Bombay)

12:30-12:45 FrB19.6

A Generic Miniature Multi-Feature Programmable Wireless Powering Headstage ASIC for Implantable Biomedical Systems **5617-5620**

Chinnakonda Kubendran, Rajkumar* (Purdue Univ.); Krishnan, Harish (Purdue Univ.); Manola, Bhupendra (Purdue Univ.); Irazoqui, Pedro (Purdue Univ.)

FrB20: 11:15-12:45 Salons CD Marriott
3.7.19 Wearable Sensors and Systems I (Oral Session)
Chair: Tamura, Toshiyo *(Chiba Univ.)*
Co-Chair: Guillemaud, Regis *(CEA Léti MINATEC)*

11:15-11:30 FrB20.1

Introducing a Modular Activity Monitoring System **5621-5624**

Reiss, Attila* (DFKI); Stricker, Didier (DFKI)

11:30-11:45 FrB20.2

OLAM: A Wearable, Non-Contact Sensor for Continuous Heart-Rate and Activity Monitoring **5625-5628**

Albright, Ryan (Oregon State Univ.); Goska, Benjamin* (Oregon State Univ.); Chi, Yu (UCSD); Cauwenberghs, Gert (Univ. of California San Diego); Chiang, Patrick (Oregon State Univ.)

11:45-12:00 FrB20.3

Upper Limb Joint Angle Tracking with Inertial Sensors **5629-5632**

El-Gohary, Mahmoud* (Portland State Univ.); Holmstrom, Lars (Portland State Univ.); Huisinga, Jessie (Oregon Health & Science Univ. (OHSU)); King, Edward (Oregon Health & Science Univ. (OHSU)); McNames, James (Portland State Univ.); Horak, Fay (Oregon Health & Science Univ.)

12:00-12:15 FrB20.4

Tetherless Ergonomics Workstation to Assess Nurses' Physical Workload in a Clinical Setting **5633-5636**

Smith, Warren* (California State Univ.); Nave, Michael E. (California State Univ., Sacramento); Hreljac, Alan (California State Univ., Sacramento)

12:15-12:30 FrB20.5

Development of an In-Shoe Pressure-Sensitive Device for Gait Analysis **5637-5640**

De Rossi, Stefano Marco Maria* (Scuola Superiore Sant'Anna); Lenzi, Tommaso (Scuola Superiore Sant'Anna); Vitiello, Nicola (Scuola Superiore Sant'Anna); Donati, Marco (Scuola Superiore Sant'Anna); Persichetti, Alessandro (Scuola Superiore Sant'Anna); Giovacchini, Francesco (Scuola Superiore Sant'Anna); Vecchi, Fabrizio (Scuola Superiore Sant'Anna); Carrozza, Maria Chiara (Scuola Superiore Sant'Anna)

12:30-12:45 FrB20.6

A Computationally Efficient QRS Detection Algorithm for Wearable ECG Sensors **5641-5644**

Wang, Yichao (NUS); John, Deepu* (NUS); Lian, Yong (Natl. Univ. of Singapore)

FrB21: 11:15-12:45 Salon E Marriott
1.7.42 Neural Networks in Biosignal Processing and Classification (Oral Session)
Chair: Muehlsteff, Jens *(Philips)*
Co-Chair: Francis, Joseph Thachil *(SUNY Downstate Medical Ctr.)*

11:15-11:30 FrB21.1

Brain Tumour Classification Using Gaussian Decomposition and Neural Networks **5645-5648**

Arizmendi, Carlos (Technical Univ. of Catalonia (UPC)); Sierra Bueno, Daniel Alfonso (Univ. Industrial de Santander); Vellido, Alfredo* (Soft Computing (SOCO) Research Group. Dept. Llenguatges i Sistemes Informàtics Univ. Politècnica de Catalunya); Romero, Enrique (Technical Univ. of Catalonia (UPC))

11:30-11:45 FrB21.2

Detecting Freezing-Of-Gait During Unscripted and Unconstrained Activity **5649-5652**

Cole, Bryan* (Boston Univ.); Roy, Serge (Boston Univ.); Nawab, Syed Hamid (Boston Univ.)

11:45-12:00   FrB21.3
A New Neural Network Approach for Short-Term Glucose Prediction Using Continuous
Glucose Monitoring Time-Series and Meal Information **5653-5656**
  Zecchin, Chiara* (Univ. of Padova); Facchinetti, Andrea (Univ. of Padova); Sparacino, Giovanni (Univ. of Padova); De Nicolao, Giuseppe (Univ. of Pavia); Cobelli, Claudio (Univ. of Padova)

12:00-12:15   FrB21.4
Beat-To-Beat Cardiac Output Inference Using Heart Sounds **5657-5661**
  Couceiro, Ricardo (Univ. of Coimbra); de Carvalho, Paulo* (Univ. of Coimbra); Paiva, Rui Pedro (Univ. of Coimbra); Henriques, Jorge (Univ. of Coimbra – NIF 501617582); Antunes, Manual (Univ. of Coimbra); Quintal, Isabel (Centro Hospitalar de Coimbra); Muehlsteff, Jens (Philips)

12:15-12:30   FrB21.5
Reinforcement Learning via Kernel Temporal Difference **5662-5665**
  Bae, Jihye* (Univ. of Florida); Chhatbar, Pratik Yashvant (SUNY Downstate Medical Ctr.); Francis, Joseph Thachil (SUNY Downstate Medical Ctr.); Sanchez, Justin C. (Univ. of Miami); Principe, Jose (Univ. of Florida)

12:30-12:45   FrB21.6
Block Based Neural Network for Hypoglycemia Detection **5666-5669**
  San, Phyo Phyo* (Univ. of Tech. Sydney); Ling, Steve (Univ. of Tech. Sydney); Nguyen, Hung T. (Univ. of Tech., Sydney)

FrB22: 11:15-12:45   Salon F Marriott
1.2.30 Recent Developments in Biomedical Modeling and Simulation (Oral Session)
Chair: Parker, Alice C. *(Univ. of Southern California)*
Co-Chair: Signorini, Maria G. *(Pol. di Milano)*

11:15-11:30   FrB22.1
BioSignalML – a Meta-Model for Biosignals **5670-5673**
  Brooks, David* (Univ. of Auckland); Hunter, Peter (Univ. of Auckland); Smaill, Bruce (Univ. of Auckland); Titchener, Mark (The Univ. of Auckland)

11:30-11:45   FrB22.2
A Directionally-Selective Neuromorphic Circuit Based on Reciprocal Synapses
in Starburst Amacrine Cells **5674-5677**
  Tseng, Ko-Chung* (Univ. of Southern California); Parker, Alice C. (Univ. of Southern California); Joshi, Jonathan (Univ. of Southern California)

11:45-12:00   FrB22.3
Subspace Detection of the Impulse Response Function from Intra-Partum Cardiotocography **5678-5681**
  Warrick, Philip A.* (Perigen Canada); Hamilton, Emily (McGill Univ.)

12:00-12:15   FrB22.4
A Compressive Sensing Approach for Glioma Margin Delineation Using Mass Spectrometry **5682-5685**
  Gholami, Behnood* (Brigham & Women's Hospital, Harvard Medical School); Agar, Nathalie (Brigham & Women's Hospital, Harvard Medical School); Jolesz, Ferenc A. (Brigham & Women's Hospital/Harvard Medical School); Haddad, Wassim (Georgia Inst. of Tech.); Tannenbaum, Allen (Georgia Inst. of Tech.)

12:15-12:30   FrB22.5
A Dynamical Model for Generating Synthetic Phonocardiogram Signals **5686-5689**
  Almasi, Ali* (Sharif Univ. of Tech.); Shamsollahi, Mohammad Bagher (Sharif Univ. of Tech.); Senhadji, Lotfi (Univ. de Rennes 1 & INSERM)

12:30-12:45   FrB22.6
Analysis of the Respiratory Pattern Variability of Patients in Weaning Process Using
Autoregressive Modeling Techniques **5690-5693**
  Chaparro, Javier (Escuela Colombiana de Ingeniería Julio Garavito); Giraldo, Beatriz* (Univ. Poiltècnica de Catalunya); Caminal, Pere (Technical Univ. of Catalonia (UPC)); Benito, Salvador (Hospital de la Santa Creu i Sant Pau)

2.7.27 MR Image Segmentation (Oral Session)
Chair: Bonmassar, Giorgio *(Harvard Medical School)*
Co-Chair: Paulsen, Keith *(Dartmouth College)*

11:15-11:30   FrB23.1
Fuzzy Approach Toward Reducing False Positives in the Detection of Small Multiple Sclerosis Lesions in Magnetic Resonance Images 5694-5697
  Aymerich, Francesc Xavier (Institut de Diagnòstic per la Imatge); Sobrevilla, Pilar* (Univ. Politècnica de Catalunya); Montseny, Eduard (Univ. Politècnica de Catalunya); Rovira, Alex (Unitat RM Vall Hebron)

11:30-11:45   FrB23.2
Segmentation of Scarred and Non-Scarred Myocardium in LG Enhanced CMR Images Using Intensity-Based Textural Analysis 5698-5701
  Kotu, Lasya Priya* (Univ. of Stavanger); Engan, Kjersti (Univ. of Stavanger); Eftestøl, Trygve (Univ. of Stavanger); Ørn, Stein (Stavanger Univ. Hospital); Woie, Leik (Stavanger Univ. Hospital, Stavanger, Norway)

11:45-12:00   FrB23.3
Bladder Segmentation in MR Images Using Active Region Growing Model 5702-5705
  Garnier, Carole (Univ. de Rennes 1); Wu, Ke (Southeast Univ. China); Dillenseger, Jean-Louis* (Univ. de Rennes 1)

12:00-12:15   FrB23.4
Atlas-Based Segmentation for Globus Pallidus Internus Targeting on Low-Resolution MRI 5706-5709
  Iacono, Maria Ida* (MGH, Charlestown, MA, USA); Makris, Nikos (Massachusetts General Hospital); Mainardi, Luca (Politecnico di Milano); Gale, John (Cleveland Clinic, Dept. of Neuroscience & Ctr. for Neurological Restoration, Cleveland, Ohio, USA.); van der Kouwe, Andre (Athinoula Martinos Ctr. for Biomedical Imaging, Massachusetts General Hospital, & Harvard Medical School); Mareyam, Azma (A. A. Martinos Ctr. for Biomedical Imaging, Dept. of Radiology); Polimeni, Jonathan (Harvard Medical School; Massachusetts General Hospital); Wald, Lawrence L. (A. A. Martinos Ctr. for Biomedical Imaging, Dept. of Radiology); Fischl, Bruce (A. A. Martinos Ctr. for Biomedical Imaging, Dept. of Radiology); Eskandar, Emad (Massachusetts General Hospital); Bonmassar, Giorgio (Harvard Medical School)

12:15-12:30   FrB23.5
Robust Local Estimation in Anisotropic Diffusion Process 5710-5713
  Ragoubi Hor, Refka* (Institut Telecom/Telecom Bretagne INSERM U650); Burdin, Valérie (Institut Telecom/Telecom Bretagne – INSERM U650); Rémy-Néris, Olivier (CHU Morvan)

12:30-12:45   FrB23.6
Biomedical Image Segmentation via Constrained Graph Cuts and Pre-Segmentation 5714-5717
  Yu, Zeyun* (Univ. of Wisconsin-Milwaukee); Xu, Ming (Univ. of Wisconsin-Milwaukee); Gao, Zhanheng (Univ. of Wisconsin-Milwaukee)

2.6.20 Image Reconstruction (Oral Session)
Chair: Warfield, Simon K. *(Harvard Medical School)*
Co-Chair: Boisvert, Jonathan *(Natl. Res. Council of Canada)*

11:15-11:30   FrB24.1
Reference-Guided Sparsifying Transform Design for Compressive Sensing MRI 5718-5721
  Babacan, S. Derin* (Univ. of Illinois at Urbana-Champaign); Peng, Xi (Univ. of Illinois at Urbana-Champaign); Wang, Xian-Pei (Wuhan Univ., China); Do, Minh (Univ. of Illinois at Urbana-Champaign); Liang, Zhi-Pei (Univ. of Illinois at Urbana-Champaign)

11:30-11:45   FrB24.2
Motion-Robust MRI through Real-Time Motion Tracking and Retrospective Super-Resolution Volume Reconstruction 5722-5725
  Gholipour, Ali* (Children's Hospital Boston & Harvard Medical School); Polak, Martin (Children's Hospital Boston); van der Kouwe, Andre (Athinoula Martinos Ctr. for Biomedical Imaging, Massachusetts General Hospital, & Harvard Medical School); Nevo, Erez (Robin Medical, Inc.); Warfield, Simon K. (Harvard Medical School)

11:45-12:00   FrB24.3

Interactive 3D Reconstruction of the Spine from Radiographs Using a Statistical Shape Model and Second-Order Cone Programming **5726-5729**

Boisvert, Jonathan* (Natl. Research Council of Canada); Moura, Daniel (Univ. do Porto)

12:00-12:15   FrB24.4

Microwave Imaging for Breast Cancer Detection – Advances in Three-Dimensional Image Reconstruction **5730-5733**

Golnabi, Amir H* (Dartmouth College); Meaney, Paul (Dartmouth College);
Epstein, Neil (Dartmouth College); Paulsen, Keith (Dartmouth College)

12:15-12:30   FrB24.5

Compressed Sensing MRI Using Singular Value Decomposition Based Sparsity Basis **5734-5737**

Yu, Yeyang* (Univ. of Queensland); Hong, Mingjian (ChongQing Univ.); Wang, Hua (The Univ. of Queensland);
Liu, Feng (The Univ. of Queensland); Crozier, Stuart (The Univ. of Queensland)

12:30-12:45   FrB24.6

Microwave Dielectric Contrast Imaging in a Magnetic Resonant Environment and the Effect of Using Magnetic Resonant Spatial Information in Image Reconstruction **5738-5741**

Epstein, Neil* (Dartmouth College); Golnabi, Amir H (Dartmouth College);
Meaney, Paul (Dartmouth College); Paulsen, Keith (Dartmouth College)

FrB26: 11:15-12:45   Provincetown Marriott
4.3.2 Control in Synthetic Biology II (Minisymposium)
Chair: Tidor, Bruce *(Massachusetts Inst. of Tech.)*
Co-Chair: Lu, Timothy *(Massachusetts Inst. of Tech.)*

11:15-11:45   FrB26.1

Bacterial Cheating Limits Antibiotic Resistance .... *****

Gore, Jeff* (MIT)

11:45-12:15   FrB26.2

A Control Theory Approach to Engineering Biomolecular Circuits .... *****

Del Vecchio, Domitilla* (MIT)

FrC01: 13:00-14:30   St. George AB Westin
8.8.12 Recent Developments in Medical Robotics and Biomechanics (Oral Session)
Chair: Miyashita, Tomoyuki *(Waseda Univ.)*
Co-Chair: Nadkarni, Seemantini *(Massachusetts General Hospital, Harvard Medical School)*

13:00-13:15   FrC01.1

Depth-Resolved Mapping of Tissue Mechanical Properties Using a Novel Optical Approach **5742-5745**

Hajjarian, Zeinab* (Massachusetts General Hospital/Harvard Medical School);
Nadkarni, Seemantini (Massachusetts General Hospital, Harvard Medical School)

13:15-13:30   FrC01.2

Measurement of Bulk Mechanical Properties of Tissue Using Laser Speckle Rheology **5746-5748**

Hajjarian, Zeinab* (Massachusetts General Hospital/Harvard Medical School);
Nadkarni, Seemantini (Massachusetts General Hospital, Harvard Medical School)

13:30-13:45   FrC01.3

Effect of Force Tightening on Cable Tension and Displacement in Greater Trochanter Reattachment **5749-5752**

Canet, Fanny* (Hopital Sacré-Coeur de Montréal); Duke, Kajsa (Ecole de technologie supérieure, Univ. of Alberta); Bourgeois, Yan (École de Technologie Supérieure; Hôpital du Sacré-Coeur); Laflamme, George Yves (Hôpital du Sacré-Coeur); Brailovski, Vladimir (Ecole de technologie supérieure); Petit, Yvan (École de Technologie Supérieure)

13:45-14:00 FrC01.4
Modeling the Internal Pressure Dependence of Thermal Conductivity and in Vitro Temperature Measurement for Lung RFA **5753-5757**
Yamazaki, Nozomu* (Waseda Univ.); Watanabe, Hiroki (Waseda Univ.); Seki, Masatoshi (Waseda Univ.); Hoshi, Takeharu (Waseda Univ.); Kobayashi, Yo (Waseda Univ.); Miyashita, Tomoyuki (Waseda Univ.); Fujie, Masakatsu G. (Waseda Univ.)

14:00-14:15 FrC01.5
Force Relaxation and Sprinback of Novel Elastic Orthopedic Cables **5758-5761**
Canet, Fanny* (Hopital Sacré-Coeur de Montréal); Baril, Yannick (Ecole de technologie supérieure); Brailovski, Vladimir (Ecole de technologie supérieure); Petit, Yvan (École de Technologie Supérieure); Bissonnette, Guillaume (Univ. de Montréal); Laflamme, George Yves (Hôpital du Sacré-Coeur)

14:15-14:30 FrC01.6
Semi-Autonomous Wheelchair Developed Using a Unique Camera System Configuration Biologically Inspired by Equine Vision **5762-5765**
Nguyen, Jordan Son* (Univ. of Tech., Sydney); Tran, Yvonne (Univ. of Tech., Sydney); Su, Steven Weidong (Univ. of Tech., Sydney); Nguyen, Hung T. (Univ. of Tech., Sydney)

FrC02: 13:00-14:30 St. George CD Westin
8.10.1 Advanced Technologies for Human Movement Analysis (Minisymposium)
Chair: Mazzà, Claudia *(Univ. of Rome)*
Co-Chair: Gambaretto, Emiliano *(Mixamo, Inc)*

13:00-13:15 FrC02.1
Inertial Measurement Unit in Human Movement Science .... *****
Aissaoui, Rachid* (École de technologie supérieure)

13:15-13:30 FrC02.2
Advanced Technologies for Human Movement Analysis: Optoelectronic Stereophotogrammetry Systems .... *****
Rozumalski, Adam* (Gillette Children's Specialty Healthcare)

13:30-13:45 FrC02.3
Markerless Motion Capture for Clinical Motion Analysis .... *****
Gambaretto, Emiliano* (Mixamo, Inc); Corazza, Stefano (Mixamo, Inc)

FrC03: 13:00-14:30 Essex Ballroom South Westin
6.2.28 Brain-Machine Interfaces: III (Oral Session)
Chair: Poon, Chi-Sang *(Massachusetts Inst. of Tech.)*
Co-Chair: Nenadic, Zoran *(UC Irvine)*

13:00-13:15 FrC03.1
Preliminary Assessment of Tongue Drive System in Medium Term Usage for Computer Access and Wheelchair Control **5766-5769**
Yousefi, Behnaz (Georgia Inst. of Tech.); Huo, Xueliang* (Georgia Inst. of Tech.); Ghovanloo, Maysam (Georgia Inst. of Tech.)

13:15-13:30 FrC03.2
A Novel Selective Stimulus Presentation for P300 Speller **5770-5773**
Takahashi, Hiromu* (Nagoya Univ.); Yoshikawa, Tomohiro (Nagoya Univ.); Furuhashi, Takeshi (Nagoya Univ.)

13:30-13:45 FrC03.3
Fusion with Language Models Improves Spelling Accuracy for ERP-Based Brain Computer Interface Spellers **5774-5777**
Orhan, Umut* (Northeastern Univ.); Erdogmus, Deniz (Northeastern Univ.); Roark, Brian (Oregon Health & Science Univ.); Purwar, Shalini (Northeastern Univ.); Hild II, Kenneth (Oregon Health & Science Univ.); Oken, Barry (Oregon Health & Science Univ.); Nezamfar, Hooman (Northeastern Univ.); Fried-Oken, Melanie (Oregon Health & Science Univ.)

13:45-14:00   FrC03.4

Stability of MEG for Real-Time Neurofeedback **5778-5781**

  Foldes, Stephen* (Univ. of Pittsburgh); Vinjamuri, Ramana (Univ. of Pittsburgh); Wang, Wei (Univ. of Pittsburgh); Weber, Douglas (Univ. of Pittsburgh); Collinger, Jennifer (Univ. of Pittsburgh)

14:00-14:15   FrC03.5

Classification of Hand Posture from Electrocorticographic Signals Recorded During Varying Force Conditions **5782-5785**

  Degenhart, Alan (Univ. of Pittsburgh); Collinger, Jennifer (Univ. of Pittsburgh); Vinjamuri, Ramana (Univ. of Pittsburgh); Kelly, John (Carnegie Mellon Univ.); Tyler-Kabara, Elizabeth (Univ. of Pittsburgh); Wang, Wei* (Univ. of Pittsburgh)

14:15-14:30   FrC03.6

Noninvasive Brain-Computer Interface Driven Hand Orthosis **5786-5789**

  King, Christine E.* (Univ. of California, Irvine); Wang, Po T (Univ. of California Irvine); Mizuta, Masato (Nagasaki Univ.); Reinkensmeyer, David J. (Univ. of California); Do, An H. (Univ. of California Irvine); Moromugi, Shunji (Nagasaki Univ.); Nenadic, Zoran (UC Irvine)

FrC05: 13:00-14:30   Essex Ballroom North Westin
6.3.31 Motor Neuroprostheses I (Oral Session)
Chair: Tyler, Dustin *(Case Western Reserve Univ.)*
Co-Chair: Mushahwar, Vivian *(Univ. of Alberta)*

13:00-13:15   FrC05.1

Nerve Lesioning with Direct Current **5790-5793**

  Ravid, Einat (Natalie)* (Univ. of Alberta); Gan, Liu Shi (Univ. of Alberta); Prochazka, Arthur (Univ. of Alberta)

13:15-13:30   FrC05.2

Training to Improve Volitional Muscle Activity in Clinically Paralyzed Muscles for Neuroprosthesis Control **5794-5797**

  Moss, Christa* (Case Western Reserve Univ.); Kilgore, Kevin (MetroHealth Medical Ctr.); Peckham, Hunter (Case Western Reserve Univ.)

13:30-13:45   FrC05.3

Restoring Stepping after Spinal Cord Injury Using Intraspinal Microstimulation and Novel Control Strategies **5798-5801**

  Holinski, Bradley Jared* (Univ. of Alberta); Mazurek, Kevin (Johns Hopkins Univ.); Everaert, Dirk George (Univ. of Alberta); Stein, Richard B. (Univ. of Alberta); Mushahwar, Vivian (Univ. of Alberta)

13:45-14:00   FrC05.4

Continuous Decoding of Intended Movements with a Hybrid Kinetic and Kinematic Brain Machine Interface **5802-5806**

  Suminski, Aaron* (Univ. of Chicago); Willett, Francis (Univ. of Chicago); Fagg, Andrew (Univ. of Oklahoma); Bodenhamer, Matthew (Univ. of Oklahoma); Hatsopoulos, Nicholas (Univ. of Chicago)

14:00-14:15   FrC05.5

Robot-Driven Spinal Epidural Stimulation Compared with Conventional Stimulation in Adult Spinalized Rats **5807-5810**

  Hsieh, Fu-Han* (Drexel Univ.); Giszter, Simon (Drexel Univ. College Medicine)

14:15-14:30   FrC05.6

Optimizing Nerve Cuff Stimulation of Targeted Regions through Use of Genetic Algorithms **5811-5814**

  Brill, Natalie* (Case Western Reserve Univ.); Tyler, Dustin (Case Western Reserve Univ.)

6.8.19 Wearable systems for Neuro-Rehabilitation: Mobility, Balance and Activity Monitoring (Oral Session)
Chair: Veltink, Peter *(Univ. of Twente)*
Co-Chair: Chiari, Lorenzo *(Univ. of Bologna)*

13:00-13:15   FrC07.1

Wireless Inertial Measurement Unit with GPS (WIMU-GPS) – Wearable Monitoring Platform for Ecological Assessment of Lifespace and Mobility in Aging and Disease 5815-5819

Boissy, Patrick* (Univ. de Sherbrooke); Brière, Simon (Research Ctr. on Aging CSSS-IUGS); Hamel, Mathieu (Inst. Univ. de Geriatrie de Sherbrooke); Jog, Mandar (Univ. of Western Ontario – London Health Sciences Ctr.); Speechley, Mark (Western Ontario Univ.); Karelis, Anthony (Univ. du Québec à Montréal); Frank, James (Univ. of Windsor); Vincent, Claude (Univ. Laval); Edwards, Roderick (Univ. of Victoria); Duval, Christian (Univ. du Québec à Montréal-UQAM)

13:15-13:30   FrC07.2

Foot Worn Inertial Sensors for Gait Assessment and Rehabilitation Based on Motorized Shoes 5820-5823

Aminian, Kamiar* (Ecole Polytechnique Federale); Mariani, Benoit (Ecole Polytechnique Fédérale de Lausanne); Paraschiv-Ionescu, Anisoara (Ecole Polytechnique Federale); Hoskovec, Constanze (CHUV CUTR Sylvana); Büla, Christophe (CHUV CUTR Sylvana); Penders, Julien (imec); Tacconi, Carlo (Univ. of Bologna); Marcellini, Fiorella (Ctr. of Psycho-social Aspects of Aging)

13:30-13:45   FrC07.3

Carbon Nanotubes (CNTs) Based Strain Sensors for a Wearable Monitoring and Biofeedback System for Pressure Ulcer Prevention and Rehabilitation 5824-5827

Boissy, Patrick* (Univ. de Sherbrooke); Genest, Jonathan (Univ. de Sherbrooke); Patenaude, Johane (Univ. de Sherbrooke); Poirier, Marie-Sol (Univ. de Sherbrooke); Chenel, Vanessa (Univ. de Sherbrooke); Béland, Jean-Pierre (Univ. du Québec à Chicoutimi); Legault, Georges-August (Univ. de Sherbrooke); Bernier, Louise (Univ. de Sherbrooke); Tapin, Danielle (Univ. de Montréal); Beauvais, Jacques (Univ. de Sherbrooke)

13:45-14:00   FrC07.4

Wearable Systems with Minimal Set-Up for Monitoring and Training of Balance and Mobility 5828-5832

Chiari, Lorenzo* (Univ. of Bologna)

14:00-14:15   FrC07.5

Capturing Whole-Body Mobility of Patients with Parkinson Disease Using Inertial Motion Sensors: Expected Challenges and Rewards 5833-5838

Rahimi, Fariborz* (London Health Sciences Ctr.); Duval, Christian (Univ. du Québec à Montréal-UQAM); Jog, Mandar (Univ. of Western Ontario – London Health Sciences Ctr.); Bee, Carina (London Health Sciences Ctr.); South, Angela (Univ. of Western Ontario); Jog, Monica (London Health Sciences Ctr.); Edwards, Roderick (Univ. of Victoria); Boissy, Patrick (Univ. de Sherbrooke)

14:15-14:30   FrC07.6

Estimating Fugl-Meyer Clinical Scores in Stroke Survivors Using Wearable Sensors 5839-5842

Del Din, Silvia (Univ. of Padova); Patel, Shyamal* (Harvard Medical School); Cobelli, Claudio (Univ. of Padova); Bonato, Paolo (Harvard Medical School)

6.1.8 Implantable Biochips (Oral Session)
Chair: Sawan, Mohamad *(Ec. Pol.)*
Co-Chair: Gosselin, Benoit *(Laval Univ.)*

13:00-13:15   FrC09.1

Sensitivity of a Frequency-Selective Electrode Based on Spatial Spectral Properties of the Extracellular AP of Myelinated Nerve Fibers 5843-5846

Rossel, Olivier* (LIRMM – UMII/CNRS); Soulier, Fabien (Univ. Montpellier II); Bernard, Serge (CNRS); Cathebras, Guy (Univ. Montpellier II)

13:15-13:30   FrC09.2

A Low-Power High-Sensitivity CMOS Mixed-Signal Seizure-Onset Detector 5847-5850

Safi-Harb, Mona* (Ecole Polytechnique de Montreal); Salam, Muhammad Tariqus (École Polytechnique de Montréal); Mirabbasi, Shahriar (Univ. of British Columbia); Nguyen, Dang (Notre-Dame Hospital); Sawan, Mohamad (Ecole Polytechnique)

13:30-13:45 FrC09.3

Micro-Watt Building Blocks for Biomedical RF Tranceivers **5851-5854**
  TARIS, Thierry* (IMS Lab)

13:45-14:00 FrC09.4

**Approaches for the Efficient Extraction and Processing of Biopotentials in
Implantable Neural Interfacing Microsystems** **5855-5859**
  Gosselin, Benoit* (Laval Univ.)

14:00-14:15 FrC09.5

Low-Power SoC Design for Ligament Balance Measuring System in Total Knee Arthroplasty **5860-5863**
  Liu, Ming (Tsinghua Univ.); Chen, Hong (Tsinghua Univ.); Zhang, Xu (Tsinghu Univ.); Zhang, Chun (Tsinghua
  Univ., China); Jiang, HanJun (Tsinghua Univ.); Wang, Zhihua (Tsinghua Univ.)*

14:15-14:30 FrC09.6

An Overview of the Recent Wideband Transcutaneous Wireless Communication Techniques **5864-5867**
  Ghovanloo, Maysam* (Georgia Inst. of Tech.)

FrC19: 13:00-14:30 Salons AB Marriott
1.4.34 Biomedical Signal Classification in Cardiovascular System (Oral Session)
Chair: Guttag, John *(MIT)*
Co-Chair: Tong, Shanbao *(Shanghai Jiao Tong Univ.)*

13:00-13:15 FrC19.1

T-Wave Alternans Detection Using a Bayesian Approach and a Gibbs Sampler **5868-5871**
  Lin, Chao* (Univ. of Toulouse); Mailhes, Corinne (Univ. of Toulouse); Tourneret, Jean-Yves (Univ. of Toulouse)

13:15-13:30 FrC19.2

Amplitude of Dominant T-Wave Alternans Assessment on ECGs Obtained from a Biophysical Model **5872-5875**
  Sassi, Roberto (Univ. degli Studi di Milano); Mainardi, Luca (Politecnico di Milano);
  Cerutti, Sergio (Politecnico di Milano)*

13:30-13:45 FrC19.3

**Patient-Specific Ventricular Beat Classification without Patient-Specific Expert
Knowledge: A Transfer Learning Approach** **5876-5879**
  Wiens, Jenna* (MIT); Guttag, John (MIT)

13:45-14:00 FrC19.4

Noise Detection in Heart Sound Recordings **5880-5883**
  Zia, Mohammad (Rutgers Univ.); Griffel, Benjamin (Rutgers Univ.); Fridman, Vladimir (Long Island College
  Hospital); Saponieri, Cesare (Long Island College Hospital); Semmlow, John (Rutgers Univ.)*

14:00-14:15 FrC19.5

Spatiotemporal Estimation of Activation Times of Fractionated ECGs on Complex Heart Surfaces **5884-5887**
  Erem, Burak (Northeastern Univ.); Brooks, Dana (Northeastern Univ.); van Dam, Peter (Radboud Univ.
  Medical Ctr.); Stinstra, Jeroen (Univ. of Utah); MacLeod, Rob (Univ. of Utah)*

14:15-14:30 FrC19.6

**Computerized Intrapartum Electronic Fetal Monitoring: Analysis of the
Decision to Deliver for Fetal Distress** **5888-5891**
  Georgieva, Antoniya (Univ. of Oxford); Payne, Stephen John (Univ. of Oxford);
  Moulden, Mary (Univ. of Oxford); Redman, Christopher WG (Univ. of Oxford)*

1.2.3 Towards Understanding Neurons' Language: From Micro-Processing to Macro-Analyzing Brain Recordings (Oral Session)
Chair: Nikita, Konstantina *(Natl. Technical Univ. of Athens)*
Co-Chair: Bianchi, Anna Maria *(Pol. di Milano)*

13:00-13:15   FrC20.1
Multi-Input GNL-HybELS: An Automated Tool for the Analysis of Oculomotor Dynamics During Visual-Vestibular Interactions 5892-5895
  Ghoreyshi, Atiyeh* (McGill Univ.); Galiana, Henrietta L. (McGill Univ.)

13:15-13:30   FrC20.2
Dynamic Analysis of EEG Signals During Spatial Working Memory Used for Either Perception Discrimination or Planning of Action 5896-5899
  Protopapa, Foteini* (Natl. Technical Univ. of Athens); Mylonas, Dimitris (Natl. Technical Univ. of Athens); Spiliotis, Konstantinos (Natl. Technical Univ. of Athens); Siettos, Constantinos (Natl. Technical Univ. of Athens); Evdokimidis, Ioannis (Natl. & Kapodistrian Univ. of Athens, Medical School); Smyrnis, Nikolaos (Natl. & Kapodistrian Univ. of Athens, Medical School)

13:30-13:45   FrC20.3
Local Field Potential Driven Izhikevich Model Predicts a Subthalamic Nucleus Neuron Activity 5900-5903
  Michmizos, Kostis P.* (Massachusetts Inst. of Tech.); Nikita, Konstantina (Natl. Technical Univ. of Athens)

13:45-14:00   FrC20.4
Decoding Ensemble Activity from Neurophysiological Recordings in the Temporal Cortex 5904-5907
  Kreiman, Gabriel* (Harvard Medical School)

14:00-14:15   FrC20.5
Multiscale Information for Network Characterization in Epilepsy 5908-5911
  Stamoulis, Catherine* (Harvard Medical School); Chang, Bernard (Harvard Medical School/Beth Israel Deaconess Medical Ctr.)

14:15-14:30   FrC20.6
The Volterra-Wiener Approach in Neuronal Modeling 5912-5915
  Mitsis, Georgios D.* (Univ. of Cyprus)

1.5.1 Causality in Brain Dynamics and Cardiovascular Control (Oral Session)
Chair: Faes, Luca *(Univ. of Trento)*
Co-Chair: Porta, Alberto *(Univ. degli Studi di Milano)*

13:00-13:15   FrC21.1
Analyzing Coherent Brain Networks with Granger Causality 5916-5918
  Ding, Mingzhou* (Univ. of Florida); Mo, Jue (Univ. of Florida); Wen, Xiaotong (Univ. of Florida); Schroeder, Charles E. (Nathan Kline Inst. for Psychiatric Research)

13:15-13:30   FrC21.2
Assessing Directional Interactions among Multiple Physiological Time Series: The Role of Instantaneous Causality 5919-5922
  Faes, Luca* (Univ. of Trento); Nollo, Giandomenico (Univ. of Trento)

13:30-13:45   FrC21.3
Role of Respiration in Setting Causality among Cardiovascular Variability Series 5923-5926
  Porta, Alberto* (Univ. degli Studi di Milano); Bassani, Tito (Politecnico di Milano); Bari, Vlasta (Univ. of Milan, Milan, Italy); Takahashi, Anielle (Federal Univ. of São Carlos, São Carlos, Brazil); Tobaldini, Eleonora (Univ. degli Studi di Milano); Catai, Aparecida (Dept. of Physiotherapy, Federal Univ. of São Carlos, São Carlos, Brazil); Montano, Nicola (Univ. degli Studi di Milano)

13:45-14:00   FrC21.4
Semiparametric Detection of Nonlinear Causal Coupling Using Partial Directed Coherence 5927-5930
  Massaroppe, Lucas (Univ. of Sao Paulo); Baccala, Luiz Antonio* (Escola Politecnica); Sameshima, Koichi (Univ. de Sao Paulo, Faculdade de Medicina)

14:00-14:15   FrC21.5

Multivariate Analysis of Dynamical Processes with Applications to the Neurosciences 5931-5934
   Schelter, Bjorn* (Albert-Ludwigs Univ.); Sommerlade, Linda (Univ. of Freiburg, Germany); Platt, Bettina (Inst.
   for Medical Sciences, Univ. of Aberdeen); Plano, Andrea (Inst. for Medical Sciences, Univ. of Aberdeen);
   Thiel, Marco (Univ. of Aberdeen); Timmer, Jens (Inst. of Physics, Univ. of Freiburg)

14:15-14:30   FrC21.6

Symbolic Coupling Traces for Causality Analysis of Cardiovascular Control 5935-5938
   Wessel, Niels* (Humboldt-Univ. zu Berlin); Suhrbier, Alexander (Inst. for Applied Computer Science);
   Riedl, Maik (Univ. Potsdam); Marwan, Norbert (Potsdam Inst. for Climate Impact Research);
   Penzel, Thomas (Charite Univ. Hospital); Malberg, Hagen (Dresden Technical Univ.);
   Bretthauer, G (Inst. for Applied Computer Science); Kurths, Juergen (Univ. Potsdam)

FrC23: 13:00-14:30   Salon G Marriott
2.8.39 Retinal Image Analysis II (Oral Session)
Chair: Tobin, Kenneth (Oak Ridge Natl. Lab.)
Co-Chair: Yoshida, Hisashi (Kinki Univ.)

13:00-13:15   FrC23.1

Microaneurysm Detection with Radon Transform-Based Classification on Retina Images 5939-5942
   Giancardo, Luca* (Univ. of Burgundy – Oak Ridge Natl. Lab); Meriaudeau, Fabrice (Univ. de Bourgogne);
   Karnowski, Thomas (Oak Ridge Natl. Lab.); Li, Yaqin (Univ. of Tennessee Health Science Ctr.);
   Tobin, Kenneth (Oak Ridge Natl. Lab.); Chaum, Edward (Univ. of Tennessee Hamilton Eye Inst)

13:15-13:30   FrC23.2

Evaluation of the Grading Performance of an Ensemble-Based Microaneurysm Detector 5943-5946
   Antal, Balint* (Univ. of Debrecen); Lazar, Istvan (Univ. of Debrecen); Hajdu, Andras (Univ. of Debrecen);
   Torok, Zsolt (Univ. of Debrecen); Csutak, Adrienne (Univ. of Debrecen); Peto, Tunde (Moorfields Eye Hospital)

13:30-13:45   FrC23.3

Computerized Detection of Peripapillary Chorioretinal Atrophy by Texture Analysis 5947-5950
   Muramatsu, Chisako* (Gifu Univ.); Hatanaka, Yuji (Univ. of Shiga Prefecture); Sawada, Akira (Gifu Univ.);
   Yamamoto, Tetsuya (Gifu Univ.); Fujita, Hiroshi (Gifu Univ.)

13:45-14:00   FrC23.4

Machine Learning and Pattern Classification in Identification of Indigenous Retinal Pathology 5951-5954
   Jelinek, Herbert Franz* (Charles Sturt Univ.); Rocha, Anderson (Univ. of Campinas); Carvahlo, Tiago (Univ. of
   Campinas); Goldenstein, Siome (Univ. of Campinas); Wainer, Jacques (Univ. of Campinas)

14:00-14:15   FrC23.5

An Automated Retinal Image Quality Grading Algorithm 5955-5958
   Hunter, Andrew* (Univ. of Lincoln); James, Lowell (Foster Findlay Associates); Maged, Habib (Sunderland
   Eye Infirmary); Ryder, Bob (City Hospital Birmingham); Basu, Ansu (City Hospital Birmingham);
   Steel, David (Sunderland Eye Infirmary)

14:15-14:30   FrC23.6

Automatic Detection of Retina Disease: Robustness to Image Quality and
Localization of Anatomy Structure 5959-5964
   Karnowski, Thomas* (Oak Ridge Natl. Lab.); Aykac, Deniz (Oak Ridge Natl. Lab.);
   Giancardo, Luca (Univ. of Burgundy – Oak Ridge Natl. Lab); Nichols, Trent Lee (Oak Ridge Natl. Lab.);
   Li, Yaqin (Univ. of Tennessee Health Science Ctr.); Tobin, Kenneth (Oak Ridge Natl. Lab.);
   Chaum, Edward (Univ. of Tennessee Hamilton Eye Inst)

FrC24: 13:00-14:30   Salon HI Marriott
2.3.9 Optical Imaging Studies and Techniques (Oral Session)
Chair: Ozcan, Aydogan (UCLA)
Co-Chair: Merchant, Fatima (Univ. of Houston)

13:00-13:15   FrC24.1

Spatiotemporal Measurement of Tumor Oxygenation Reveals Repeat Hypoxic Phenomenon in Mice 5965-5968
   Yamada, Ryo* (Keio Univ.); Tsukada, Kosuke (Keio Univ.); Horinouchi, Hirohisa (Keio Univ., School of Medicine)

13:15-13:30   FrC24.2

3D Imaging for Quantitative Assessment of Toxicity on Vascular Development in Zebrafish **5969-5972**

Hans, Charu (Univ. of Houston); Shete, Amol (Univ. of Houston); Shah, Shishir (Univ. of Houston); McCollum, Catherine (Univ. of Houston); Bondesson, Maria (Univ. of Houston); Merchant, Fatima* (Univ. of Houston)

13:30-13:45   FrC24.3

Subcellular Particles Tracking in Time-Lapse Confocal Microscopy Images **5973-5976**

Li, Shuo* (Univ. of Texas, at Arlington); Gao, Jean (Univ. of Texas); Luby-Phelps, Kate (The Univ. of Texas Southwestern Medical Ctr.)

13:45-14:00   FrC24.4

Dynamic Phase Imaging for in Vitro Process Monitoring and Cell Tracking **5977-5980**

Creath, Katherine* (4D Tech. Corp.)

14:00-14:15   FrC24.5

Lensless Fluorescent On-Chip Microscopy Using a Fiber-Optic Taper **5981-5984**

Coskun, Ahmet Faruk* (Univ. of California at Los Angeles); Sencan, Ikbal (UCLA); Su, Ting-Wei (Univ. of California, Los Angeles); Ozcan, Aydogan (UCLA)

FrC25: 13:00-14:30   Salon JK Marriott
2.7.29 Image Segmentation (Oral Session)
Chair: Laine, Andrew *(Columbia Univ.)*
Co-Chair: Wang, Yi *(Cornell Univ.)*

13:00-13:15   FrC25.1

Employing Temporal Information for Cell Segmentation Using Max-Flow/min-Cut in Phase-Contrast Video Microscopy **5985-5988**

Massoudi, Amir* (Univ. of New South Wales); Sowmya, Arcot (Univ. of New South Wales); Semenovich, Dimitri (Univ. of New South Wales); Mele, Katarina (CSIRO, Mathematical & Information Sciences, Locked Bag 17, North Ryde, NSW 1670, Australia.)

13:15-13:30   FrC25.2

Supervised Learning Framework for Screening Nuclei in Tissue Sections **5989-5992**

Nandy, Kaustav* (SAIC-Frederick, Natl. Cancer Inst.); Gudla, Prabhakar R (Natl. Cancer Inst.-Frederick/SAIC-Frederick, Inc.); Amundsen, Ryan (Univ. of Michigan); Meaburn, Karen (Natl. Cancer Inst., Natl. Inst. of Health); Misteli, Tom (Natl. Cancer Inst., Natl. Inst. of Health); Lockett, Stephen (SAIC-Frederick)

13:30-13:45   FrC25.3

An ICA-Based Method for the Segmentation of Pigmented Skin Lesions in Macroscopic Images **5993-5996**

Cavalcanti, Pablo (UFRGS); Scharcanski, Jacob* (UFRGS); Di Persia, Leandro Ezequiel (Univ. Nacional del Litoral); Milone, Diego (Univ. Nacional del Litoral – CONICET)

13:45-14:00   FrC25.4

A Novel Approach to Automated Cell Counting for Studying Human Corneal Epithelial Cells **5997-6000**

Bandekar, Namrata (Univ. of Waterloo); Wong, Alexander* (Univ. of Waterloo); Clausi, David Anthony (Univ. of Waterloo); Gorbet, Maud (Univ. of Waterloo)

14:00-14:15   FrC25.5

Estimation of the Population of Neutrophils Induced to Differentiate from the MPRO Mouse Promyelocytic Cell Line **6001-6004**

Ivan, Fransiskus Xaverius* (Nanyang Technological Univ.); Welsch, Roy (Massachusetts Inst. of Tech.); Chow, Vincent T. K. (Natl. Univ. of Singapore); Rajapakse, Jagath C (Bioinformatics Research Ctr., School of Computer Eng., Nanyang Technological Univ.)

14:15-14:30   FrC25.6

Interactive Liver Tumor Segmentation from CT Scans Using Support Vector Classification with Watershed **6005-6008**

Zhang, Xing (Inst. of Automation, Chinese Acad. of Sciences); Tian, Jie* (Chinese Acad. of Sciences); Xiang, Dehui (Inst. of Automation, Chinese Acad. of Sciences); Li, Xiuli (Inst. of Automation, Chinese Acad. of Sciences); Deng, Kexin (Inst. of Automation Chinese Acad. of Sciences)

4.3.3 Control in Synthetic Biology III (Minisymposium)
Chair: Tidor, Bruce *(Massachusetts Inst. of Tech.)*
Co-Chair: Lu, Timothy *(Massachusetts Inst. of Tech.)*

13:00-13:30	FrC26.1

Simple Model Systems in Synthetic Biology: RNA Replicators and Bacteriophages .... *
  Chen, Irene (Harvard Univ.)*

13:30-14:00	FrC26.2

Engineering Complex Dynamics Using Synthetic Gene Networks .... *
  Wang, Xiao (School of Biological & Health Systems Eng., Arizona State Univ.)*

14:00-14:30	FrC26.3

Designing and Building Synthetic Biology – An Engineering Challenge .... *
  Ellis, Tom (Imperial College London)*

FrC27: 15:30-17:00	Provincetown Marriott

4.3.4 Control in Synthetic Biology IV (Minisymposium)
Chair: Tidor, Bruce *(Massachusetts Inst. of Tech.)*
Co-Chair: Lu, Timothy *(Massachusetts Inst. of Tech.)*

15:30-16:00	FrC27.1

Analog Electronic Circuit Design for Synthetic Biology and Systems Biology .... *
  Sarpeshkar, Rahul (Massachusetts Inst. of Tech.)*

16:00-16:30	FrC27.2

**Numerical Subtleties in Biochemical Oscillator Sensitivity Analysis in the
Presence of Conservation Constraints** .... *
  White, Jacob K. (Massachusetts Inst. of Tech.)*

FrP21: 15:30-17:00	America Ballroom Westin

1.1.20 Time-Frequency Analysis of Biosignals (Poster Session)

15:30-17:00	FrP21.1

Associating ECG Features with Firefighter's Activities 6009-6012
  Pallauf, Johannes (Univ. do Porto); Gomes, Pedro Tiago (Faculdade de Ciências da Univ. do Porto, Portugal);
  Bras, Susana (Univ. de Aveiro); Cunha, João Paulo Silva (Univ. of Aveiro); Coimbra, Miguel (Instituto de
  Telecomunicações/Univ. do Porto)*

15:30-17:00	FrP21.2

Modulation Filtering for Noise Detection in Heart Sound Signals 6013-6016
  Ramos, João Pedro (Univ. of Coimbra); de Carvalho, Paulo (Univ. of Coimbra); Paiva, Rui Pedro (Univ. of
  Coimbra); Henriques, Jorge (Univ. of Coimbra – NIF 501617582)*

15:30-17:00	FrP21.3

Cough Detection Algorithm for Monitoring Patient Recovery from Pulmonary Tuberculosis 6017-6020
  Tracey, Brian (Tufts Univ.); Comina, German (Univ. Nacional de Ingeniería); Larson, Sandra (Michigan State
  Univ., College of Osteopathic Medicine); Bravard, Marjory (Massachusetts General Hospital); Lopez, Jose W.
  (Hospital Nacional Dos de Mayo); Gilman, Robert H. (Johns Hopkins Univ., Bloomberg School of Public Health)*

15:30-17:00	FrP21.4

Investigating the Statistical Properties of the Swallowing Sounds 6021-6024
  Sarraf Shirazi, Samaneh (Univ. of Manitoba); Moussavi, Zahra (Univ. of Manitoba)*

15:30-17:00	FrP21.5

**Conduction Velocity of the Uterine Contraction in Serial Magnetomyogram (MMG) Data:
Event Based Simulation and Validation** 6025-6028
  Furdea, Adrian (Univ. of Tübingen); Preissl, Hubert (Univ. of Tübingen); Lowery, Curtis (Univ. of Arkansas for
  Medical Sciences); Eswaran, Hari (Univ. of Arkansas for Medical Sci); Govindan, Rathinaswamy (UAMS)*

15:30-17:00   FrP21.6
Identification of CpG Islands in DNA Sequences Using Matched Filters **6029-6032**
Kakumani, Rajasekhar* (Concordia Univ.); Ahmad, Omair (Concordia Univ.);
Devabhaktuni, Vijay (Univ. of Toledo)

FrP22: 15:30-17:00   America Ballroom Westin
1.4.14 Pattern Recognition Methods for Data Mining in Biosignals (Poster Session)

15:30-17:00   FrP22.1
Modeling High-Level Descriptions of Real-Life Physical Activities Using Latent Topic
Modeling of Multimodal Sensor Signals **6033-6036**
Kim, Samuel* (Univ. of Southern California); Li, Ming (Univ. of Southern California); Lee, Sangwon (Univ. of
Southern California); Mitra, Urbashi (Univ. of Southern California); Emken, Adar (Univ. of Southern California);
Spruijt-Metz, Donna (Univ. of Southern California); Annavaram, Murali (Univ. of Southern California);
Narayanan, Shrikanth (Univ. of Southern California)

15:30-17:00   FrP22.2
A Wavelet-Based Approach for Time Series Pattern Detection and Events
Prediction Applied to Telemonitoring Data **6037-6040**
Rocha, Teresa* (Inst Superior de Eng de Coimbra); Paredes, Simão (Instituto Superior de Engenharia de
Coimbra); Henriques, Jorge (Univ. of Coimbra – NIF 501617582); de Carvalho, Paulo (Univ. of Coimbra)

15:30-17:00   FrP22.3
A Method to Determine the Optimal Features for Control of a Powered Lower-Limb Prostheses **6041-6046**
Farrell, Matthew Todd* (MIT); Herr, Hugh (MIT)

15:30-17:00   FrP22.4
Analysis of Human Motions with Arm Constraint **6047-6050**
Kim, Duk-Jin* (UT at Dallas); Prabhakaran, Balakrishnan (UTD)

15:30-17:00   FrP22.5
Assessment of Features for Automatic CTG Analysis Based on Expert Annotation **6051-6054**
Chudacek, Vaclav* (Czech Technical Univ. in Prague); Spilka, Jiri (Czech Technical Univ. in Prague);
Lhotska, Lenka (Czech Technical Univ. in Prague); Janku, Petr (Obstetrics & Gynaecology clinic, Univ.
Hospital in Brno, Czech Republic); Koucky, Michal (Gynaecology & Obstetrics unit of the Charles Univ.
Hospital, Prague, Czech Republic); Huptych, Michal (Czech Technical Univ. in Prague);
Bursa, Miroslav (Czech Technical Univ. in Prague)

15:30-17:00   FrP22.6
Drowsiness Detection by Thoracic Effort Signal Analysis in Real Driving Environments **6055-6058**
Rodriguez Ibañez, Noelia* (FICOSA Intl.); Garcia-gonzalez, Miguel A. (Univ. Politècnica de
Catalunya); Fernandez-Chimeno, Mireya (Technical Univ. of Catalonia);
Ramos-Castro, Juan (Univ. Politecnica de Catalunya)

15:30-17:00   FrP22.7
Single Channel-Based Myoelectric Control of Hand Movements with Empirical Mode Decomposition **6059-6062**
Ali, Ali* (Univ. of Plymouth); Bugmann, Guido (Ctr. for Robotics & Neural Systems, Univ. of Plymouth);
Outram, Nicholas (Univ. of Plymouth); Escudero, Javier (Univ. of Plymouth)

FrP23: 15:30-17:00   America Ballroom Westin
1.2.11 Biomedical Signal Classification II (Poster Session)

15:30-17:00   FrP23.1
Automatic REM Sleep Detection Associated with Idiopathic REM Behavior Disorder **6063-6066**
Kempfner, Jacob* (Technical Univ. of Denmark); Jennum, Poul (Danish Ctr. for Sleep Medicing);
Sorensen, Gertrud Laura (Technical Univ. of Denmark); Sorensen, Helge B D (Technical Univ. of Denmark)

15:30-17:00   FrP23.2
A Rule-Based Automatic Sleep Staging Method **6067-6070**
Liang, Sheng-Fu* (Natl. Cheng Kung Univ.); Kuo, Chih-En (Natl. Cheng Kung Univ.); Hu, Yu-Han (Natl. Cheng
Kung Univ.); Cheng, Yu-Shian (Natl. Cheng Kung Univ.)

15:30-17:00   FrP24.1
Development of Double Density Whole Brain Fnirs with EEG System for Brain Machine Interface 6118-6122
   Ishikawa, Akihiro* (SHIMADZU Corp.); Udagawa, Haruhide (SHIMADZU Corp.);
   Masuda, Yoshinori (SHIMADZU Corp.); Kohno, Satoru (SHIMADZU Corp.);
   Amita, Takashi (SHIMADZU Corp.); Inoue, Yoshihiro (SHIMADZU Corp.)

15:30-17:00   FrP24.2
Measurements of Right / Left Hemisphere Activation Using Functional Near-Infrared
Spectroscopy During Incongruent Stroop Test 6123-6126
   Hiroyasu, Tomoyuki (Doshisha Univ.); Fukuhara, Michihiro* (Doshisha Univ.); Yokouchi, Hisatake (Doshisha
   Univ.); Miki, Mitsunori (Doshisha Univ.); Yoshimi, Masato (Doshisha Univ.)

15:30-17:00   FrP24.3
A Statistical Model of Retinal Optical Coherence Tomography Image Data 6127-6130
   Kulkarni, Prathamesh (Univ. of Houston); Lozano, Diana (Univ. of Houston College of Optometry);
   Zouridakis, George (Univ. of Houston); Twa, Michael* (Univ. of Houston)

15:30-17:00   FrP24.4
Optical Coherence Tomography: Health Information Embedded on OCT Signal Statistics 6131-6133
   Bernardes, Rui* (Faculty of Medicine, Univ. of Coimbra, Coimbra, Portugal/AIBILI, Coimbra, Portugal)

15:30-17:00   FrP24.5
23 Khz MEMS Based Swept Source for Optical Coherence Tomography Imaging 6134-6137
   Vuong, Barry* (Ryerson Univ.); Sun, Cuiru (Ryerson Univ.); Harduar, Mark (Ryerson Univ.);
   Mariampillai, Adrian (Ryerson Univ.); Isamoto, Keiji (Santec Corp.); Chong, Changho (Santec Corp.);
   Standish, Beau (Ryerson Univ.); Yang, Victor (Univ. of Ryerson)

15:30-17:00   FrP24.6
Ontology-based Malaria Parasite Stage and Species Identification from
Peripheral Blood Smear Images 6138-6141
   Makkapati, Vishnu* (Philips Elec. India Limited); Rao, Raghuveer (Army Research Lab.)

15:30-17:00   FrP24.7
Development of Three Dimensional Blood Vessel Search System by Using Stereo and
Autofocus Hybrid Method 6142-6145
   Nakamachi, Eiji* (Doshisha Univ.)

15:30-17:00   FrP24.8
Thermal Infrared Imaging: Toward Diagnostic Medical Capability 6146-6149
   Arthur, Daniel Terence John (Curtin Univ.); Khan, Masood Mehmood* (Curtin Univ.)

15:30-17:00   FrP24.9
Spatiotemporal Changes of Cerebral Blood Flow Following Hemorrhagic Stroke by
Laser Speckle Imaging 6150-6153
   Liu, Chenwei (Shanghai Jiao Tong Univ.); Xie, Bohua (Shanghai Jiao Tong Univ.); Li, Minheng (Shanghai Jiao
   Tong Univ.); Yang, Guo-yuan (Shanghai Jiao Tong Univ.); Tong, Shanbao* (Shanghai Jiao Tong Univ.)

15:30-17:00   FrP24.10
Detection of Unstained Living Neurospheres from Phase Contrast Images with
Very Large Illumination Variations 6154-6157
   Xiong, Wei* (Inst. for Infocomm Research, A-STAR); Chia, Shue Ching (Inst. for Infocomm Research);
   Lim, Joo Hwee (Inst. for Infocomm Research)

15:30-17:00   FrP24.11
L1-Regularized Cerenkov Luminescence Tomography with a SP3 Method and CT Fusion 6158-6161
   Zhong, Jianghong (Inst. of Automation, Chinese Acad. of Sciences); Tian, Jie* (Chinese Acad. of Sciences);
   Yang, Xin (Inst. of Automation, Chinese Acad. of Sciences); Qin, Chenghu (Chinese Acad. of Sciences)

15:30-17:00   FrP24.12

Mosaicing of Optical Microscope Imagery Based on Visual Information **6162-6165**

*Carozza, Ludovico (Univ. of Bologna, ARCES); Bevilacqua, Alessandro (ARCES-DEIS Univ. of Bologna);
Piccinini, Filippo* (Univ. of Bologna, ARCES)*

15:30-17:00   FrP24.13

Vignetting Correction by Exploiting an Optical Microscopy Image Sequence **6166-6169**

Bevilacqua, Alessandro (ARCES-DEIS Univ. of Bologna); Piccinini, Filippo (Univ. of Bologna, ARCES);
Gherardi, Alessandro (ARCES-Univ. of Bologna)*

15:30-17:00   FrP24.14

Next Generation Optical Surface Sensing for Real-Time Measurement in Radiotherapy **6170-6173**

Parkhurst, James (The Christie NHS Foundation Trust); Price, Gareth (The Christie NHS Foundation Trust);
Sharrock, Phil (The Christie NHS Foundation Trust); Marchant, Tom (The Christie NHS Foundation Trust);
Moore, Christopher (The Christie NHS Foundation Trust)*

15:30-17:00   FrP24.15

Automatic Cell Tracking Applied to Analysis of Cell Migration in Wound Healing Assay **6174-6179**

Bise, Ryoma (Dai Nippon Printing); Kanade, Takeo (Carnegie Mellon Univ.);
Yin, Zhaozheng (Carnegie Mellon Univ.); Huh, Seung-il (Carnegie Mellon Univ.)*

15:30-17:00   FrP24.16

**Synthesis of Cervical Tissue Second Harmonic Generation Images Using
Markov Random Field Modeling** **6180-6183**

Yousefi, Siamak (Univ. of Texas at Dallas); Kehtarnavaz, Nasser (Univ. of Texas at Dallas);
Gholipour, Ali (Univ. of Texas at Dallas)*

FrP25:   15:30-17:00   America Ballroom Westin

2.4.14 Advances in X-Ray, CT, PET, and SPECT (Poster Session)

15:30-17:00   FrP25.1

Improving Osteoporosis Diagnose in Children Using Image Texture Analysis **6184-6187**

Castellanos, Norma Pilar (Univ. Autonoma Metropolitana Iztapalapa); Martinez, Elisa (Instituto Nacional de
Rehabilitacion); Gutierrez, Josefina (Instituto Nacional de Rehabilitación)*

15:30-17:00   FrP25.2

**Semi-Automated Segmentation and Classification of Digital Breast
Tomosynthesis Reconstructed Images** **6188-6191**

Vedantham, Srinivasan (Univ. of Massachusetts Medical School); Shi, Linxi (Univ. of Massachusetts Medical
School); Karellas, Andrew (Univ. of Massachusetts Medical School); Michaelsen, Kelly (Dartmouth College);
Krishnaswamy, Venkataramanan (Dartmouth College); Pogue, Brian (Dartmouth College);
Paulsen, Keith (Dartmouth College)*

15:30-17:00   FrP25.3

**Spatially Different, Real-Time Temporal Filtering and Dose Reduction for
Dynamic Image Guidance During Neurovascular Interventions** **6192-6195**

Setlur Nagesh, Swetadri Vasan (Univ. At Buffalo); Sharma, Prateek (Univ. at Buffalo); Ionita, Ciprian (SUNY at
Buffalo); Titus, Albert (Univ. at Buffalo, The State Univ. of New York); Cartwright, Alexander (Elec. Eng., Univ.
at Buffalo, SUNY); Bednarek, Daniel (Univ. at Buffalo); Rudin, Stephen (Univ. at Buffalo)*

15:30-17:00   FrP25.4

Osteophyte Detection for Hand Osteoarthritis Identification in X-Ray Images Using CNNs **6196-6199**

Banerjee, Sreeparna (West Bengal Univ. of Tech., Kolkata, India); Schaefer, Gerald (Loughborough Univ.);
Bhunia, Satyajit (College of Eng. & Management, Kolaghat, India)*

15:30-17:00   FrP25.5

Efficient and Effective Regularised ART for Computed Tomography **6200-6203**

*Buzmakov, Alexey (A.V. Shubnikov Inst. of Crystallography, RAS); Nikolaev, Dmitry (Inst. for Information
Transmission Problems, RAS); Chukalina, Marina (Inst. of MicroElec.Tech., RAS);
Schaefer, Gerald* (Loughborough Univ.)*

15:30-17:00   FrP25.6

Automatic Dent-Landmark Detection in 3-D CBCT Dental Volumes **6204-6207**

Cheng, Erkang (Temple Univ.); Chen, Jinwu (Temple Univ. Kornberg School of Dentistry);
Gabler, Bryce (Temple Dental School); Wu, Yi (Nanjing Univ. of Information Science & Tech.);
Deng, Huiyang (Temple Univ.); Megalooikonomou, Vasilis (Temple Univ., Ctr. for Information Science & Tech.);
Yang, Jie (Temple Univ.); Ling, Haibin (Temple Univ.)*

15:30-17:00   FrP25.7

**An Automatic Detection Method for Carotid Artery Calcifications Using
Top-Hat Filter on Dental Panoramic Radiographs** **6208-6211**

Sawagashira, Tsuyoshi (Gifu Univ.); Hayashi, Tatsuro (Gifu Univ.); Hara, Takeshi (Gifu Univ. Graduate Sch of
Medicine); Katsumata, Akitoshi (Asahi Univ.); Muramatsu, Chisako (Gifu Univ.); Zhou, Xiangrong (Gifu Univ.);
Iida, Yukihiro (Asahi Univ.); Katagi, Kiyoji (Asahi Univ. Hospital); Fujita, Hiroshi (Gifu Univ.)*

15:30-17:00   FrP25.8

Recognition-Based Segmentation and Registration Method for Image Guided Shoulder Surgery **6212-6215**

Chaoui, Jean (LaTIM); Hamitouche, Chafiaâ (Télécommunications Bretagne); Stindel, Eric (Univ. de Bretagne
Occidentale); Roux, Christian (TELECOM Bretagne – INSERM)*

15:30-17:00   FrP25.9

**Monitoring Pulmonary Fibrosis by Fusing Clinical, Physiological, and
Computed Tomography Features** **6216-6219**

Caban, Jesus (Natl. Inst. of Health); Yao, Jianhua (Natl. Inst. of Health); Bagci, Ulas (Natl. Inst. of Health);
Mollura, Daniel J. (Natl. Inst. of Health)*

15:30-17:00   FrP25.10

Principal Curve Based Semi-Automatic Segmentation of Organs in 3D-CT **6220-6223**

*You, Sheng (Northeastern Univ.); Bas, Erhan (Northeastern Univ.); Ataer-Cansizoglu, Esra (Northeastern
Univ.); Kalpathy-Cramer, Jayashree (Oregon Health & Science Univ.); Erdogmus, Deniz* (Northeastern Univ.)*

FrP26:   15:30-17:00   America Ballroom Westin
2.8.41 Advances in Retinal Image Analysis II (Poster Session)

15:30-17:00   FrP26.1

Automatic Optic Disc Segmentation with Peripapillary Atrophy Elimination **6224-6227**

Cheng, Jun (Inst. for Infocomm Research, AStar); Liu, Jiang (Inst. for Infocomm Research, A STAR);
Wong, Damon (Inst. for Infocomm Research); Yin, Fengshou (Inst. for Infocomm Research);
Cheung, Carol (Singapore Eye Research Inst.); Baskaran, Mani (Singapore Eye Research Inst.);
Aung, Tin (Singapore Eye Research Inst.); Wong, Tien Yin (Natl. Univ. of Singapore)*

15:30-17:00   FrP26.2

MRMR Optimized Classification for Automatic Glaucoma Diagnosis **6228-6231**

Zhang, Zhuo (A*STAR); Kwoh, Chee Keong (Nanyang Tech. Univ., Singapore); Liu, Jiang (Inst. for Infocomm
Research, A STAR); Yin, Fengshou (Inst. for Infocomm Research); Wirawan, Adrianto (Nanyang Tech. Univ.);
Cheung, Carol (Singapore Eye Research Inst.); Baskaran, Mani (Singapore Eye Research Inst.);
Aung, Tin (Singapore Eye Research Inst.); Wong, Tien Yin (Natl. Univ. of Singapore)*

15:30-17:00   FrP26.3

Automated Detection of Red Lesions from Digital Colour Fundus Photographs **6232-6235**

Jaafar, Hussain F (Univ. of Liverpool); Nandi, Asoke K (The Univ. of Liverpool);
Al-Nuaimy, Waleed (Univ. of Liverpool)*

15:30-17:00   FrP26.4

Statistical Characterization and Segmentation of Drusen in Fundus Images **6236-6241**

Santos-Villalobos, Hector (Oak Ridge Natl. Lab.); Karnowski, Thomas (Oak Ridge Natl. Lab.);
Aykac, Deniz (Oak Ridge Natl. Lab.); Giancardo, Luca (Univ. of Burgundy – Oak Ridge Natl. Lab.);
Li, Yaqin (Univ. of Tennessee Health Science Ctr.); Nichols, Trent Lee (Oak Ridge Natl. Lab.);
Tobin, Kenneth (Oak Ridge Natl. Lab.); Chaum, Edward (Univ. of Tennessee Hamilton Eye Inst)*

15:30-17:00   FrP26.5
Retinal Image Registration Based on Multiscale Products and Optic Disc Detection **6242-6245**
  Koukounis, Dimitris (Univ. of Bristol, UK); Nicholson, Lindsay (Univ. of Bristol);
  Bull, David Roger (Univ. of Bristol); Achim, Alin* (Univ. of Bristol)

15:30-17:00   FrP26.6
Predicting Phosphene Elicitation in Patients with Retinal Implants: A Mathematical Study **6246-6249**
  Savage, Craig Owen* (Univ. of Melbourne); Grayden, David B. (Univ. of Melbourne);
  Meffin, Hamish (Natl. ICT Australia); Burkitt, Anthony Neville (Univ. of Melbourne)

FrP27: 15:30-17:00   America Ballroom Westin
2.9.42 Functional Imaging (Poster Session)

15:30-17:00   FrP27.1
Thermographic Investigation of Osseous Stress Pathology **6250-6253**
  Arthur, Daniel Terence John (Curtin Univ.); Khan, Masood Mehmood* (Curtin Univ.);
  Barclay, Luke Charles (Curtin Univ.)

15:30-17:00   FrP27.2
Changes of Skin Temperature of Parts of the Body and Serum Asymmetric
Dimethylarginine (ADMA) in Type 2 Diabetes Mellitus Indian Patients **6254-6259**
  Anburajan, Mariamichael* (Professor & Head,); S, Sivanandam (Dept of BioMedical Eng., SRM
  Univ.,Kattankulathur-603203); Sahu, Bidyarasmi (Dept of BioTech., SRM Univ., Kattankulathur);
  B, Venkatraman (Radiation Safety & Environmental Group, Indira Gandhi Ctr. for Atomic Research (IGCAR),
  Kalpakkam-603102, Tamil Nadu, India-); M, Menaka (Radiation Safety & Environmental Group, Indira Gandhi
  Ctr. for Atomic Research (IGCAR), Kalpakkam-603102, Tamil Nadu, India); B, Baldev Raj (Indira Gandhi Ctr.
  for Atomic Research (IGCAR), Kalpakkam-603102, Tamil Nadu, India)

15:30-17:00   FrP27.3
A Method for Measuring the Accuracy of Multi-Modal Image Fusion System for Catheter-Based
Cardiac Interventions Using a Novel Motion Enabled Targeting Phantom **6260-6264**
  Hatt, Charles* (Univ. of Wisconsin – Madison); Stanton, Douglas (Philips Research North America);
  Parthasarathy, Vijay (Philips Research North America); Jain, Ameet (Philips Research);
  Raval, Amish (U. Wisconsin-Madison)

15:30-17:00   FrP27.4
Gait Analysis with Multiple Depth Cameras **6265-6268**
  Auvinet, Edouard* (Univ. de Montréal); Meunier, Jean (Univ. de Montreal);
  Multon, Franck (M2S – Univ. de Rennes 2)

15:30-17:00   FrP27.5
Spatially Weighted Mutual Information (SWMI) for Registration of Digitally
Reconstructed ex vivo Whole Mount Histology and in vivo Prostate MRI **6269-6272**
  Patel, Pratik* (Rutgers Univ.); Chappelow, Jonathan (Rutgers Univ.); Tomaszewski, John (Univ. of
  Pennsylvania); Feldman, Michael (Univ. of Pennsylvania); Rosen, Mark (Univ. of Pennsylvania);
  Shih, Natalie (Univ. of Pennsylvania); Madabhushi, Anant (Rutgers Univ.)

15:30-17:00   FrP27.7
Real-Time Quantitative Ex Vivo Direct Autoradiography with 10µM Pixel Resolution **6273-6276**
  Peng, Qiyu* (Lawrence Berkeley Natl. Lab.); Stephen E, Holland (Lawrence Berkeley Natl. Lab.);
  Choong, Woon-Seng (Lawrence Berkeley Natl. Lab.); Budinger, Thomas (Lawrence Berkeley Natl. Lab.);
  Moses, William W (Lawrence Berkeley Natl. Lab.)

15:30-17:00   FrP28.1

An EEG-Based Brain Computer Interface for Rehabilitation and Restoration of Hand Control Following Stroke Using Ipsilateral Cortical Physiology **6277-6280**

Fok, Sam* (Washington Univ. in St. Louis); Schwartz, Raphael (Washington Univ. in St. Louis); Wronkiewicz, Mark (Washington Univ. in St. Louis); Holmes, Charles (Washington Univ. in St. Louis); Zhang, Jessica (Washington Univ. in St. Louis); Somers, Thane (Washington Univ. in St. Louis); Bundy, David (Washington Univ. in St. Louis); Leuthardt, Eric (Washington Univ. in St. Louis)

15:30-17:00   FrP28.2

Classification of Intended Motor Movement Using Surface EEG Ensemble Empirical Mode Decomposition **6281-6284**

Kuo, Ching-Chang (Louisiana Tech Univ.); Lin, William S. (Louisiana Tech Univ.); Dressel, Chelsea A. (Louisiana Tech Univ.); Chiu, Alan Wing Lun* (Louisiana Tech Univ.)

15:30-17:00   FrP28.3

Classification of Resting, Anticipation and Movement States in Self-Initiated Arm Movements for EEG Brain Computer Interfaces **6285-6288**

Rodrigo, Miguel (Univ. de Zaragoza, Bit&Brain); Montesano, Luis (Univ. de Zaragoza); Minguez, Javier* (Zaragoza Univ.)

15:30-17:00   FrP28.4

Single-Trial EEG Discrimination between Wrist and Finger Movement Imagery and Execution in a Sensorimotor BCI **6289-6293**

Mohamed, Abdul-Khaaliq* (Univ. of Witwatersrand); Marwala, Tshilidzi (Univ. of Johannesburg); John, Lester (Univ. of Cape Town)

15:30-17:00   FrP28.5

Decoding Semantic Information from Human Electrocorticographic (ECoG) Signals **6294-6298**

Wang, Wei (Univ. of Pittsburgh); Degenhart, Alan* (Univ. of Pittsburgh); Sudre, Gustavo (Carnegie Mellon Univ.); Pomerleau, Dean (Intel Labs Pittsburgh & Carnegie Mellon Univ.); Tyler-Kabara, Elizabeth (Univ. of Pittsburgh)

15:30-17:00   FrP28.6

Using Scalp Electrical Biosignals to Control an Object by Concentration and Relaxation Tasks: Design and Evaluation **6299-6302**

George, Laurent* (INRIA, VR4I (BUNRAKU) Research Team); Lotte, Fabien (Institute for Infocomm Research); Viciana Abad, Raquel (Univ. ofJaén); Lécuyer, Anatole (IRISA-INRIA Rennes)

15:30-17:00   FrP28.7

Mental Tasks Classification for BCI Using Image Correlation **6303-6306**

Ubeda, Andres (Univ. Miguel Hernandez de Elche); Ianez, Eduardo (Univ. Miguel Hernandez de Elche); Azorín, José M.* (Univ. Miguel Hernández de Elche)

15:30-17:00   FrP28.8

Effect of Competing Stimuli on SSVEP-Based BCI **6307-6310**

Ng, Kian* (Univ. of Queensland, Queensland Brain Inst.); Bradley, Andrew Peter (Univ. of Queensland); Cunnington, Ross (Univ. of Queensland)

15:30-17:00   FrP28.9

Multimodal Target Detection Using Single Trial Evoked EEG Responses in Single and Dual-Tasks **6311-6314**

Cecotti, Hubert* (Univ. of California, Santa Barbara); Kasper, Ryan (Univ. of California, Santa Barbara); Elliott, James (Univ. of California, Santa Barbara); Eckstein, Miguel (Univ. of California, Santa Barbara); Giesbrecht, Barry (Univ. of California, Santa Barbara)

15:30-17:00   FrP28.10

Skilled Hindlimb Reaching Task in Rats As a Platform for a Brain-Machine Interface to Restore Motor Function after Complete Spinal Cord Injury **6315-6318**

Knudsen, Eric* (Drexel Univ.); Moxon, Karen (Drexel Univ.); Sturgis, Eliot Berkowitz (Drexel Univ.); Shumsky, Jed (Drexel Univ. College of Medicine)

15:30-17:00 FrP29.1
Behaviour Patterns Detection for Persuasive Design in Nursing Homes to Help Dementia Patients 6413-6417
Fernandez-Llatas, Carlos (Univ. Politecnica de Valencia); Garcia-Gomez, Juan Miguel (ITACA-IBIME, Univ. Politécnica de Valencia); Vicente, Javier (ITACA-IBIME, Univ. Politécnica de Valencia); Juan Carlos, Naranjo (TSB-ITACA Univ. Politecnica de Valencia); Robles, Montserrat (Technical Univ. of Valencia); Benedí, Jose Miguel (ITI – Univ. Politecnica de Valencia); Traver, Vicente* (Inst. ITACA)

15:30-17:00 FrP29.2
Using Pre-Treatment Electroencephalography Data to Predict Response to Transcranial Magnetic Stimulation Therapy for Major Depression 6418-6421
Khodayari-Rostamabad, Ahmad* (McMaster Univ.); Reilly, James (McMaster Univ.); Hasey, Gary (McMaster Univ.); de Bruin, Hubert (McMaster Univ.); MacCrimmon, Duncan (McMaster Univ.)

15:30-17:00 FrP29.3
Use of Radial Basis Functions in Computer-Aided Diagnosis of Prostate Cancer 6422-6425
Marin, Oscar (Univ. of Alicante); Ruiz Fernandez, Daniel* (Univ. of Alicante); Pérez, Irene (Univ. of Alicante); Soriano Paya, Antonio (Univ. of Alicante)

15:30-17:00 FrP29.4
iSyNCC: An Intelligent System for Patient Monitoring & Clinical Decision Support in Neuro-Critical-Care 6426-6429
Feng, Mengling* (Inst. for Infocomm Research); Zhang, Zhuo (A*STAR); Zhang, Feng (Inst. for Inforcomm Research Singapore); Ge, Yu (Inst. for Infocomm Research); Loy, Liang Yu (Inst. for Inforcomm Research); Guo, Wenyuan (Inst. for Inforcomm Research); Chin, Pei Loon (Inst. for Inforcomm Research); King, Nicolas Kon Kam (Natl. Neuroscience Inst. Singapore); Ang, Beng Ti (Natl. Neuroscience Inst.); Guan, Cuntai (Inst. for Infocomm Research)

15:30-17:00 FrP29.5
Development and Usability Testing of a Parent Decision Support Tool for the Neonatal Intensive Care Unit 6430-6433
Weyand, Sabine* (Univ. of Ottawa); Frize, Monique (Carleton Univ.); Bariciak, Erika (Univ. of Ottawa); Dunn, Sandra (Champlain Maternal Newborn Regional Program)

15:30-17:00 FrP29.6
Supervised Regularized Canonical Correlation Analysis: Integrating Histologic and Proteomic Data for Predicting Biochemical Failures 6434-6437
Golugula, Abhishek* (Rutgers Univ.); Lee, George (Rutgers Univ.); Master, Stephen (Univ. of Pennsylvania); Feldman, Michael (Univ. of Pennsylvania); Tomaszewski, John (Univ. of Pennsylvania); Madabhushi, Anant (Rutgers Univ.)

15:30-17:00 FrP29.7
Rough Set Theory Based Prognostication of Life Expectancy for Terminally Ill Patients 6438-6441
Gil-Herrera, Eleazar* (Univ. of South Florida); Yalcin, Ali (Univ. of South Florida); Djulbegovic, Benjamin (Univ. of South Florida); Tsalatsanis, Athanasios (Univ. of South Florida); Barnes, Laura (Univ. of South Florida)

17:15-17:30 FrD12.1
Quantitative Determination of Arterial Pulse Wave Velocity by Non-Interfering Bioimpedance Sensing 6442-6445
Baek, David B.; Lading, Lars* (Sense A/S)

17:30-17:45   FrD12.2

Robustness of the P-U and LnD-U Loop Wave Speed Estimation Methods:
Effects of the Diastolic Pressure Decay and Vessel Wall Non-Linearities **6446-6449**

Mynard, Jonathan* (Murdoch Children's Research Inst.); Davidson, Malcolm R. (Dept. of Chemical &
Biomolecular Eng., Univ. of Melbourne); Penny, Daniel (Murdoch Children's Research Inst.);
Smolich, Joseph (Murdoch Children's Research Inst.)

17:45-18:00   FrD12.3

Effects of Pressure-Dependent Segmental Arterial Compliance and Posture Changes on
Pulse Wave Transmission in an Arterial Model of the Human Upper Limb **6450-6453**

Xu, Ke* (Macquarie Univ.); Butlin, Mark (Macquarie Univ.); Avolio, Alberto (Macquarie Univ.)

18:00-18:15   FrD12.4

Age-Related Changes in Reservoir and Excess Components of Central Aortic
Pressure in Asymptomatic Adults **6454-6457**

Bia, Daniel (School of Medicine, Republic Univ.); Cymberknop, Leandro Javier* (Univ. Tecnológica Nacional);
Zócalo, Yanina (School of Medicine, Republic Univ.); Farro, Ignacio (School of Medicine, Republic Univ.);
Torrado, Juan (School of Medicine, Republic Univ.); Farro, Federico (Univ. de la República, School of
Medicine); Pessana, Franco (FICEN, Favaloro Univ.); Armentano, Ricardo Luis (Favaloro Univ.)

18:15-18:30   FrD12.5

Carotid-Radial Pulse Wave Velocity As a Discriminator of Intrinsic Wall Alterations During
Evaluation of Endothelial Function by Flow Mediated Dilatation **6458-6461**

Torrado, Juan* (School of Medicine, Republic Univ.); Bia, Daniel (School of Medicine, Republic Univ.);
Zócalo, Yanina (School of Medicine, Republic Univ.); Farro, Ignacio (School of Medicine, Republic Univ.);
Farro, Federico (Univ. de la República, School of Medicine); Valero, Matías (Favaloro Univ., Buenos Aires,
Argentina); Armentano, Ricardo Luis (Favaloro Univ.)

18:30-18:45   FrD12.6

Pulse Arrival Time Is Not an Adequate Surrogate for Pulse Transit Time in Terms of
Tracking Diastolic Pressure **6462-6464**

Zhang, Guanqun* (Michigan State Univ.); Xu, Da (Univ. of Waterloo); Olivier, Bari (Michigan State Univ.);
Mukkamala, Ramakrishna (Michigan State Univ.)

FrD13: 17:15-18:45   Arlington Marriott
4.7.1 Advances in the Analysis of High-Throughput Systems Biology Datasets (Oral Session)
Chair: Akay, Metin *(Univ. of Houston)*
Co-Chair: Balestra, Gabriella *(Pol. di Torino)*

17:15-17:30   FrD13.1

A Multidimensional Signal Processing Approach for Classification of Microwave
Measurements with Application to Stroke Type Diagnosis **6465-6469**

Yousefi Mesri, Hamed (Chalmers Univ. of Tech.); Khazaeli Najafabadi, Masoud (Chalmers Univ. of Tech.);
McKelvey, Tomas* (Chalmers Univ. of Tech.)

17:30-17:45   FrD13.2

Early Detection and Characterization of Alzheimer's Disease in Clinical Scenarios Using
Bioprofile Concepts and K-Means **6470-6473**

Escudero, Javier* (Univ. of Plymouth); Ifeachor, Emmanuel (Univ. of Plymouth)

17:45-18:00   FrD13.3

SVS: Data and Knowledge Integration in Computational Biology **6474-6478**

Zycinski, Grzegorz (Univ. of Genoa); Barla, Annalisa* (Univ. of Genoa); Verri, Alessandro (Univ. of Genoa)

18:00-18:15   FrD13.4

An Hybrid Framework for Genome Wide Epistasis Discovery **6479-6482**

Tan, Zehao (Inst. for Infocomm Research); Zhang, Zhuo* (A*STAR); Liu, Jiang (Inst. for Infocomm Research,
A STAR); Kwoh, Chee Keong (Nanyang Tech. Univ., Singapore); Ong, Sim Heng (Natl. Univ. of Singapore);
Teo, Yik Ying (Natl. Univ. of Singapore); Khor, Chiea Chuen (Genome Inst. of Singapore); Tai, E Shyong (Natl.
Univ. of Singapore); Aung, Tin (Singapore Eye Research Inst.); Vithana, Eranga (Singapore Eye Research
Inst.); Wong, Tien Yin (Natl. Univ. of Singapore)

18:15-18:30   FrD13.5

MEET: Motif Estimation Elements Toolkit **6483-6486**

Pairó, Erola (Institut of BioEng. of Catalonia); Maynou, Joan* (Univ. Politècnica de Catalunya); Vallverdu, Montserrat (Univ. Politècnica de Catalunya); Caminal, Pere (Technical Univ. of Catalonia (UPC)); Marco, Santiago (Institut for BioEng. of Catalonia); Perera, Alexandre (Univ. Politècnica de Catalunya)

18:30-18:45   FrD13.6

Using Multimodal Information for the Segmentation of Fluorescent Micrographs with Application to Virology and Microbiology **6487-6490**

Held, Christian* (Fraunhofer IIS); Wenzel, Jens (Univ.sklinik Erlangen, Mikrobiologisches Institut – Klinische Mikrobiologie Immunologie und Hygiene, Germany); Webel, Rike (Univ. of Erlangen-Nuremberg, Inst. for Clinical & Molecular Virology); Marschall, Manfred (Inst. for Clinical & Molecular Virology, Univ. of Erlangen-Nuremberg); Lang, Roland (Univ. Hospital Erlangen); Palmisano, Ralf (SFB796); Wittenberg, Thomas (Fraunhofer Inst. for Integrated Circuits (IIS))

FrD15: 17:15-18:45   Clarendon Marriott

7.4.2 Cell-Matrix Interactions within Tumors and Normal Tissue (Minisymposium)

Chair: Moore, Nicole *(NCI/NIH)*

Co-Chair: Wong, Joyce *(Boston Univ.)*

17:15-17:30   FrD15.1

Mechanobiology of Tumor Invasion and Angiogenesis .... *****

Munn, Lance* (Massachusetts General Hospital)

17:30-17:45   FrD15.2

Control of Cell Phenotype by Tuning Cell-Substrate Interactions: Mechanics, Chemistry, and Structure .... *****

Wong, Joyce* (Boston Univ.)

17:45-18:00   FrD15.3

Chemomechanics at the Cell-Material Interface: Pulling It All Together .... *****

Van Vliet, Krystyn* (Massachusetts Inst. of Tech.); Zeiger, Adam (Drexel Univ.); Maloney, John (Massachusetts Inst. of Tech.); Paradise, Ranjani K. (Massachusetts Inst. of Tech.)

FrD16: 17:15-18:45   Darthmouth Marriott

9.2.18 Recent Advances in Clinical Gait Analysis Using Ambient and Wearable Sensors (Oral Session)

Chair: Caulfield, Brian *(UCD)*

Co-Chair: Tamura, Toshiyo *(Chiba Univ.)*

17:15-17:30   FrD16.1

Passive In-Home Measurement of Stride-To-Stride Gait Variability Comparing Vision and Kinect Sensing **6491-6494**

Stone, Erik* (Univ. of Missouri); Skubic, Marjorie (Univ. of Missouri)

17:30-17:45   FrD16.2

Unobtrusive Monitoring of the Longitudinal Evolution of In-Home Gait Velocity Data with Applications to Elder Care **6495-6498**

Austin, Daniel* (Oregon Health & Science Univ.); Hayes, Tamara (Oregon Health & Science Univ.); Kaye, Jeffrey A. (Oregon Health & Science Univ.); Mattek, Nora (Oregon Health & Science Univ.); Pavel, Michael (Oregon Health & Science Univ.)

17:45-18:00   FrD16.3

Body-Worn Sensor Based Surrogates of Minimum Ground Clearance in Elderly Fallers and Controls **6499-6502**

Greene, Barry R.* (Intel); Doheny, Emer (Intel); Foran, Tim (St.James's Hospital); Caulfield, Brian (UCD); McGrath, Denise (Univ. College Dublin)

18:00-18:15   FrD16.4

Estimation of End Point Foot Clearance Points from Inertial Sensor Data **6503-6506**

Santhiranayagam, Braveena K. (Victoria Univ., Melbourne, Australia); Lai, Tze Huei, Daniel (Victoria Univ.); Begg, Rezaul* (Victoria Univ.); Palaniswami, Marimuthu (Univ. of Melbourne)

18:15-18:30   FrD16.5
Laboratory in a Box: Wearable Sensors and Its Advantages for Gait Analysis **6507-6510**
  Najafi, Bijan* (Rosalind Franklin Univ. of Medicine & Science); Khan, Tahir (Rosalind Franklin Univ. of Medicine
  & Science); Wrobel, James (Rosalind Franklin Univ. of Medicine & Science)

18:30-18:45   FrD16.6
Using a Tri-Axial Accelerometer to Detect Technique Breakdown Due to Fatigue in
Distance Runners: A Preliminary Perspective **6511-6514**
  Patterson, Matt* (Univ. College Dublin); Caulfield, Brian (UCD); McGrath, Denise (Univ. College Dublin)

FrD17: 17:15-18:45	Exeter Marriott

11.2.2 Biomedical Engineering Education: Mobility, Harmonization, Innovation (Oral Session)
Chair: Magjarevic, Ratko *(Univ. of Zagreb)*
Co-Chair: Zequera Diaz, Martha Lucia *(Pontificia Univ. Javeriana)*

17:15-17:30   FrD17.1
Branding the Bio/Biomedical Engineering Degree **6515-6517**
  Voigt, Herbert* (Boston Univ.)

17:30-17:45   FrD17.2
Project-Based Learning with International Collaboration for Training Biomedical Engineers **6518-6521**
  Krishnan, Shankar Muthu* (Wentworth Inst. of Tech.)

17:45-18:00   FrD17.3
Promoting Harmonization of BME Education in Europe: The CRH-BME Tempus Project **6522-6525**
  Pallikarakis, Nicolas* (Univ. of Patras); Bliznakov, Zhivko (Univ. of Patras); Miklavcic, Damijan (Univ. of
  Ljubljana); Jarm, Tomaz (Univ. of Ljubljana); Magjarevic, Ratko (Univ. of Zagreb); Lackovic, Igor (Univ. of
  Zagreb); Pecchia, Leandro (Univ. of Naples – Federico II); Stagni, Rita (Univ. of Bologna);
  Jobaggy, Akos (Budapest Univ. of Tech. & Economics); Barbenel, Joe (Univ. of Strathclyde)

18:00-18:15   FrD17.4
Teaching Medical Instrumentation Fundamentals through Innovation Processes **6526-6529**
  Cadena, Miguel* (Univ. Autonoma Metropolitana); Azpiroz-leehan, Joaquin (Univ. Autonoma Metropolitana);
  Martinez-Licona, Fabiola (Univ. Autonoma Metropolitana)

18:15-18:30   FrD17.5
Bioengineering Education @ NUS: A Design-Centered Curriculum **6530-6533**
  Goh, James, Cho Hong* (Natl. Univ. of Singapore); Toh, Siew-Lok (Natl. Univ. of Singapore)

FrD20: 17:15-18:45	Salons CD Marriott

1.4.1 Cognitive State Assessment Competition 2011 (Oral Session)
Chair: Estepp, Justin *(Air Force Research Lab.)*
Co-Chair: Gray, Wayne *(Rensselaer Polytechnic Inst.)*

17:15-17:30   FrD20.1
An EEG Workload Classifier for Multiple Subjects **6534-6537**
  Wang, Ziheng* (Rensselaer Polytechnic Inst.); Hope, Ryan (Rensselaer Polytechnic Inst.);
  Wang, Zuoguan (Rensselaer Polytechnic Inst.); Qiang, Ji (Rensselaer Polytechnic Inst.);
  Gray, Wayne (Rensselaer Polytechnic Inst.)

17:30-17:45   FrD20.2
Physiological Cognitive State Assessment: Applications for Designing
Effective Human-Machine Systems **6538-6541**
  Estepp, Justin* (Air Force Research Lab.); Christensen, James (U.S. Air Force Research Lab.)

17:45-18:00   FrD20.3
QUASAR's QStates Cognitive Gauge Performance in the Cognitive State
Assessment Competition 2011 .... **6542-6546**
  McDonald, Neil (Quantum Applied Science & Research, Inc.);
  Soussou, Walid* (Quantum Applied Science & Research Inc. (QUASAR))

18:00-18:15   FrD20.4
Estimation of Task Workload from EEG Data: New and Current Tools and Perspectives **6547-6551**
Kothe, Christian Andreas Edgar* (Univ. of California San Diego); Makeig, Scott (Univ. of California San Diego)

18:15-18:30   FrD20.5
An Assessment of Non-Stationarity in Physiological Cognitive State
Assessment Using Artificial Neural Networks **6552-6555**
Estepp, Justin* (Air Force Research Lab.); Klosterman, Samantha (Wright State Univ.);
Christensen, James (U.S. Air Force Research Lab.)

18:30-18:45   FrD20.6
Particle Swarm Optimization of Feature Selection for Cognitive State Detection **6556-6559**
Firpi, Hiram* (JHU); Vogelstein, R. Jacob (Johns Hopkins Univ.)

FrD21: 17:15-18:45   Salon E Marriott
1.3.1 Nonlinear Biomedical Signal Processing: Advances and Challenges in Monitoring (Oral Session)
Chair: Signorini, Maria G. *(Politecnico di Milano)*
Co-Chair: Chon, Ki *(Worcester Polytechnic Inst.)*

17:15-17:30   FrD21.1
Assessment of Diabetic Cardiac Autonomic Neuropathy in Type I Diabetic Mice **6560-6563**
Chon, Ki* (Worcester Polytechnic Inst.); Yang, Bufan (WPI)

17:30-17:45   FrD21.2
Monitoring in Cardiovascular Disease Patients by Nonlinear Biomedical Signal Processing **6564-6567**
Voss, Andreas* (Univ. of Applied Sciences Jena); Schulz, Steffen (Univ. of Applied Sciences Jena);
Schroeder, Rico (Univ. of Applied Sciences Jena)

17:45-18:00   FrD21.3
Advances in Monitoring Cardiovascular Signals. Contribution of Nonlinear Signal Processing **6568-6571**
Signorini, Maria G.* (Politecnico di Milano); Cerutti, Sergio (Politecnico di Milano);
Ferrario, Manuela (Politecnico di Milano); Magenes, Giovanni (Univ. of Pavia)

FrD22: 17:15-18:45   Salon F Marriott
1.2.29 Biomedical Modeling and Simulation: Neurological Data (Oral Session)
Chair: Swindlehurst, A. Lee *(Univ. of California, Irvine)*
Co-Chair: Gutierrez, David *(Cinvestav)*

17:15-17:30   FrD22.1
EEG/MEG Source Localization Using Source Deflated Matching Pursuit **6572-6575**
Wu, Shun Chi* (Univ. of California, Irvine); Swindlehurst, A. Lee (Univ. of California, Irvine)

17:30-17:45   FrD22.2
Investigaton of the Neuronal Efficacy and Eeg Source Power under Steady-State Visual Stimulation **6576-6579**
Duru, Adil Deniz (Bogazici Univ.); Erdogan, Sinem Burcu* (Bogazici Univ.); Bayram, Ali (Bogazici Univ.
Biomedical Eng. Inst.); Kasikci, Itir (Istanbul Medical School); Ademoglu, Ahmet (Bogazici Univ.);
Demiralp, Tamer (Istanbul Medical School)

17:45-18:00   FrD22.3
Neonatal Seizure Detection Using Blind Distributed Detection with Correlated Decisions **6580-6584**
Jeremic, Aleksandar* (McMaster Univ.); Li, Huaying (McMaster Univ.)

18:00-18:15   FrD22.4
EEG Signal Classification Using Time-Varying Autoregressive Models and Common Spatial Patterns ... **6585-6588**
Gutierrez, David* (Cinvestav Monterrey); Salazar-Varas, Rocio (Cinvestav Monterrey)

18:15-18:30   FrD22.5
Functional Near Infrared Spectroscopy (fNIRS) Synthetic Data Generation **6589-6592**
Leamy, Darren John* (NUI Maynooth); Ward, Tomas (NUI Maynooth)

18:30-18:45   FrD22.6

EMG Contributes to Improve Cerebral State Index Modeling in Dogs Anesthesia **6593-6596**
Bras, Susana (Univ. de Aveiro); Ferreira, David A (Univ. de Trás-os-Montes e Alto Douro);
Antunes, Luis (Univ. de Trás-os-Montes e Alto Douro); Ribeiro, Lénio (Hospital Veterinário do Porto);
Nunes, Catarina S (King's College London); Gouveia, Sonia (Univ. do Porto)*

FrD23: 17:15-18:45   Salon G Marriott
2.8.34 Cell Image Analysis (Oral Session)
Chair: Kong, Jun *(Emory Univ.)*
Co-Chair: Whelan, Paul F. *(Dublin City Univ.)*

17:15-17:30   FrD23.1

Evaluating Descriptors for the Lateral Translocation of Membrane Proteins **6597-6600**
Domanova, Olga (RWTH Aachen); Borbe, Stefan (Fraunhofer Institute for Applied Information Tech. FIT);*
Mühlfeld, Stefanie (Heinrich-Heine Univ. of Düsseldorf, Medical Faculty, Dept. of Gastroenterology, Hepatology
& Infectiology); Becker, Martin (Heinrich-Heine Univ. of Düsseldorf, Medical Faculty, Dept. of Gastroenterology,
Hepatology & Infectiology); Kubitz, Ralf (Heinrich-Heine Univ. of Düsseldorf, Medical Faculty, Dept. of
Gastroenterology, Hepatology & Infectiology); Häussinger, Dieter (Heinrich-Heine Univ. of Düsseldorf, Medical
Faculty, Dept. of Gastroenterology, Hepatology & Infectiology); Berlage, Thomas (Fraunhofer Institute for
Applied Information Tech. FIT)

17:30-17:45   FrD23.2

Features for Cells and Nuclei Classification **6601-6604**
Liu, Song (Nanyang Technological Univ.); Mundra, Piyushkumar A. (Nanyang Technological Univ.);*
Rajapakse, Jagath C (Bioinformatics Research Ctr., School of Computer Eng., Nanyang Technological Univ.)

17:45-18:00   FrD23.3

Towards Building Computerized Image Analysis Framework for Nucleus
Discrimination in Microscopy Images of Diffuse Glioma **6605-6608**
Kong, Jun (Emory Univ.); Cooper, Lee (Emory); Kurc, Tahsin (Emory);*
Brat, Daniel (Emory Univ.); Saltz, Joel (Emory Univ.)

18:00-18:15   FrD23.4

New Robust Algorithm for Tracking Cells in Videos of Drosophila Morphogenesis Based on
Finding an Ideal Path in Segmented Spatio-Temporal Cellular Structures **6609-6612**
Bellaiche, Yohanns (Institut CURIE Paris); Bosveld, Floris (Institut CURIE Paris); Graner, Francois (Institut
CURIE Paris); Mikula, Karol (Slovak Univ. of Tech.); Remesikova, Mariana (Slovak Univ. of Tech. Bratislava);*
Smisek, Michal (Slovak Univ. of Tech. Bratislava)

18:15-18:30   FrD23.5

An Active Particle-based Tracking Framework for 2D and 3D Time-lapse Microscopy Images **6613-6618**
Hossain, M. Julius (Dublin City Univ.)*

18:30-18:45   FrD23.6

Spherical Harmonics Based Extraction and Annotation of Cell Shape in
3D Time-Lapse Microscopy Sequences **6619-6622**
Ducroz, Christel (Institut Pasteur, Quantitative Image Analysis Unit); Olivo-Marin, Jean-Christophe (Institut*
Pasteur); Dufour, Alexandre (Institut Pasteur)

FrD24: 17:15-18:45   Salon HI Marriott
2.8.36 Endoscopic and Motion Imaging (Oral Session)
Chair: Coimbra, Miguel *(Inst. de Telecomunicações/Univ. do Porto)*
Co-Chair: Branzan Albu, Alexandra *(Univ. of Victoria)*

17:15-17:30   FrD24.1

Real-Time Laryngoscopic Measurements of Vocal-Fold Vibrations **6623-6626**
Ishii, Idaku (Hiroshima Univ.); Takemoto, Shoichi (Hiroshima Univ.); Takaki, Takeshi (Hiroshima Univ.);*
Takamoto, Muneo (Hiroshima Univ.); Imon, Kentaro (Hiroshima Univ.); Hirakawa, Katsuhiro (Hiroshima Univ.)

17:30-17:45   FrD24.2

Towards Integrating Temporal Information in Capsule Endoscopy Image Analysis **6627-6630**

*Zhao, Qian (The Chinese Univ. of Hong Kong); Dassopoulos, Themistocles (Washington Univ. School of
Medicine); Mullin, Gerard (Johns Hopkins Univ.); Hager, Gregory D (Johns Hopkins Univ.);
Meng, Max Q.-H. (The Chinese Univ. of Hong Kong); Kumar, Rajesh* (Johns Hopkins Univ.)*

17:45-18:00   FrD24.3

Compressed Domain Topographic Classification for Capsule Endoscopy **6631-6634**

*Marques, Nuno (Instituto de Telecomunicações, Faculdade de Ciências daUniv. do Porto);
Cunha, João Paulo Silva (Univ. of Aveiro); Dias, Eduardo (Univ. de Aveiro, IEETA);
Coimbra, Miguel* (Instituto de Telecomunicações/Univ. do Porto)*

18:00-18:15   FrD24.4

Gap Detection in Endoscopic Video Sequences Using Graphs **6635-6638**

Behrens, Alexander (RWTH Aachen Univ.); Takami, Masato (RWTH Aachen Univ.);
Gross, Sebastian (RWTH Aachen Univ.); Aach, Til (RWTH Aachen Univ.)*

18:15-18:30   FrD24.5

Feature-Based Tracking of Urethral Motion in Low-Resolution Trans-Perineal Ultrasound **6639-6642**

Jean, Frederic (Laval Univ.); Branzan Albu, Alexandra (Univ. of Victoria); Dumoulin, Chantal (Univ. of Montreal)*

18:30-18:45   FrD24.6

**Bleeding Detection in Wireless Capsule Endoscopy Images Based on
Color Invariants and Spatial Pyramids Using Support Vector Machines** **6643-6646**

Lv, Guolan (Shanghai Jiao Tong Univ.); Yan, Guo-Zheng (Shanghai Jiao Tong Univ.);
Wang, Zhiwu (Shanghai Jiao Tong Univ.)*

FrD25: 17:15-18:45   Salon JK Marriott

2.2.17 Health Informatics: eHealth Solutions for Cardiovascular Risk Screening II (Minisymposium)

Chair: Poon, Carmen CY *(The Chinese Univ. of Hong Kong)*

Co-Chair: Sonka, Milan *(Univ. of Iowa)*

17:15-17:30   FrD25.1

**IVUS-Based Assessment of 3D Morphology and Virtual Histology:
Prediction of Atherosclerotic Plaque Status and Changes** **6647-6650**

Sonka, Milan (Univ. of Iowa)*

17:30-17:45   FrD25.2

**Automated High-Performance Cimt Measurement Techniques Using Patented AtheroEdge™:
A Screening and Home Monitoring System** **6651-6654**

Molinari, Filippo (Politecnico di Torino); Meiburger, Kristen Mariko (Politecnico di Torino);
Suri, Jasjit (Biomedical Technologies)*

17:45-18:00   FrD25.3

**First and Second Order Statistical Texture Features in Carotid Plaque Image Analysis:
Preliminary Results From Ongoing Research** **6655-6658**

Nicolaides, Andrew (Imperial College); Kyriacou, Efthyvoulos (Frederick Univ. Cyprus); Pattichis, Constantinos
(Univ. of Cyprus); Petroudi, Styliani (Univ. of Oxford); Pattichis, Marios (Univ. of New Mexico,); Griffin, Maura
(Vascular Noninvasive Screening & Diagnostic Ctr., London, UK); Kakkos, Stavros (Imperial College)*

18:00-18:15   FrD25.4

Challenges and Opportunities for the Detection of Neovascularization in IVUS Data .... *

Kakadiaris, Ioannis (Univ. of Houston)*

FrD26: 16:30-17:45   Provincetown Marriott

4.3.16 Control in Synthetic Biology V (Minisymposium)

Chair: Tidor, Bruce *(Massachusetts Inst. of Tech.)*

Co-Chair: Lu, Timothy *(Massachusetts Inst. of Tech.)*

16:30-17:00   FrD26.1

Metabolic Engineering to Potentiate Immunity .... *

Brynildsen, Mark (Princeton Univ.)*

RNA Expression Signatures to Determine Antibiotic Responses .... *
Hung, Deborah* (Massachusetts General Hospital)

Saturday, 3 September 2011

SaA01: 08:00-09:30   St. George AB Westin
8.7.31 Micro-Biorobotics (Oral Session)
Chair: Martel, Sylvain *(Ec. Pol. de Montreal)*
Co-Chair: Kaneko, Makoto *(Osaka Univ.)*

08:00-08:15   SaA01.1
Autonomous Locomotion of Capsule Endoscope in Gastrointestinal Tract 6659-6663
Yang, Sungwook (Korea Inst. of Science & Tech.); Park, Kitae (Univ. of Science & Tech., Korea);
Kim, Jinseok (Korea Inst. of Science & Tech); Kim, Tae Song (Korea Inst. of Science & Tech.);
Yoon, Eui-Sung* (Korea Inst. of Science & Tech.)

08:15-08:30   SaA01.2
Electromagnetic Drive of Microrobot Geometrically Constrained in Blood Vessel 6664-6667
Nakamura, Sho* (the Univ. of Tokyo); Harada, Kanako (The Univ. of Tokyo); Sugita, Naohiko (The Univ. of
Tokyo); Mitsuishi, Mamoru (The Univ. of Tokyo); Kaneko, Makoto (Osaka Univ.)

08:30-08:45   SaA01.3
Encapsulation of Magnetotactic Bacteria for Targeted and Controlled Delivery of
Anticancer Agents for Tumor Therapy 6668-6671
Martel, Sylvain (Ecole Polytechnique de Montreal); Afkhami Zarreh, Fatemeh (Ecole Polytechnique de
Montreal); Taherkhani, Samira (Ecole Polytechnique of Montreal);
Mohammadi, Mahmood* (École polytechnique de Montréal)

08:45-09:00   SaA01.4
Human Neuroblastoma Cultures for Biorobotics 6672-6675
Ferrandez, Jose M.* (Univ. Politecnica de Cartagena); Fernandez, Eduardo (Univ. Miguel Hernandez); Lorente,
Victor (UPCT); Cuadra, Jose Manuel (UNED); Álvarez Sánchez, José Ramón (UNED); de la Paz, Felix (UNED)

09:00-09:15   SaA01.5
A Stereotaxic Instrument for Precise Localization of Honeybee Brain 6676-6679
Wang, Shen (Qiushi Acad. for Advanced Studies, Zhejiang Univ.); Zheng, Nenggan (Zhejiang Univ., China);
Zhao, Huixia (Zhejiang Univ.); Guo, Songchao (Zhejiang Univ., China); Hu, Fuliang (Zhejiang Univ.);
Sun, Chao (Zhejiang Univ.); Zheng, Xiaoxiang* (Zhejiang Univ.)

09:15-09:30   SaA01.6
An Image-Based Guidewire Navigation Method for Robot-Assisted Intravascular Interventions 6680-6685
Ji, Cheng* (Chinese Acad. of Sciences); Hou, Zeng-Guang (Inst. of Automation, Chinese Acad. of Sciences);
Xie, Xiao (Chinese Acad. of Sciences)

SaA02: 08:00-09:30   St. George CD Westin
8.6.1 Robot-Aided Surgery (Oral Session)
Chair: Fischer, Gregory *(Worcester Pol. Inst.)*
Co-Chair: Desai, Jaydev *(Univ. of Maryland)*

08:00-08:15   SaA02.1
Robust 3D Tracking for Robotic-Assisted Beating Heart Surgery 6686-6686
Poignet, Philippe* (LIRMM, UMR CNRS 5506, Univ. of Montpellier II); Richa, Rogério (Univ. Montpellier 2);
Padilha Lanari Bó, Antônio (Univ. de Brasília); Liu, Chao (LIRMM – CNRS)

08:15-08:30   SaA02.2
Approaches to Creating and Controlling Motion in MRI 6687-6690
Fischer, Gregory* (Worcester Polytechnic Inst.); Cole, Gregory (Worcester Polytechnic Inst.)

08:30-08:45   SaA02.3
Towards a Soft-Tissue Cutting Simulator Using the Cohesive Zone Approach **6691-6694**
Lister, Kevin* (Univ. of Maryland, College Park); Lau, Alan (Drexel Univ.); Desai, Jaydev (Univ. of Maryland)

08:45-09:00   SaA02.4
Force Detecting Gripper and Flexible Micro Manipulator for Neurosurgery **6695-6699**
Yoneyama, Takeshi* (Kanazawa Univ.); Watanabe, Tetsuyou (Kanazawa Univ.);
Kagawa, Hiroyuki (Kanazawa Univ.); Hamada, Junichiro (Kanazawa Univ.);
Hayashi, Yutaka (Kanazawa Univ.); Nakada, Mitsutoshi (Kanazawa Univ.)

09:00-09:15   SaA02.5
Microsurgical Skill Assessment: Toward Skill-Based Surgical Robotic Control **6700-6703**
Harada, Kanako* (The Univ. of Tokyo); Minakawa, Yoshiaki (The Univ. of Tokyo); Baek, Young Min (The Univ.
of Tokyo); Kozuka, Yasuhide (The Univ. of Tokyo); Sora, Shigeo (Tokyo Metropolitan Police Hospital); Morita,
Akio (NTT Medical Ctr. Tokyo); Sugita, Naohiko (The Univ. of Tokyo); Mitsuishi, Mamoru (The Univ. of Tokyo)

09:15-09:30   SaA02.6
Haptic Feedback Control in Medical Robots through Fractional Viscoelastic Tissue Model **6704-6708**
Kobayashi, Yo* (Waseda Univ.); Moreira, Pedro (LIRMM-UMR CNRS, Univ. of Montpellier II); Poignet, Philippe
(LIRMM, UMR CNRS 5506,Univ. of Montpellier II); Zemiti, Nabil (Univ. Montpellier);
Liu, Chao (LIRMM – CNRS); Fujie, Masakatsu G. (Waseda Univ.)

SaA03: 08:00-09:30   Essex Ballroom South Westin
6.11.7 Rehabilitation Robotics (Minisymposium)
Chair: Krebs, Hermano Igo *(MIT)*
Co-Chair: Volpe, Bruce *(Cornell Univ.)*

08:00-08:15   SaA03.1
NeuRO-BOTICS Ushers in the Age of Recovery .... *****
Volpe, Bruce* (Cornell Univ.)

08:15-08:30   SaA03.2
Rehabilitation Robotics: An Academic Engineer Perspective **6709-6712**
Krebs, Hermano Igo* (MIT)

08:30-08:45   SaA03.3
Rehabilitation Robotics (RR): An Industry Perspective .... *****
Jansen, Paul* (Medical Devices Sanofi-Aventis)

SaA05: 08:00-09:30   Essex Ballroom North Westin
6.1.3 Recent Experiences with Non-Penetrating Micro-Electrodes in the CNS (Minisymposium)
Chair: Sahin, Mesut *(New Jersey Inst. of Tech.)*
Co-Chair: Bruns, Tim M. *(Univ. of Pittsburgh)*

08:00-08:15   SaA05.1
Single and Multi-Unit Activity Recorded from the Surface of the Dorsal Root
Ganglia with Non-Penetrating Electrode Arrays **6713-6716**
Gaunt, Robert (Univ. of Pittsburgh); Bruns, Tim M. (Univ. of Pittsburgh); Crammond, Donald (Univ. of Pittsburgh);
Tomycz, Nestor (Univ. of Pittsburgh); Moossy, John (Univ. of Pittsburgh); Weber, Douglas* (Univ. of Pittsburgh)

08:15-08:30   SaA05.2
Cerebellar Activity Patterns Revealed by Micro-EcoG Technique .... *****
Sahin, Mesut* (New Jersey Inst. of Tech.); Groth, Jonathan (New Jersey Inst. of Tech., Newark)

08:30-08:45   SaA05.3
Decoding Tradeoffs in Multiscale Neuronal Recording for Brain-Machine Interfaces .... *****
Prasad, Abhishek (Univ. of Miami); Pohlmeyer, Eric (Univ. of Miami); Mahmoudi, Babak (Univ. of Miami);
Sanchez, Justin C.* (Univ. of Miami)

08:00-08:15   SaA07.1
Chip-Scale Hermetic Feedthroughs for Implantable Bionics **6717-6720**
Guenther, Thomas* (The Univ. of New South Wales); Dodds, Christopher William Douglas (Univ. of New South Wales); Lovell, Nigel (Univ. of New South Wales); Suaning, Gregg (The Univ. of New South Wales)

08:15-08:30   SaA07.2
**Theoretical Framework for Estimating the Conductivity Map of the
Retina through Finite Element Analysis** **6721-6724**
Tahayori, Bahman* (Univ. of Melbourne); Meffin, Hamish (Natl. ICT Australia); Venables, Nicholas Alexander (Univ. of Melbourne); Grayden, David B. (Univ. of Melbourne); Burkitt, Anthony Neville (Univ. of Melbourne)

08:30-08:45   SaA07.3
Interphase Gap Decreases Electrical Stimulation Threshold of Retinal Ganglion Cells **6725-6728**
Weitz, Andrew* (Univ. of Southern California); Behrend, Matthew (Univ. of Southern California); Humayun, Mark (Univ. of Southern California); Chow, Robert (Univ. of Southern California); Weiland, James (Univ. of Southern California)

08:45-09:00   SaA07.4
**A Prototype 64-Electrode Stimulator in 65 nm CMOS Process towards a
High Density Epi-Retinal Prosthesis** **6729-6732**
Tran, Nhan* (Univ. of Melbourne); Skafidas, Stan (NICTA Victoria Research Lab); Yang, Jiawei (Univ. of Melbourne); Bai, Shun (Univ. of Melbourne); Fu, Meng (Univ. of Melbourne); Ng, David (NICTA Victoria Research Lab); Halpern, Mark E (NICTA Victoria Res. Lab.); Mareels, Iven (Melbourne Univ., Australia)

09:00-09:15   SaA07.5
CMOS-Based Smart-Electrode-Type Retinal Stimulator with Bullet-Shaped Bulk Pt Electrodes **6733-6736**
Tokuda, Takashi* (Nara Inst. of Science & Tech.); Ito, Takasuke (Nara Inst. of Science & Tech.); Kitao, Takuya (Nara Inst. of Science & Tech.); Noda, Toshihiko (Nara Inst. of Science & Tech.); Sasagawa, Kiyotaka (Nara Inst. of Science & Tech.); Terasawa, Yasuo (NIDEK Co., Ltd); Tashiro, Hiroyuki (Kyushu Univ.); Kanda, Hiroyuki (Osaka Univ.); Fujikado, Takashi (Osaka Univ.); Ohta, Jun (Nara Inst. of Science & Tech.)

09:15-09:30   SaA07.6
**Towards a Chip Scale Neurostimulator: System Architecture of a Current-Driven 98 Channel
Neurostimulator via a Two-Wire Interface** **6737-6740**
Jung, Louis Hyunsuk* (Univ. of New South Wales); Shany, Nitzan (The Univ. of New South Wales); Lehmann, Torsten (Univ. of New South Wales); Byrnes-Preston, Philip (The Univ. of New South Wales); Lovell, Nigel (Univ. of New South Wales); Suaning, Gregg (The Univ. of New South Wales)

08:00-08:15   SaA08.1
Smart Calibration for Video Game Play by People with a Movement Impairment **6741-6744**
Perez, Sergi* (Univ. of California Irvine); Benitez, Raul (Univ. Politecnica de Catalunya); Reinkensmeyer, David J. (Univ. of California)

08:15-08:30   SaA08.2
Preliminary Investigation into the Effects of Visual Feedback Distortion on Range of Motion **6745-6748**
Supple, Kelli (Univ. of Pittsburgh); Brewer, Bambi* (Univ. of Pittsburgh)

08:30-08:45   SaA08.3
Adaptive Rehabilitation Gaming System: On-line individualization of stroke rehabilitation **6749-6752**
Nirme, Jens (Lab. of Synthetic Perceptive, Emotive & Cognitive Systems, Univ. Pompeu Fabra); Duff, Armin (Lab. of Synthetic Perceptive, Emotive & Cognitive Systems, Univ. Pompeu Fabra); Verschure, Paul F M J* (SPECS, ICREA & Univ. Pompeu Fabra)

08:45-09:00 SaA08.4

Sensorimotor Enhancement with a Mixed Reality System for Balance and Mobility Rehabilitation 6753-6757

Fung, Joyce* (McGill Univ.); Perez, Claire (Jewish Rehabilitation Hospital)

09:00-09:15 SaA08.5

Human Augmentics: Augmenting Human Evolution 6758-6761

Kenyon, Robert V.* (Univ. of Illinois at Chicago); Leigh, Jason (Univ. of Illinois at Chicago)

09:15-09:30 SaA08.6

**Simultaneous Coordinate Representations Are Influenced by Visual
Feedback in a Motor Learning Task** 6762-6768

Parmar, Pritesh* (Univ. of Illinois at Chicago, The Rehabilitation Inst. of Chicago); Huang, Felix (Rehabilitation Inst. of Chicago); Patton, James (Jim) (Rehab Inst. of Chicago & U. of Illinois at Chicago)

SaA09: 08:00-09:30 Regis Marriott
6.5.35 Deep Brain Stimulation (Oral Session)
Chair: Patel, Shyamal *(Harvard Medical School)*
Co-Chair: Lowery, Madeleine *(Univ. Coll. Dublin)*

08:00-08:15 SaA09.1

Cortical Mapping of the Optically Evoked Responses in Channelrhodopsin-2 Mouse Model 6769-6772

Choi, Jee Hyun* (Korea Inst. of Science & Tech.); Kim, Guk Bae (Korea Inst. of Science & Tech.)

08:15-08:30 SaA09.2

Study on Dbs Device for Small Animals 6773-6776

*Qian, Xing (Tsinghua Univ., School of Aerospace); Hao, Hongwei (Tsinghua Univ.);
Ma, Bozhi (Tsinghua Univ.); Wen, Xiongwei (Tsinghua Univ.); Li, Luming* (Tsinghua Univ.)*

08:30-08:45 SaA09.3

Instrumentation to Record Evoked Potentials for Closed-Loop Control of Deep Brain Stimulation 6777-6780

Kent, Alexander* (Duke Univ.); Grill, Warren (Duke Univ.)

08:45-09:00 SaA09.4

Real Time Epileptic Seizure Detection with the Local Field Potential of Anterior Thalamic of Rats 6781-6784

Liu, Xiaoyin (Tsinghua Univ.); Hao, Hongwei (Tsinghua Univ.); Yang, Linchang (Tsinghua Univ.); Li, Luming
(Tsinghua Univ.); Zhang, Jianguo (Beijing Neurosurgical Inst.,Capital Medical Univ.); Yang, Anchao (Beijing
Neurosurgical Inst.,Capital Medical Univ.); Ma, Yu (Beijing Neurosurgical Inst.,Capital Medical Univ.)*

09:00-09:15 SaA09.5

Application of Non-Linear Control Theory to a Model of Deep Brain Stimulation 6785-6788

Davidson, Clare Muireann (Univ. College Dublin); Lowery, Madeleine (Univ. College Dublin);
de Paor, Annraoi (Univ. College Dublin)*

09:15-09:30 SaA09.6

**Quantitative Measurement of Motor Symptoms in Parkinson's Disease:
A Study with Full-Body Motion Capture Data** 6789-6792

Das, Samarjit (Carnegie Mellon Univ.); Trutoiu, Laura Cristina (Carnegie Mellon Univ.);
Murai, Akihiko (Disney); Alcindor, Dunbar (Allegheny General Hospital); Oh, Michael (Allegheny General
Hospital); Torre, Fernando De la (Carnegie Mellon Univ.); Hodgins, Jessica (Carnegie Mellon Univ.)*

SaA10: 08:00-09:30 Simmons Marriott
10.8.8 Low Cost Healthcare Delivery, Public and Environmental Health (Oral Session)
Chair: Moussavi, Zahra *(Univ. of Manitoba)*
Co-Chair: Ozcan, Aydogan *(UCLA)*

08:00-08:15 SaA10.1

Measuring Changes in Activity Patterns During a Norovirus Epidemic at a Retirement Community 6793-6796

Campbell, Ian (Oregon Health & Science Univ.); Austin, Daniel (Oregon Health & Science Univ.);
Hayes, Tamara (Oregon Health & Science Univ.); Pavel, Michael (Oregon Health & Science Univ.);
Riley, Thomas (Oregon Health & Science Univ.); Mattek, Nora (Oregon Health & Science Univ.);
Kaye, Jeffrey A. (Oregon Health & Science Univ.)*

08:15-08:30   SaA10.2
Detailed Analysis of the Relationship between Tracheal Breath Sounds and
Airflow in Relation to OSA During Wake and Sleep **6797-6800**
  Yadollahi, Azadeh* (Toronto Rehab Inst.); Moussavi, Zahra (Univ. of Manitoba)

08:30-08:45   SaA10.3
Wide-Field Fluorescent Microscopy on a Cell-Phone **6801-6804**
  Zhu, Hongying* (UCLA); Ozcan, Aydogan (UCLA)

08:45-09:00   SaA10.4
Instrumented Insole vs. Force Plate: A Comparison of Center of Plantar Pressure **6805-6809**
  Dyer, Philip S* (Univ. of Utah); Bamberg, Stacy J Morris (Univ. of Utah)

09:00-09:15   SaA10.5
Aedes Aegypti Egg Counting System **6810-6812**
  Gomes Netto Monte da Silva, Marilú (Federal Univ. of Pernambuco); Rodrigues, Marco Aurélio Benedetti
  (Federal Univ. of Pernambuco); de Araujo, Renato Evangelista* (Federal Univ. of Pernambuco)

09:15-09:30   SaA10.6
Liquid Cooling System for the Vibro-Tactile Threshold Device **6813-6816**
  Parsons, Erin* (Univ. of Utah); Redd, Christian Brandt (Univ. of Utah); Gandhi, Minu (Univ. of Utah);
  Tuckett, Robert (Univ. of Utah); Bamberg, Stacy J Morris (Univ. of Utah)

SaA11: 08:00-09:30   Wellesley Marriott
5.1.12 Cardiovascular Mechanics (Oral Session)
Chair: Soraghan, John J. *(Univ. of Strathclyde)*
Co-Chair: Nadkarni, Seemantini *(Massachusetts General Hospital, Harvard Medical School)*

08:00-08:15   SaA11.1
Left Ventricular Model Parameters and Cardiac Rate Variability **6817-6820**
  Palladino, Joseph* (Trinity College); Noordergraaf, Abraham (Univ. of Pennsylvania);
  Zukus, Ryan (Trinity College); Marchidan, Andrei (Trinity College)

08:15-08:30   SaA11.2
CMRI Based 3D Left Ventricle Motion Analysis on Patients with Acute Myocardial Infarction **6821-6824**
  Gao, Hao* (Univ. of Strathclyde); Kadir, Kushsairy (Univ. of Strathcylde); Berry, Colin (Univ. of Glasgow);
  Payne, Alexander (Univ. of Glasgow); Soraghan, John J (Univ. of Strathclyde); Luo, Xiaoyu (Univ. of Glasgow)

08:30-08:45   SaA11.3
Replication of the Frank-Starling Response in a Mock Circulation Loop **6825-6828**
  Gregory, Shaun David* (Queensland Univ. of Tech.); Stevens, Michael Charles (Univ. of Queensland);
  Timms, Daniel Lee (Bivacor Pty Ltd); Pearcy, Mark (Queensland Univ. of Tech.)

08:45-09:00   SaA11.4
Polynomial Regularization for Robust MRI-Based Estimation of
Blood Flow Velocities and Pressure Gradients **6829-6832**
  Delles, Michael* (Karlsruhe Inst. of Tech. (KIT)); Rengier, Fabian (Dept. of Diagnostic & Interventional Radiology,
  Univ. Hospital Heidelberg); Ley, Sebastian (Dept. of Diagnostic & Interventional Radiology, Univ. Hospital
  Heidelberg); von Tengg-Kobligk, Hendrik (Dept. of Diagnostic & Interventional Radiology, Univ. Hospital
  Heidelberg); Kauczor, Hans-Ulrich (Dept. of Diagnostic & Interventional Radiology, Univ. Hospital Heidelberg);
  Dillmann, Rüdiger (Karlsruhe Inst. of Tech. (KIT)); Unterhinninghofen, Roland (Karlsruhe Inst. of Tech. (KIT))

09:00-09:15   SaA11.5
Identification of Nonlinear Cardiac Cell Dynamics Using Radial Basis Function Regression **6833-6836**
  Kanaan-Izquierdo, Samir (Univ. Politecnica de Catalunya); Velazquez, Susana (Univ. Politecnica de
  Catalunya); Benitez, Raul* (Univ. Politecnica de Catalunya)

5.1.21 Computational Modeling of Lung Mechanical Function (Minisymposium)
Chair: Bates, Jason H.T. *(Univ. of Vermont, Coll. of Medicine)*
Co-Chair: Kaczka, David W. *(Harvard Medical School/Beth Israel Deaconess Med Ctr.)*

08:00-08:15   SaA12.1
Modeling the Dynamics of Active Airway Narrowing .... *
Bates, Jason H T* (Univ. of Vermont, College of Medicine)

08:15-08:30   SaA12.2
Linking Changes in Mechanical Impedance to Altered Lung Structure Using Computational Modeling .... *
Kaczka, David W.* (Harvard Medical School/Beth Israel Deaconess Med Ctr.)

08:30-08:45   SaA12.3
Model Predictions of Spatial Self-Organization and Symmetry Breaking in the Lung .... *
Winkler, Tilo* (Massachusetts General Hospital & Harvard Medical School)

08:45-09:00   SaA12.4
Modeling the Progression of Lung Parenchymal Diseases .... *
Suki, Bela* (Boston Univ.)

SaA13: 08:00-09:30   Arlington Marriott

4.6.13 Bioinformatics for Integrated Genomics I (Oral Session)
Chair: Chang, Hsun-Hsien *(Childen's Hospital Boston)*
Co-Chair: Wang, May Dongmei *(Georgia Tech. & Emory Univ.)*

08:00-08:15   SaA13.1
**A Phenotype-Driven Dimension Reduction (PhDDR) Approach to
Integrated Genomic Association Analyses** 6837-6840
*Gao, Cuilan (Dept. of Biostatisitcs, St. Jude Children's Research Hospital);
Cheng, Cheng* (St.Jude Children's Research Hospital)*

08:15-08:30   SaA13.2
**Image Processing Challenges in the Creation of Spatiotemporal Gene
Expression Atlases of Developing Embryos** 6841-6844
Castro Gonzalez, Carlos (Univ. Politécnica de Madrid); Luengo-Oroz, Miguel Angel (Univ. Politécnica de
Madrid); Duloquin, Louise (CNRS); Savy, Thierry (Ecole Polytechnique); Melani, Camilo (Univ. de Buenos
Aires); Desnoulez, Sophie (CNRS); Bourgine, Paul (Ecole Polytechnique); Peyrieras, Nadine (CNRS);
Ledesma-Carbayo, Maria J. (Univ. Politécnica de Madri); Santos, Andres (Univ. Politecnica Madrid)*

08:30-08:45   SaA13.3
Enrichment of Protein Expression Datasets through Protein-Protein Interaction Analysis 6845-6848
*Massanet-Vila, Raimon (Univ. Politècnica de Catalunya); Padró, Teresa (Cardiovascular Research Ctr. (CSIC-
ICCC), IIB Sant Pau, Barcelona, Spain); Cardús, Anna (Cardiovascular Research Ctr. (CSIC-ICCC), IIB Sant Pau,
Barcelona, Spain,); Badimón, Lina (Cardiovascular Research Ctr. (CSIC-ICCC), IIB Sant Pau, Barcelona, Spain);
Caminal, Pere (Technical Univ. of Catalonia (UPC)); Perera, Alexandre* (Univ. Politècnica de Catalunya)*

08:45-09:00   SaA13.4
Phenotype Prediction by Integrative Network Analysis of SNP and Gene Expression Microarrays 6849-6852
Chang, Hsun-Hsien (Childen's Hospital Boston);
McGeachie, Michael (Channing Lab, Brigham & Women's Hospital, Harvard Medical School)*

09:00-09:15   SaA13.5
**Prioritizing Predicted Cis-Regulatory Elements for Co-Expressed Gene
Sets Based on Lasso Regression Models** 6853-6856
Hu, Hong (Univ. of Illinois at Chicago); Roqueiro, Damian (Univ. of Illinois at Chicago);
Dai, Yang (Univ. of Illinois at Chicago)*

09:15-09:30   SaA13.6

Topology Aware Functional Similarity of Protein Interaction Networks Based on Gene Ontology 6857-6860

Li, Fei (Beijing Inst. of Radiation Medicine); Cui, Xiuliang (Beijing Inst. of Radiation Medicine,);
Xie, Dafei (Beijing Inst. of Radiation Medicine); Bo, Xiaochen (Beijing Inst. of Radiation Medicine);
Wang, Shengqi (Beijing Inst. of Radiation Medicine)*

SaA15:   08:00-09:30   Clarendon Marriott
7.5.1 Stem Cells in Regenerative Medicine (Minisymposium)
Chair: Alsberg, Eben *(Case Western Res. Univ.)*
Co-Chair: Radisic, Milica *(Univ. of Toronto)*

08:00-08:15   SaA15.1

**Guiding Stem Cell Fate in High-Density Hmsc Systems with Incorporated Bioactive
Microspheres for Cartilage Tissue Engineering .... ***

Solorio, Loran (Case Western Reserve Univ.); Alsberg, Eben* (Case Western Reserve Univ.)

08:15-08:30   SaA15.2

**Comparison between Embryonic Stem Cell and Adult Bone Marrow-Derived
Mesenchymal Stem Cells for Chondrogenesis .... ***

Brown, Patrick (Univ. of Wisconsin-Madison); Li, Wan-Ju* (Univ. of Wisconsin-Madison)

08:30-08:45   SaA15.3

In Vitro Model System for Cardiac Stem Cell Therapy .... *

Radisic, Milica* (Univ. of Toronto)

SaA16:   08:00-09:30   Darthmouth Marriott
9.6.3 Ablation Therapies (Oral Session)
Chair: Poon, Carmen CY *(The Chinese Univ. of Hong Kong)*
Co-Chair: Gilbert, James *(Covidien)*

08:00-08:15   SaA16.1

Nanosecond Pulsed Electric Field Ablation of Hepatocellular Carcinoma 6861-6865

Beebe, Stephen (Old Dominion Univ.); Chen, Xinhua (Old Dominion Univ.);
Liu, Jie (Old Dominion Univ.); Schoenbach, Karl (Old Dominion Univ.)*

08:15-08:30   SaA16.2

Mathematical Study of the Effects of Different Intrahepatic Cooling on Thermal Ablation Zones 6866-6869

Peng, Tingying (Univ. of Oxford); O'Neill, David Patrick (Univ. of Oxford);
Payne, Stephen John (Univ. of Oxford)*

08:30-08:45   SaA16.3

A New System Architecture Improves Output Power Regulation in Electrosurgical Generators 6870-6873

Friedrichs, Daniel* (Univ. of Colorado); Erickson, Robert (Univ. of Colorado); Gilbert, James (Covidien)

08:45-09:00   SaA16.4

**Design of a New Probe for Tumor Treatment in the Alternate Thermal
System Base on Numerical Simulation 6874-6877**

*Cai, Zhanghao (School of Biomedical Eng. & Med-X Research Inst., Shanghai Jiaotong Univ.);
Song, Mingyang (SJTU); Sun, Jianqi* (Shanghai Jiao Tong Univ.); Zhang, Aili (Shanghai Jiao Tong Univ.);
Xu, Lisa Xuemin (Shanghai Jiaotong Univ.)*

09:00-09:15   SaA16.5

**Experimental and Theoretical Study of an Internally Cooled Bipolar Electrode for
RF Coagulation of Biological Tissues 6878-6881**

González, Ana (Polytechnic Univ. of Valencia); Alba, José (Polytechnic Univ. of Valencia);
Trujillo, Macarena (Univ. Politécnica de Valencia); Berjano, Enrique (Polytechnic Univ. of Valencia)*

3.4.8 In Vivo Neurotransmitter Sensing: State of the Art and Applications (Oral Session)
Chair: Besio, W.G. *(Univ. of Rhode Island)*
Co-Chair: Kennedy, Robert *(Univ. of Michigan)*

08:00-08:15   SaA17.1
High Temporal and Spatial Resolution Monitoring of Neurochemicals in Vivo Using Sampling and Segmented Flow .... *
  Kennedy, Robert* (Univ. of Michigan)

08:15-08:30   SaA17.2
Cell–based Neurotransmitter Fluorescent Engineered Reporters (CNiFERs) to Image Neurotransmitter Modulation of Brain Activity .... *
  Muller, Arnaud* (Univ. of California San Diego); Schroeder, Lee (Univ. of California San Diego);
  Taylor, Natalie (Salk Inst. for Biological Studies); Slesinger, Paul (Salk Inst. for Biological Studies);
  Kleinfeld, David (Univ. of California San Diego)

08:30-08:45   SaA17.3
Conformal Ceramic-Based Microelectrode Arrays for Second-By-Second Measurements of Neurotransmitters in the CNS .... *
  Gerhardt, Greg* (Univ. of Kentucky Medical Ctr.); Pomerleau, Francois (Univ. of Kentucky Medical Ctr.);
  Burmeister, Jason (Univ. of Kentucky Medical Ctr.); Huettl, Peter (Univ. of Kentucky Medical Ctr.)

08:45-09:00   SaA17.4
Advancements in PET Radiotracer Development for Neuroscience Applications .... *
  Hooker, Jacob* (MGH & Harvard Medical School)

09:00-09:15   SaA17.5
Luminescent Glucose and Lactate Sensors Using Nanoparticles and Fiber Optics for Neurochemical Monitoring .... *
  McShane, Mike* (Texas A&M Univ.)

09:15-09:30   SaA17.6
Neurotransmitter Modulation in Rat Hippocampus via Extracranial Focal Electrical Stimulation .... *
  Besio, W.G.* (Univ. of Rhode Island); Luna-Munguía, Hiram (Ctr. for Research & Advanced Studies);
  Rocha, Luisa (Ctr. for Research & Advanced Studies)

3.7.20 Wearable Sensors and Systems II (Oral Session)
Chair: Van Hoof, Chris *(IMEC)*
Co-Chair: Sazonov, Edward *(Univ. of Alabama)*

08:00-08:15   SaA19.1
An In-The-Ear Platform for Recording Electroencephalogram 6882-6885
  Looney, David* (Imperial College London); Park, Cheolsoo (Imperial College London); Kidmose, Preben
  (Aarhus Univ., Denmark); Rank, Mike Lind (Widex A/S); Ungstrup, Michael (Widex A/S); Rosenkranz, Karin
  (UCL Inst. of Neurology, WC1N 3BG London, UK); Mandic, Danilo (Imperial College)

08:15-08:30   SaA19.2
Ultra-Thin Chip Package (UTCP) and Stretchable Circuit Technologies for Wearable ECG System 6886-6889
  Sterken, Tom (IMEC); Vanfleteren, Jan (IMEC/Ghent Univ.); Torfs, Tom (IMEC); Op de Beeck, Maaike* (IMEC);
  Bossuyt, Frederick (TFCG IMEC Ghent); Van Hoof, Chris (IMEC)

08:30-08:45   SaA19.3
Swallowing Detection by Sonic and Subsonic Frequencies: A Comparison 6890-6893
  Fontana, Juan M.* (Univ. of Alabama); Melo, Pedro Lopes (Univ. do Estado do Rio de Janeiro);
  Sazonov, Edward (Univ. of Alabama)

08:45-09:00   SaA19.4

A Real Time, Wearable ECG and Continous Blood Pressure Monitoring System for First Responders ... 6894-6898

Ribeiro, David (Univ. of Aveiro); Ferreira Marques, Fábio André (Univ. of Aveiro); Colunas, Márcio (Inst. of Elec.& Telematics Eng. of Aveiro, Univ. of Aveiro); Fernandes, José Maria (Univ. of Aveiro (PT 501461108)); Cunha, João Paulo Silva* (Univ. of Aveiro)

09:00-09:15   SaA19.5

Telefetalcare: A First Prototype of a Wearable Fetal Electrocardiograph 6899-6902

Fanelli, Andrea* (Politecnico di Milano); Signorini, Maria G. (Politecnico di Milano); Ferrario, Manuela (Politecnico di Milano); Perego, Paolo (Politecnico di Milano, Indaco dept.); Piccini, Luca (Politecnico di Milano); Andreoni, Giuseppe (Politecnico di Milano); Magenes, Giovanni (Univ. of Pavia)

09:15-09:30   SaA19.6

A Wearable ECG-HR Detector and Its Application to Automatic Assist-Mode Selection of an Electrically Assisted Bicycle 6903-6906

Ueno, Akinori* (Tokyo Denki Univ.); Miyashita, Osamu (Tokyo Denki Univ.); Yoshida, Toshiya (Tokyo Denki Univ.); Yamamoto, Junich (Tokyo Denki Univ.); Lataire, Philippe (Vrije Univ. Brussel)

SaA20: 08:00-09:30   Salons CD Marriott
3.6.22 Body Sensor Networks (Oral Session)
Chair: Lymberis, Andreas *(European Commission)*
Co-Chair: Maglaveras, Nikolaos *(Aristotle Univ. of Thessaloniki)*

08:00-08:15   SaA20.1

Initial Study on Pulse Wave Velocity Acquired from One Hand Using Two Synchronized Wireless Reflectance Pulse Oximeters 6907-6910

Li, Kejia* (Kansas State Univ.); Warren, Steve (Kansas State Univ.)

08:15-08:30   SaA20.2

A Trimodal System for the Acquisition of Synchronous Echocardiography, Electrocardiography, and Seismocardiography Data 6911-6914

Wick, Carson* (Georgia Inst. of Tech.); Su, Jin-Jyh (Georgia Inst. of Tech.); Brand, Oliver (Georgia Inst. of Tech.); McClellan, James (Georgia Inst. of Tech.); Bhatti, Pamela (Georgia Inst. of Tech.); Tridandapani, Srini (Emory Univ.)

08:30-08:45   SaA20.3

The Smart Patches and Wearable Band (W-Band) for Comfortable Sleep Monitoring System 6915-6918

Lee, Seulki* (KAIST); Yan, Long (KAIST); Roh, Taehwan (KAIST); Hong, Sunjoo (KAIST); Yoo, Hoi-Jun (KAIST)

08:45-09:00   SaA20.4

A Wireless Modular Multi-Modal Multi-Node Patch Platform for Robust Biosignal Monitoring 6919-6922

Pantelopoulos, Alexandros* (West Wireless Health Inst.); Saldivar, Enrique (West Wireless Health Inst.); Roham, Masoud (West Wireless Health Inst.)

09:00-09:15   SaA20.5

Development of a Body Joint Angle Measurement System Using Imu Sensors 6923-6926

Bakhshi, Saba* (Univ. of Denver); Mahoor, Mohammad H. (Univ. of Denver); Davidson, Bradley (Univ. of Denver)

09:15-09:30   SaA20.6

Development of the Wireless Ultra-Miniaturized Inertial Measurement Unit WB-4: Preliminary Performance Evaluation 6927-6930

Lin, Zhuohua* (Waseda Univ.); Zecca, Massimiliano (Waseda Univ.); Sessa, Salvatore (Waseda Univ.); Bartolomeo, Luca (Waseda Univ.); Ishii, Hiroyuki (Waseda Univ.); Takanishi, Atsuo (Waseda Univ.)

1.2.23 Signal Processing in Physiological Systems IV (Oral Session)
Chair: Magenes, Giovanni *(Univ. of Pavia)*
Co-Chair: Reisner, Andrew *(Massachusetts General Hospital)*

08:00-08:15   SaA21.1
ECG-Based Detection of Body Position Changes Using a Laplacian Noise Model 6931-6934
  Mincholé, Ana* (Univ. of Zaragoza); Sornmo, Leif (Lund Univ.); Laguna, Pablo (Zaragoza Univ. & CIBER-BBN)

08:15-08:30   SaA21.2
Latency Variable Source Separation for Heart Rate Detection in Low-Quality ECG Signals 6935-6938
  Vullings, Rik* (Eindhoven Univ. of Tech.)

08:30-08:45   SaA21.3
Using Confidence Intervals to Assess the Reliability of Instantaneous Heart Rate and Respiratory Rate ... 6939-6942
  Chen, Xiaoxiao* (U.S. Army Medical Research & Materiel Command); Chen, Liangyou (Sears Holdings Corp.);
  Reisner, Andrew (Massachusetts General Hospital); Reifman, Jaques (U.S. Army Medical Research)

08:45-09:00   SaA21.4
A New Density-Ratio Based Approach for Patient-Specific Biomedical Monitoring 6943-6946
  Chen, Dongmei* (The Chinese Univ. of Hong Kong); Meng, Max Q.-H. (The Chinese Univ. of Hong Kong)

09:00-09:15   SaA21.5
An Efficient Method for Ectopic Beats Cancelation Based on Radial Basis Function 6947-6950
  Mateo, Jorge (Univ. of Castilla la Mancha); Torres, Ana (Univ. of Castilla la Mancha);
  Rieta, J. J.* (Univ. Politecnica de Valencia)

09:15-09:30   SaA21.6
Sympathetic Neural Recruitment Patterns During the Valsalva Maneuver 6951-6954
  Salmanpour, Aryan* (The Univ. of Western Ontario); Frances, Maria (the Univ. of Western Ontario);
  Goswami, Ruma (the Univ. of Western Ontario); Shoemaker, Kevin (the Univ. of Western Ontario)

SaA22: 08:00-09:30   Salon F Marriott

1.10.45 Principal Component Analysis (Oral Session)
Chair: Gao, Shangkai *(Tsinghua Univ.)*
Co-Chair: Molinari, Filippo *(Pol. di Torino)*

08:00-08:15   SaA22.1
Blind Separation and Localization of Correlated P300 Subcomponents from
Single Trial Recordings Using Extended PARAFAC2 Tensor Model 6955-6958
  Makki Abadi, Bahador* (Univ. of Surrey); Jarchi, Delaram (Univ. of Surrey); Sanei, Saeid (Univ. of Surrey)

08:15-08:30   SaA22.2
Learning Event-Related Potentials (ERPs) from Multichannel EEG Recordings:
A Spatio-Temporal Modeling Framework with a Fast Estimation Algorithm 6959-6962
  Wu, Wei* (Tsinghua Univ.); Gao, Shangkai (Tsinghua Univ.)

08:30-08:45   SaA22.3
A Non-Orthogonal SVD-Based Decomposition for Phase Invariant Error-Related Potential Estimation 6963-6966
  Phlypo, Ronald* (Grenoble Univ./CNRS); Jrad, Nisrine (GIPSA Lab – Grenoble Univ.); Rousseau, Sandra
  (ViBS Research Group, GIPSA-Lab, Univ. of Grenoble/CNRS); Congedo, Marco (cnrs)

08:45-09:00   SaA22.4
Principal Component Analysis to Quantify Anaesthetic Effects on Atrial Fibrillation Morphology 6967-6970
  Cervigon, Raquel* (UCLM); Moreno, Javier (Hospital Clínico); Reilly, Richard (Trinity College Dublin);
  Castells, Francisco (Univ. Politécnica de Valencia)

09:00-09:15   SaA22.5
A Hybrid Least Squares and Principal Component Analysis Algorithm for Raman Spectroscopy 6971-6974
  Van de Sompel, Dominique* (Stanford Univ.); Gambhir, Sanjiv Sam (Stanford Univ.)

09:15-09:30 SaA22.6

A Pipeline for Copy Number Variation Detection Based on Principal Component Analysis **6975-6978**

Chen, Jiayu* (Univ. of New Mexico); liu, Jingyu (Inst. of living); Boutte, David (The Mind Research Network); Calhoun, Vince (The Mind Research Network/Univ. of New Mexico)

SaA23: 08:00-09:30 Salon G Marriott
2.8.43 Brain Tissue and Tumor Segmentation (Minisymposium)
Chair: Khan, Iftekharuddin *(Univ. of Memphis)*
Co-Chair: Kakadiaris, Ioannis *(Univ. of Houston)*

08:00-08:15 SaA23.1

Multi-Parametric Analysis and Registration of Brain Tumors: Constructing Statistical Atlases and Diagnostic Tools of Predictive Value **6979-6981**

Davatzikos, Christos* (Univ. of Pennsylvania); Zacharaki, Evangelia (Univ. of Patras); Gooya, Ali (Univ. of Pennsylvania); Clark, Vanessa (Univ. of Pennsylvania)

08:15-08:30 SaA23.2

3D Slicer As a Tool for Interactive Brain Tumor Segmentation **6982-6984**

Kikinis, Ron* (Brigham & Women's Hospital & Harvard Medical School); Pieper, Steve (Isomics, Inc.)

08:30-08:45 SaA23.3

Multiresolution Texture Models for Brain Tumor Segmentation in MRI **6985-6988**

Khan, Iftekharuddin* (Univ. of Memphis); Shaheen, Ahmed (Univ. of Memphis); Jakir, Hossen (Univ. of Memphis)

08:45-09:00 SaA23.4

Discriminative and Generative Models for Brain Tumor MR Images .... *****

Prastawa, Marcel* (Univ. of Utah); Gerig, Guido (Univ. of Utah)

SaA24: 08:00-09:30 Salon HI Marriott
2.1.2 MR Neuroimaging (Oral Session)
Chair: Warfield, Simon K. *(Harvard Medical School)*
Co-Chair: Talavage, Thomas *(Purdue Univ.)*

08:00-08:15 SaA24.1

Combination of Nonlinear Registration Methods with High Resolution Fmri for a Fine Exploration of Human Primary Motor Hand Area **6989-6992**

Pizzagalli, Fabrizio (INSERM U836 UJF-CEA-CHU (Grenoble Inst. of Neuroscience)); Auzias, Guillaume (UMR CNRS 6168); Delon-Martin, Chantal (INSERM U836 UJF-CEA-CHU (Grenoble Inst. of Neuroscience)); Dojat, Michel* (INSERM U836 UJF-CEA-CHU (Grenoble Inst. of)

08:15-08:30 SaA24.2

Continuous Arterial Spin Labeling of Mouse Cerebral Blood Flow Using an Actively-Detuned Two-Coil System at 9.4T **6993-6996**

Lei, Hongxia* (Ecole Polytechnique Federale de Lausanne); Pilloud, Yves (Ecole Polytechnique Federale de Lausanne); Magill, Arthur (Ecole Polytechnique Federale de Lausanne); Gruetter, Rolf (Ecole Polytechnique Federale de Lausanne)

08:30-08:45 SaA24.3

On the Accuracy of Unwarping Techniques for the Correction of Susceptibility-Induced Geometric Distortion in Magnetic Resonance Echo-Planar Images **6997-7000**

Gholipour, Ali* (Children's Hospital Boston & Harvard Medical School); Kehtarnavaz, Nasser (Univ. of Texas at Dallas); Scherrer, Benoit (INSERM U836 UJF-CEA-CHU, IMAG); Warfield, Simon K. (Harvard Medical School)

08:45-09:00 SaA24.4

Cluster Sizes in Interleaved Silent Steady State (ISSS) Imaging **7001-7004**

Akrofi, Kwaku* (Univ. of Illinois at Urbana-Champaign); Sutton, Bradley P. (Univ. of Illinois at Urbana-Champaign); Ouyang, Cheng (Univ. of Illinois at Urbana-Champaign); Husain, Fatima (Univ. of Illinois at Urbana-Champaign)

09:00-09:15   SaA24.5

In vivo Manganese-enhanced MRI and Diffusion Tensor Imaging of Developing and Impaired Visual Brains **7005-7008**
Chan, Kevin C. (Univ. of Pittsburgh); Cheng, Joe S. (The Univ. of Hong Kong); Fan, Shu Juan (The Univ. of Hong Kong); Zhou, Iris Yuwen (The Univ. of Hong Kong); Wu, Ed X.* (The Univ. of Hong Kong)

09:15-09:30   SaA24.6

Generalized Regional Disorder-Sensitive-Weighting Scheme for 3D Neuroimaging Retrieval **7009-7012**
Liu, Sidong* (Univ. of Sydney); Cai, Weidong (Univ. of Sydney); Wen, Lingfeng (Univ. of Sydney); Eberl, Stefan (Royal Prince Alfred Hospital); Fulham, Michael (Royal Prince Alfred Hospital); Feng, Dagan (The Univ. of Sydney)

SaA25: 08:00-09:30   Salon JK Marriott
2.5.18 Electrical Source and Impedance Imaging (Oral Session)
Chair: Woo, Eung Je *(Kyung Hee Univ.)*
Co-Chair: Laine, Andrew *(Columbia Univ.)*

08:00-08:15   SaA25.1

Investigation of EEG and MEG Source Imaging Accuracy in Reconstructing Extended Cortical Sources **7013-7016**
Ding, Lei* (Univ. of Oklahoma); Yuan, Han (Laureate Inst. for Brain Research)

08:15-08:30   SaA25.2

A New Method for Localizing the Sources of Correlated Cross-Frequency Oscillations in Human Brains **7017-7020**
Tanaka, Hiroaki* (Kumamoto Univ.); Hayashida, Yuki (Osaka Univ.); Igasaki, Tomohiko (Kumamoto Univ.); Murayama, Nobuki (Kumamoto Univ.)

08:30-08:45   SaA25.3

Objective Evaluation of Somatic Sensation for Mechanical Stimuli by Means of Cortical Dipole Layer Imaging **7021-7024**
Hori, Junichi* (Niigata Univ.)

08:45-09:00   SaA25.4

High-Resolution MREIT Using Low Imaging Currents **7025-7028**
Woo, Eung Je* (Kyung Hee Univ.)

09:00-09:15   SaA25.5

A Portable Instrument for High-Speed Brain Function Imaging: Feiter **7029-7032**
McCann, Hugh* (Univ. of Manchester); Ahsan, Syed Talha (Univ. of Manchester); Davidson, John (The Univ. of Manchester); Robinson, Rebecca (The Univ. of Manchester); Wright, Paul (The Univ. of Manchester); Pomfrett, Chris (Univ. of Manchester)

09:15-09:30   SaA25.6

Electrical Impedance Tomography Reconstruction through Simulated Annealing with Incomplete Evaluation of the Objective Function **7033-7036**
Martins, Thiago de Castro (Escola Politecnica da Univ. de Sao Paulo); Camargo, Erick Dario Leon Bueno (Escola Politecnica da USP); Lima, Raul Gonzalez (Escola Politecnica da Univ. de Sao Paulo); Amato, Marcelo Brito Passos (Hospital da Clinicas da Univ. de Sao Paulo); Tsuzuki, Marcos de Sales Guerra* (Escola Politecnica da Univ. de Sao Paulo)

SaA27: 08:00-09:30   Staffordshire at the Westin
8.6.23 Surgical Robotics (Oral Session)
Chair: Fischer, Gregory *(Worcester Pol. Inst.)*
Co-Chair: Riviere, Cameron N. *(Carnegie Mellon Univ.)*

08:00-08:15   SaA27.1

Design of a Force-Reflective Master Robot for Haptic Telesurgery Applications: RoboMaster1 .... **7037-7040**
Hadavand, Mostafa (Sharif Univ. of Tech.); Mirbagheri, Alireza (Sharif Univ. of Tech.); Farahmand, Farzam* (Sharif Univ. of Tech.)

08:15-08:30   SaA27.2

Fourier Modeling of Porcine Heartbeat and Respiration in Vivo for Synchronization of HeartLander Robot Locomotion **7041-7044**

Wood, Nathan* (Carnegie Mellon Univ.); Patronik, Nicholas (St. Jude Medical); Zenati, Marco (Harvard Medical School); Riviere, Cameron N (Carnegie Mellon Univ.)

08:30-08:45   SaA27.3

In Vivo Experiments of a Surgical Robot with Vision Field Control for Single Port Endoscopic Surgery **7045-7048**

Sekiguchi, Yuta* (Waseda Univ.); Kobayashi, Yo (Waseda Univ.); Watanabe, Hiroki (Waseda Univ.); Tomono, Yu (Waseda Univ.); Noguchi, Takehiko (Waseda Univ.); Takahashi, Yu (Waseda Univ.); Fujie, Masakatsu G. (Waseda Univ.)

08:45-09:00   SaA27.4

Real-Time Control and Evaluation of a Teleoperated Miniature Arm for Single Port Laparoscopy **7049-7053**

Sánchez Secades, Luis Alonso* (Laboratoire d'Informatique, de Robotique et de Microélectronique de Montpellier); Liu, Chao (LIRMM – CNRS); Stefanini, Cesare (Scuola Superiore Sant'Anna); Zemiti, Nabil (Univ. Montpellier); Menciassi, Arianna (Scuola Superiore Sant'Anna); Poignet, Philippe (LIRMM, UMR CNRS 5506,Univ. of Montpellier II); Dario, Paolo (IIT Italian Inst. of Tech.)

09:00-09:15   SaA27.5

3D Force Control for Robotic-Assisted Beating Heart Surgery Based on Viscoelastic Tissue Model **7054-7058**

Liu, Chao* (LIRMM – CNRS); Moreira, Pedro (LIRMM-UMR CNRS, Univ. of Montpellier II); Zemiti, Nabil (Univ. Montpellier); Poignet, Philippe (LIRMM, UMR CNRS 5506,Univ. of Montpellier II)

SaAT1: 09:30-10:30   Provincetown Marriott
4.5.9 Modeling Biomedical Systems I (Minisymposium)
Chair: Dai, Hongyue *(Merck Res. Lab. Boston, Massachusetts)*
Co-Chair: Tidor, Bruce *(Massachusetts Inst. of Tech.)*

09:30-10:00   SaAT1.1

Predictive Patient Stratification through Parameter Reduction, Modeling, and Simulation .... *****

Natarajan, Madhusudan* (Pfizer); Jasper, Paul (RES Group, Inc.); Boukharov, Natalia V. (Natalia V. Boukharov); Crawford, Matthew E. (Matthew E. Crawford); Chabot, Jeffrey (Pfizer, Inc.); Gomes, Bruce (Pfizer, Inc.)

10:00-10:30   SaAT1.2

Large Scale Gene Expression Analysis of Cellular States .... *****

Subramanian, Aravind* (Broad Inst.)

SaP11: 09:30-11:00   America Ballroom Westin
1.1.3 Time-Scale, Wavelets and Empirical Mode Decomposition (Poster Session)

09:30-11:00   SaP11.1

Wepilet, Optimal Orthogonal Wavelets for Epileptic Seizure Prediction with One Single Surface Channel **7059-7062**

Bandarabadi, Mojtaba* (CISUC, Univ. of Coimbra); Teixeira, César (CISUC, Univ. of Coimbra); Sales, Francisco (Hospitais da Univ. de Coimbra); Dourado, António (FCTUC, Univ. of Coimbra)

09:30-11:00   SaP11.2

Spike Detection in the Preterm Fetal Sheep EEG Using Haar Wavelet Analysis **7063-7066**

Walbran, Anita Charlotte* (The Univ. of Auckland); Unsworth, Charles Peter (Univ. of Auckland); Gunn, Alistair Jan (Univ. of Auckland); Bennet, Laura (The Univ. of Auckland)

09:30-11:00   SaP11.3

Electroencephalographic Compression Based on Modulated Filter Banks and Wavelet Transform **7067-7070**

Bazán-Prieto, Carlos (Univ. Central "Marta Abreu" de Las Villas); Cárdenas-Barrera, Julián (Univ. Central "Marta Abreu" de Las Villas); Blanco-Velasco, Manuel* (Univ. of Alcala); Cruz-Roldán, Fernando (Univ. de Alcalá)

09:30-11:00   SaP11.4

Multiscale Autoregressive Identification of Neuro-Electrophysiological Systems **7071-7074**

Gilmour, Timothy P.* (The Pennsylvania State Univ.); Subramanian, Thyagarajan (Penn State Univ.)

09:30-11:00 SaP11.5

Towards Automated Ingestion Detection: Swallow Sounds **7075-7078**

Walker, William* (Univ. of Texas at Dallas); Bhatia, Dinesh (The Univ. of Texas at Dallas)

09:30-11:00 SaP11.6

Efficient Thresholding-Based ECG Compressors for High Quality
Applications Using Cosine Modulated Filter Banks **7079-7082**

Hernando-Ramiro, Carlos (Univ. of Alcalá); Blanco-Velasco, Manuel* (Univ. of Alcala);
Cruz-Roldán, Fernando (Univ. de Alcalá); Pedroviejo-Benito, Fátima (Univ. of Alcalá)

09:30-11:00 SaP11.7

Effect of Acute Myocardial Ischemia on Different High-Frequency Bandwidths and
Temporal Regions of the QRS **7083-7086**

Magrans, Rudys (Univ. Politècnica de Catalunya); Gomis, Pedro* (Technical Univ. of Catalonia);
Voss, Andreas (Univ. of Applied Sciences Jena); Caminal, Pere (Technical Univ. of Catalonia (UPC))

09:30-11:00 SaP11.8

A Wavelet Based Technique for Suppression of EMG Noise and Motion Artifact in Ambulatory ECG **7087-7090**

Mithun, P (IIT Bombay); Pandey, Prem C.* (IIT Bombay); Sebastian, Toney (IIT Bombay);
Mishra, Prashant (ECIL Hydrabad); Pandey, Vinod K. (Tata Consultancy Services,)

09:30-11:00 SaP11.9

Cubic Spline Interpolation with Overlapped Window and Data Reuse for On-Line
Hilbert Huang Transform Biomedical Microprocessor **7091-7094**

Chang, Nai-Fu* (Natl. Taiwan Univ.); Chiang, Cheng-Yi (Natl. Taiwan Univ. DSP/IC Lab);
Chen, Tung-Chien (Natl. Taiwan Univ.); Chen, Liang-Gee (NTU)

09:30-11:00 SaP11.10

Telephone-Quality Pathological Speech Classification Using Empirical Mode Decomposition **7095-7098**

Kaleem, Muhammad Farhat* (Ryerson Univ.); Ghoraani, Behnaz (Ryerson Univ.);
Guergachi, Aziz (Ryerson Univ.); Krishnan, Sridhar (Ryerson Univ.)

09:30-11:00 SaP11.11

Differential Neural Responses to Acupuncture Revealed by MEG Using Wavelet-Based
Time-Frequency Analysis: A Pilot Study **7099-7102**

You, Youbo (Inst. of Automation, Chinese Acad. of Sciences); Bai, Lijun (Life Science Research Ctr., Xidian
Univ.); Dai, Ruwei (Inst. of Automation, Chinese Acad. of Sciences); Xue, Ting (Life Science Research Ctr.,
Xidian Univ.); Zhong, Chongguang (Inst. of Automation, Chinese Acad. of Sciences); Feng, Yuanyuan (Inst. of
Automation); Wang, Hu (Inst. of Automation, Chinese Acad. of Sciences); Liu, Zhenyu (Inst. of Automation,
Chinese Acad. of Sciences); Tian, Jie* (Chinese Acad. of Sciences)

SaP12: 09:30-11:00 America Ballroom Westin
1.2.4 Biomedical Modeling and Simulation (Poster Session)

09:30-11:00 SaP12.1

Simulating Electrical Stimulation of Degenerative Retinal Ganglion Cells with Bi-Phasic Pulse Trains ... **7103-7106**

Kameneva, Tatiana* (Univ. of Melbourne); Grayden, David B. (Univ. of Melbourne);
Meffin, Hamish (Natl. ICT Australia); Burkitt, Anthony Neville (Univ. of Melbourne)

09:30-11:00 SaP12.2

Effect of Subthalamic Nucleus Interconnectivity at Deep Brain Stimulation
Onset and Offset: A Simulation Study **7107-7110**

Kang, Guiyeom* (Univ. College Dublin); Lowery, Madeleine (Univ. College Dublin)

09:30-11:00 SaP12.3

Artificial Neural Network Based Intracranial Pressure Mean Forecast
Algorithm for Medical Decision Support **7111-7114**

Zhang, Feng* (Inst. for Inforcomm Research Singapore); Feng, Mengling (Inst. for Infocomm Research);
Pan, Sinno Jialin (Inst. for Inforcomm Research); Loy, Liang Yu (Inst. for Inforcomm Research);
Guo, Wenyuan (Inst. for Inforcomm Research); Zhang, Zhuo (A*STAR); Chin, Pei Loon (Inst. for
Inforcomm Research); Guan, Cuntai (Inst. for Infocomm Research); King, Nicolas Kon Kam (Natl.
Neuroscience Inst. Singapore); Ang, Beng Ti (Natl. Neuroscience Inst.)

09:30-11:00   SaP12.4

**Cramér-Rao Bounds on the Performance of Simulated Annealing and
Genetic Algorithms in EEG Source Localization** **7115-7118**

Escalona-Vargas, Diana Irazú (Cinvestav Monterrey); Gutierrez, David (Cinvestav Monterrey);
Lopez-Arevalo, Ivan (Cinvestav Tamaulipas)*

09:30-11:00   SaP12.5

**Diagnostic Biomarkers for Alzheimer's Disease Using Dynamic Nonlinear
Models Based on Principal Dynamic Modes** **7119-7122**

Marmarelis, Vasilis (Univ. of Southern California); Shin, Dae (Univ. of Southern California); Diaz-Arrastia, Ramon
(Univ. of Texas Southwestern Medical Ctr.); Zhang, Rong (Univ. of Texas Southwestern Medical Ctr. at Dallas)*

09:30-11:00   SaP12.6

Video Assessment of Finger Tapping for Parkinson's Disease and Other Movement Disorders **7123-7126**

Criss, Kjersten* (Portland State Univ.); McNames, James (Portland State Univ.)

09:30-11:00   SaP12.7

Surface EMG Model of the Bicep During Aging: A Preliminary Study **7127-7130**

Wheeler, Katherine A. (RMIT); Kant Kumar, Dinesh (RMIT Univ.); Shimada, Hirokazu (Oita Natl. College of
Tech.); Poosapadi Arjunan, Sridhar (RMIT Univ.)*

09:30-11:00   SaP12.8

**System Identification of Mechanomyograms Detected with an
Acceleration Sensor and a Laser Displacement Meter** **7131-7134**

Uchiyama, Takanori* (Keio Univ.); Shinohara, Keita (Graduate School of Science & Tech., Keio Univ.)

09:30-11:00   SaP12.9

Modeling MR Induced Artifacts Contaminating Electrophysiological Signals Recorded During MRI **7135-7138**

El-Tatar, Aziz* (Univ. de Technologie de Compiègne); Fokapu, Odette (UTC)

09:30-11:00   SaP12.10

Simulated Performance Intensity Functions **7139-7142**

Hines, Andrew* (Trinity College Dublin); Harte, Naomi (Trinity College Dublin)

09:30-11:00   SaP12.11

A Whole Body Statistical Shape Model for Radio Frequency Simulation **7143-7146**

*Lee, Su-Lin (Imperial College London); Ali, Khaleda (Queen Mary Univ. London); Brizzi, Alessio (Queen Mary
Univ. London); Keegan, Jennifer (Royal Brompton Hospital, London); Hao, Yang (Queen Mary Univ. London);
Yang, Guang-Zhong* (Imperial College London)*

SaP13: 09:30-11:00	America Ballroom Westin
1.4.13 Advances in Multivariate Signal Processing (Poster Session)	

09:30-11:00   SaP13.1

Classification of Multi-Modal Data for Self-Paced Binary BCI in Freely Moving Animals **7147-7150**

Eliseyev, Andrey* (Clinatec); Faber, Jean (Clinatec); Aksenova, Tetiana (Clinatec)

09:30-11:00   SaP13.2

EEG Source Localization Based on Multivariate Autoregressive Models Using Kalman Filtering **7151-7154**

Giraldo, Eduardo (Univ. Tecnologica de Pereira); Castellanos-Dominguez, Germán (Univ. Nacional de
Colombia); Padilla-Buritica, Jorge Ivan (Univ. Nacional de Colombia, sede Manizales)*

09:30-11:00   SaP13.3

Community Detection for Directional Neural Networks Inferred from EEG Data **7155-7158**

Liu, Ying* (Michigan State Univ.); Moser, Jason (Michigan state Univ.); Aviyente, Selin (Michigan State Univ.)

09:30-11:00   SaP13.4

Detection and Removal of Stimulation Artifacts in Electroencephalogram Recordings **7159-7162**

Hoffmann, Ulrich* (Tecnalia Research & Innovation); Keller, Thierry (Tecnalia Research & Innovation)

09:30-11:00   SaP13.5

**Comparative Muscle Study Fatigue with sEMG Signals During the Isotonic and
Isometric Tasks for Diagnostics Purposes** **7163-7166**

Vela, Jhon Freddy (Federal Univ. of Espirito Santo); Benevides, Alessandro (Federal Univ. of Espirito Santo);
Moreira, Marcelo (Federal Univ. of Espirito Santo); Elias, Arlindo (Univ. Federal do Espírito Santo);
Bastos, Teodiano (Univ. Federal do Espírito Santo); Silva, Ian (Federal Univ. of Espirito Santo);
Chamorro, Claudinei (Federal Univ. of Espirito Santo)*

SaP14: 09:30-11:00   America Ballroom Westin
1.10.19 Principal Component Analysis and Independent Component Analysis (Poster Session)

09:30-11:00   SaP14.1

Sparse Approximation of Long-Term Biomedical Signals for Classification via Dynamic PCA **7167-7170**

Xie, Shengkun (Ryerson Univ., Canada); Jin, Feng* (Ryerson Univ.); Krishnan, Sridhar (Ryerson Univ.)

09:30-11:00   SaP14.2

**Principle Component Analysis on Photoplethysmograms: Blood Oxygen
Saturation Estimation and Signal Segmentation** **7171-7174**

Li, Kejia* (Kansas State Univ.); Warren, Steve (Kansas State Univ.)

09:30-11:00   SaP14.3

Bed Posture Classification for Pressure Ulcer Prevention **7175-7178**

*Yousefi, Rasoul (Univ. of Texas at Dallas); Sarah, Ostadabbas (Univ. of Texas at Dallas); Faezipour, Miad
(Univ. of Texas at Dallas); Farshbaf, Masoud (Univ. of Texas at Dallas); Nourani, Mehrdad* (Univ. of Texas at
Dallas); Tamil, Lakshman (Univ. of Texas at Dallas); Pompeo, Matthew (Presbyterian Wound Care Clinic)*

09:30-11:00   SaP14.4

**Dimensionality Reduction for the Quantitative Evaluation of a
Smartphone-Based Timed up and Go Test** **7179-7182**

Palmerini, Luca (Univ. of Bologna); Mellone, Sabato (Univ. of Bologna); Rocchi, Laura (Univ. of Bologna);
Chiari, Lorenzo (Univ. of Bologna)*

09:30-11:00   SaP14.5

Comparison of EEG Blind Source Separation Techniques to Improve the Classification of P300 Trials **7183-7186**

Cashero, Zach* (Colorado State Univ.); Anderson, Chuck (Colorado State Univ.)

SaP15: 09:30-11:00   America Ballroom Westin
2.2.7 Ultrasound Imaging (Poster Session)

09:30-11:00   SaP15.1

**Ultrasound Standoff Optimization for Maximum Image Quality of a
Robot-Assisted Flat-Panel Ultrasound Device** **7187-7190**

Gumprecht, Jan (Technische Univ. München); Bartl, Andreas (Technische Univ. München);
Stolzenburg, Jens-Uwe (Univ. of Leipzig); Lueth, Tim (Technical Univ. of Munich)*

09:30-11:00   SaP15.2

A Momentum-Based Constraint on Optical Flow Tracking of the Endocardial Surface **7191-7194**

Gamarnik, Viktor (Columbia Univ.); Po, Ming Jack (Columbia Univ.); Lorsakul, Auranuch (Columbia Univ.);
Duan, Qi (NIH); Laine, Andrew (Columbia Univ.)*

09:30-11:00   SaP15.3

**Development of an Interactive Coronary Doppler Vibrometry System for
Detection of Coronary Artery Disease** **7195-7198**

Choi, Joon Hwan (Univ. of Washington); Comess, Keith (Corazonx, Inc.); Xu, Canxing (Univ. of Washington);
Park, Jongin (Pohang Univ. of Science & Tech.); Kim, Yongmin (Univ. of Washington)*

09:30-11:00   SaP15.4

**Imaging of Sebaceous Glands in Human Skin by Three-Dimensional Ultrasound
Microscopy and Its Relation to Elasticity** **7199-7202**

*Kumagai, Kazutoshi (Tohoku Univ.); Koike, Hideyuki (Tohoku Univ.); Kudo, Yukina (Tohoku Univ.);
Nagaoka, Ryo (Tohoku Univ.); Kubo, Kiyono (Tohoku Univ.); Kobayashi, Kazuto (Honda Elec.Co., Ltd.);
Saijo, Yoshifumi* (Tohoku Univ.)*

09:30-11:00 SaP15.5

Tubular Structure Enhancement for Surgical Instrument Detection in 3D Ultrasound 7203-7206

Ren, Hongliang* (Harvard Medical School & Childrens Hospital Boston);
Dupont, Pierre (Children's Hospital/Harvard Medical School)

09:30-11:00 SaP15.6

Effect of Therapeutic Ultrasound on Acoustically Sensitive Microcapsules 7207-7210

Thirumalai, Shruthi (San Jose State Univ.); Mobed-Miremadi, Maryam (San Jose State Univ.);
Sridhar-Keralapura, Mallika* (San Jose State Univ.)

09:30-11:00 SaP15.7

A Quantitative Study to Design an Experimental Setup for Photoacoustic Imaging 7211-7214

Marion, Adrien* (Univ. de Lyon, CREATIS ; CNRS UMR5220 ; Inserm U1044 ; INSA-Lyon ; Univ. Lyon 1,
France.); Boutet, Jérôme (CEA-LETI Minatec); Debourdeau, Mathieu (CEA-LETI, MINATEC);
Dinten, Jean-Marc (CEA-LETI, MINATEC); Vray, Didier (INSA-LYON, CNRS UMR5220, INSERM U630)

09:30-11:00 SaP15.8

Automatic Left Ventricle Detection in Echocardiographic Images for Deformable Contour Initialization 7215-7218

Seng, Cher Hau (Univ. of Wollongong); Demirli, Ramazan* (Villanova Univ.); Amin, Moeness G. (Villanova
Univ.); Seachrist, Jason L. (Gwynedd-Mercy College); Bouzerdoum, Abdesselam (Univ. of Wollongong)

09:30-11:00 SaP15.9

Segmentation of 2D Fetal Ultrasound Images by Exploiting Context
Information using Conditional Random Fields 7219-7222

Gupta, Lalit* (Philips Elec.India Ltd.); Sisodia, Rajendra Singh (Philips Research Asia – Bangalore);
Vajinepalli, Pallavi (Philips Research Asia – Bangalore); Firtion, Celine (Philips Elec.India Ltd);
Ramachandran, Ganesan (Philips Elec.India Ltd)

09:30-11:00 SaP15.10

Non-Invasive Assessment for Endothelial CD81 Expression via Targeted Microbubbles 7223-7225

Yan, Fei (Chinese Acad. of Sciences); Jin, Qiaofeng (Shenzhen Inst. of Advanced Tech., Chinese
Acad. of Sciences); Liu, Xin (Shenzhen Inst. of Advanced Tech., Chinese Acad. of Sciences);
Zheng, Hairong* (Shenzhen Inst of Advanced Tech)

SaP16: 09:30-11:00 America Ballroom Westin
6.3.49 Advances in Motor Neuroprostheses (Poster Session)

09:30-11:00 SaP16.1

Computational Study of Subdural and Epidural Cortical Stimulation of the Motor Cortex 7226-7229

Kim, Donghyeon (Gwangju Inst. of Science & Tech.); Jun, Sung Chan* (Gwangju Inst. of Science & Tech.);
Kim, Hyoung-Ihl (Gwangju Inst. of Science & Tech.)

09:30-11:00 SaP16.2

A Fully Implantable Stimulator with Wireless Power and Data Transmission for
Experimental Use in Epidural Spinal Cord Stimulation 7230-7233

Xu, Qi* (Huangzhong Univ. of Science & Tech., Wuhan, P.R. China); Li, Jun (Huangzhong Univ. of Science &
Tech.,Wuhan,P.R.China); Han, Wenjuan (Huangzhong Univ. of Science & Tech., Wuhan, P.R. China);
Zhou, Houlun (Huangzhong Univ. of Science & Tech., Wuhan, P.R. China)

09:30-11:00 SaP16.3

Mechanical Power of Ankle Plantar Flexion and Subjective Pain by Monophasic Electrical Stimulation 7234-7237

Suzuki, Tatsuto* (Maizuru Natl. College of Tech.); Watanabe, Takashi (Tohoku Univ.);
Saura, Ryuichi (Osaka Medical College); Uchiyama, Hironobu (Kansai Univ.)

09:30-11:00 SaP16.4

Efficient Search and Fit Methods to Find Nerve Stimulation Parameters for Multi-Contact Electrodes 7238-7241

Freeberg, Max* (Case Western Reserve Univ.); Schiefer, Matthew A. (Case Western Reserve Univ.);
Triolo, Ronald J. (US Dept. of Veterans Affairs & Case Western Reserve Univ.)

09:30-11:00   SaP16.5
Correlation between Mechanomyography Features and Passive Movements in
Healthy and Paraplegic Subjects **7242-7245**
  Krueger, Eddy* (Federal Technological Univ. of Paraná); Scheeren, Eduardo Mendonça (Federal Technological
  Univ. of Paraná); Nogueira-Neto, Guilherme (State Univ. of Campinas); Button, Vera Lúcia da Silveira Nantes
  (State Univ. of Campinas); Nohama, Percy (Univ. Tecnológica Federal do Paraná)

09:30-11:00   SaP16.6
Online Feedback Control of Functional Electrical Stimulation Using Dorsal Root Ganglia Recordings ... 7246-7249
  Bauman, Matthew J* (Univ. of Pittsburgh); Bruns, Tim M. (Univ. of Pittsburgh); Wagenaar, Joost (Univ. of
  Philadelphia); Gaunt, Robert (Univ. of Pittsburgh); Weber, Douglas (Univ. of Pittsburgh)

09:30-11:00   SaP16.7
Development of a Bayesian Recursive Algorithm to Find Free-Spaces for an Intelligent Wheelchair 7250-7253
  Nguyen, Anh V.* (Univ. of Tech., Sydney); Su, Steven Weidong (Univ. of Tech., Sydney);
  Nguyen, Hung T. (Univ. of Tech., Sydney)

SaP17: 09:30-11:00	America Ballroom Westin
6.7.53 Recent Developments in Virtual Reality in Rehabilitation (Poster Session)	

09:30-11:00   SaP17.1
Classification of EMG Signals Using Artificial Neural Networks for Virtual Hand Prosthesis Control 7254-7257
  Mattioli, Fernando Eduardo Resende* (Federal Univ. of Uberlândia); Lamounier Jr., Edgard (Federal Univ. of
  Uberlandia); Cardoso, Alexandre (Federal Univ. of Uberlandia); Soares, Alcimar (Federal Univ. of Uberlandia);
  Andrade, Adriano (Federal Univ. of Ubelandia)

09:30-11:00   SaP17.2
Pneumatic Robotic Device for Early Delivering of Rehabilitation Therapy **7258-7261**
  Morales, Ricardo, Ricardo (Univ. Miguel Hernandez); Badesa, Francisco Javier, Javier (Univ. Miguel Hernandez);
  Garcia, Nicolas, Nicolas* (Univ. Miguel Hernandez); Sabater, Jose Maria, Jose Maria (Univ. Miguel Hernandez);
  Perez, Carlos, Carlos (Univ. Miguel Hernandez)

09:30-11:00   SaP17.3
Visuomotor Discordance in Virtual Reality: Effects on Online Motor Control **7262-7265**
  Bagce, Hamid* (UMDNJ); Saleh, Soha (NJIT); Adamovich, Sergei (NJIT); Tunik, Eugene (Univ. of Medicine &
  Dentistry of New Jersey (UMDNJ))

SaP18: 09:30-11:00	America Ballroom Westin
6.9.55 Advances in Brain Physiology and Modeling (Poster Session)	

09:30-11:00   SaP18.1
Planar Saline Bath Phantom of the Rush Head Model **7266-7269**
  Shephard, Clarissa (North Carolina State Univ.); Jochum, Thomas* (Duke Univ.);
  Abzug, Zachary (Duke Univ.); Wolf, Patrick (Duke Univ.)

09:30-11:00   SaP18.2
A Mathematical Model to Explore the Interdependence between the
Serotonin and Orexin/Hypocretin Systems **7270-7273**
  Joshi, Alok* (Intelligent Systems Research Ctr., Univ. of Ulster); Wong-Lin, KongFatt (Univ. of Ulster);
  McGinnity, T. Martin (Univ. of Ulster); Prasad, Girijesh (Univ. of Ulster)

09:30-11:00   SaP18.3
Iono-Neuromorphic Implementation of Spike-Time-Dependent Synaptic Plasticity **7274-7277**
  Meng, Yicong (Massachusetts Inst. of Tech.); Poon, Chi-Sang* (Massachusetts Inst. of Tech.)

09:30-11:00   SaP18.4
Information Transfer between Neurons in the Motor Cortex Triggered by Visual Cues **7278-7281**
  Kim, Sanggyun* (Univ. of Illinois at Urbana-Champaign); Coleman, Todd (Univ. of Illinois);
  Takahashi, Kazutaka (Univ. of Chicago); Hatsopoulos, Nicholas (Univ. of Chicago)

09:30-11:00 SaP18.5

A Hardware-Based Computational Platform for Generalized Laguerre-Volterra MIMO Model for Neural Activities 7282-7285

Li, Will X. Y.* (City Univ. of Hong Kong); Chan, Rosa H. M. (Univ. of Southern California); Zhang, Wei (City Univ. of Hong Kong); Cheung, Ray C. C. (City Univ. of Hong Kong); Song, Dong (Univ. of Southern California); Berger, Theodore (Univ. of Southern California)

09:30-11:00 SaP18.6

A Mechanism to Explain Zero-Delay Bilateral Seizure Synchronization 7286-7289

Wang, Yang* (Case Western Reserve Univ.); Toprani, Sheela (Case Western Reserve Univ.); Vrabec, Tina (Case Western Reserve Univ.); Durand, Dominique (Case Western Reserve Univ.)

09:30-11:00 SaP18.7

Addition of Deep Brain Stimulation Signal to a Local Field Potential Driven Izhikevich Model Masks the Pathological Firing Pattern of an STN Neuron 7290-7293

Michmizos, Kostis P.* (Massachusetts Inst. of Tech.); Nikita, Konstantina (Natl. Technical Univ. of Athens)

SaP19: 09:30-11:00 America Ballroom Westin

6.10.56 Advances in the Analysis of Neural Signals (Poster Session)

09:30-11:00 SaP19.1

Implantable Neural Spike Detection Using Lifting-Based Stationary Wavelet Transform 7294-7297

Yang, Yuning* (Michigan State Univ.); Mason, Andrew (Michigan State Univ.)

09:30-11:00 SaP19.2

Real-Time Neuronal Networks Reconstruction Using Hierarchical Systolic Arrays 7298-7301

Yu, Bo* (Tsinghua Univ.); Mak, Terrence (Newcastle Univ.); Poon, Chi-Sang (Massachusetts Inst. of Tech.)

09:30-11:00 SaP19.3

LivBioSig: Development of a Toolbox for Online Bio-Signals Processing and Experimentation 7302-7305

Lorrain, Thomas (Aalborg Univ.); Niazi, Imran* (Aalborg Univ.); Thibergien, Olivier (Aalborg Univ.); Jiang, Ning (Univ. Medical Ctr. Goettingen); Farina, Dario (Bernstein Ctr. for Computational Neuroscience, Univ. Medical Ctr. Göttingen)

09:30-11:00 SaP19.4

A Data-Driven Process for the Development of an Eyes-Closed EEG Normative Database 7306-7309

Aguilar Herrero, Monica* (Bit&Brain Technologies S.L.); Congedo, Marco (cnrs); Minguez, Javier (Zaragoza Univ.)

09:30-11:00 SaP19.5

Afferent and Efferent Activity Control in the Design of Brain Computer Interfaces for Motor Rehabilitation 7310-7315

Ramos Murguialday, Ander* (Fatronik Tecnalia Germany)

09:30-11:00 SaP19.6

Independent Component Analysis As a Preprocessing Step for Data Compression of Neonatal EEG 7316-7319

Mijovic, Bogdan* (Katholieke Univ. Leuven); De Vos, Maarten (KU Leuven); Matic, Vladimir (Dept. of Elec. Eng. (ESAT-SCD), Katholieke Univ. Leuven, Belgium); Van Huffel, Sabine (Katholieke Univ. Leuven)

09:30-11:00 SaP19.7

Detection and Classification of Multiple Finger Movements Using a Chronically Implanted Utah Electrode Array 7320-7323

Egan, Joshua* (Univ. of Utah); Baker, Justin (Univ. of Utah); House, Paul (Univ. of Utah); Greger, Bradley (Univ. of Utah)

09:30-11:00 SaP19.8

Assessing Directed Information As a Method for Inferring Functional Connectivity in Neural Ensembles 7324-7327

So, Kelvin* (Univ. of California, Berkeley); Gastpar, Michael (Univ. of California, Berkeley); Carmena, Jose M. (Univ. of California, Berkeley)

09:30-11:00   SaP19.9

Stochastic Resonance with a Mixture of Sub and Supra-Threshold Stimuli in a Population of Neuron Models **7328-7331**

Kawaguchi, Minato (Kanto Gakuin Univ.); Mino, Hiroyuki (Kanto Gakuin Univ.);
Durand, Dominique (Case Western Reserve Univ.); Momose, Keiko (Waseda Univ.)*

SaP110: 09:30-11:00   America Ballroom Westin
6.13.59 Advances in Human Performance (Poster Session)

09:30-11:00   SaP110.1

Fully-Automated Test of Upper-Extremity Function **7332-7335**

Kowalczewski, Jan (Univ. of Alberta); Ravid, Einat (Natalie) (Univ. of Alberta);
Prochazka, Arthur (Univ. of Alberta)*

09:30-11:00   SaP110.2

**Mobility Profile and Wheelchair Driving Skills of Powered Wheelchair Users:
Sensor-Based Event Recognition Using a Support Vector Machine Classifier** **7336-7339**

*Kardehi Moghaddam, Athena (McGill Univ.); Pineau, Joëlle (McGill Univ.); Frank, Jordan (McGill Univ.);
Archambault, Philippe S. (McGill Univ.); Routhier, François (Institut de réadaptation en déficience physique de
Québec); Audet, Thérèse (Univ. de Sherbrooke); Polgar, Jan (Univ. of Western Ontario);
Michaud, François (Univ. de Sherbrooke); Boissy, Patrick* (Univ. de Sherbrooke)*

09:30-11:00   SaP110.3

Investigation of Sit-To-Stand and Stand-To-Sit in an above Knee Amputee **7340-7343**

Gao, Fan (UT Southwestern Medical Ctr. at Dallas); Zhang, Fan (Univ. of Rhode Island);
Huang, He (Univ. of Rhode Island)*

09:30-11:00   SaP110.4

New Ergonomic Headset for Tongue-Drive System with Wireless Smartphone Interface **7344-7347**

*Park, Hangue (Georgia Tech); Kim, Jeonghee (Georgia Inst. of Techonology); Huo, Xueliang (Georgia
Inst. of Tech.); Hwang, In-O (Georgia Tech); Ghovanloo, Maysam* (Georgia Inst. of Tech.)*

09:30-11:00   SaP110.5

**Regression Equations for RT3 Activity Monitors to Estimate Energy
Expenditure in Manual Wheelchair Users** **7348-7351**

Hiremath, Shivayogi V* (Univ. of Pittsburgh); Ding, Dan (Univ. of Pittsburgh)

09:30-11:00   SaP110.6

Control of Reaching Finger Movement Accompanied with Inhibitory Intention **7352-7355**

Fukuda, Hiroshi* (Hiroshima City Univ.); Hiwaki, Osamu (Hiroshima City Univ.)

09:30-11:00   SaP110.7

**Visual and Proprioceptive Contributions to Compensatory and
Pursuit Tracking Movements in Humans** **7356-7359**

Heenan, Megan* (Marquette Univ.); Scheidt, Robert A. (Marquette Univ.); Beardsley, Scott (Marquette Univ.)

09:30-11:00   SaP110.8

Evidence of Rapid Gender Processing Revealed by ERSP **7360-7363**

*Gu, Zhong-lei (Shanghai Jiaotong Univ.); Shi, Lichen (Shanghai Jiao Tong Univ.);
Lu, Bao-Liang* (Shanghai Jiao Tong Univ.)*

09:30-11:00   SaP110.9

**Evaluation System for Minor Nervous Dysfunction by Pronation and Supination of
Forearm Using Wireless Acceleration and Angular Velocity Sensors** **7364-7367**

Iramina, Keiji (Kyushu Univ., Japan); Kamei, Yuichiro (Graduate School of Information Science & Elec. Eng.,
Kyushu Univ.); Katayama, Yoshinori (Kyushu Univ.)*

8.6.28 Recent Developments in Surgical Robotics (Poster Session)

09:30-11:00   SaP111.1

Evaluation of a Synergistic Handheld Instrument for Resternotomy Controlled by an Integrated Optical Sensor 7368-7371

Korff, Alexander* (RWTH Aachen Univ.); Jalowy, Thomas (RWTH Aachen Univ.); Müller, Meiko (RWTH Aachen Univ.); Fuertjes, Tobias (RWTH Aachen Univ.); Dohmen, Guido (Dept. of Thoracic & Cardiovascular Surgery, Univ. Hospital Aachen); Radermacher, Klaus (RWTH Aachen Univ.); Follmann, Axel (RWTH Aachen Univ.)

09:30-11:00   SaP111.2

Towards a Micropositioning System for Targeted Drug Delivery in Wireless Capsule Endoscopy 7372-7375

Woods, Stephen (Imperial College London);
Constandinou, Timothy G.* (Imperial College of Science, Tech. & Medicine)

09:30-11:00   SaP111.3

Comparative Evaluation of User Interfaces for Robot-Assisted Laser Phonomicrosurgery 7376-7379

Dagnino, Giulio* (Italian Inst. of Tech.); Mattos, Leonardo (IIT – Istituto Italiano di Tecnologia);
Becattini, Gabriele (Italian Inst. of Tech.); Dellepiane, Massimo (Univ. of Genoa – ENT Dept.);
Caldwell, Darwin G. (Italian Inst. of Tech.)

09:30-11:00   SaP111.4

Robotic Endoscope Motor Module and Gearing Design 7380-7383

Oliveira, Jillian M.* (MIT); Chen, Yi (MIT); Hunter, Ian (Massachusetts Inst. of Tech.)

09:30-11:00   SaP111.5

A Fuzzy-Based Shared Controller for Brain-Actuated Simulated Robotic System 7384-7387

Liu, Rong* (Dalian Univ. of Tech.); Xue, Kuang-zheng (The Dalian Univ. of Tech.);
Wang, Yong-xuan (Dalian Univ. of Tech.); Yang, Le (DanXia Sensor Tech. Co. Ltd.)

8.8.14 New Technologies and Methodologies in Medical Robotics and Biomechanics I (Poster Session)

09:30-11:00   SaP112.1

Analysis of Foot Pressure Distribution Data for the Evaluation of Foot Arch Type 7388-7392

Imaizumi, Kazuya* (Tokyo Healthcare Univ.); Iwakami, Yumi (Tokyo Healthcare Univ.);
Yamashita, Kazuhiko (Tokyo Healthcare Univ.)

09:30-11:00   SaP112.2

Palpation Nonlinear Reaction Force Analysis for Characterization of Breast Tissues 7393-7396

Kobayashi, Yo* (Waseda Univ.); Tsukune, Mariko (Waseda Univ.); Hoshi, Takeharu (Waseda Univ.);
Miyashita, Tomoyuki (Waseda Univ.); Shiraishi, Yasuyuki (Tohoku Univ.); Yambe, Tomoyuki (Tohoku Univ.);
Fujie, Masakatsu G. (Waseda Univ.)

09:30-11:00   SaP112.3

Validation of a Software Program for Measuring Fatigue-Related Changes in Keystroke Durations 7397-7400

Kim, Jeong Ho* (Univ. of Washington); Johnson, Peter (Univ. of Washington)

09:30-11:00   SaP112.4

Physical Human Interaction for an Inflatable Manipulator 7401-7404

Sanan, Siddharth* (Carnegie Mellon Univ.); Ornstein, Mike (Carnegie Mellon Univ.);
Atkeson, Christopher (Carnegie Mellon Univ.)

09:30-11:00   SaP112.5

Evaluation and Comparison of the Nonlinear Elastic Properties of the Soft Tissues of the Breast 7405-7408

Tsukune, Mariko* (Waseda Univ.); Kobayashi, Yo (Waseda Univ.); Hoshi, Takeharu (Waseda Univ.);
Miyashita, Tomoyuki (Waseda Univ.); Fujie, Masakatsu G. (Waseda Univ.)

09:30-11:00 SaP112.6

Cortical Response to Psycho-Physiological Changes in Auto-Adaptive Robot Assisted Gait Training **7409-7412**

Jelinek, Herbert Franz* (Charles Sturt Univ.); August, Katherine (INI Univ. of Zurich ETH Zurich); Imam, Hasan (Univ. of Melbourne); Khandoker, Ahsan Habib (Univ. of Melbourne); Koenig, Alexander (ETH Zurich); Riener, Robert (ETH & Univ. Zurich)

SaP113: 09:30-11:00 America Ballroom Westin
8.9.11 Brain Machine Interfaces and Robotics Applications (Poster Session)

09:30-11:00 SaP113.1

An Automatic Control Model for Rat-Robot **7413-7416**

Sun, Chao (Zhejiang Univ.); Zheng, Nenggan (Zhejiang Univ., China); Zhang, Xinlu (Zhejiang Univ.); Chen, Weidong* (Zhejiang Univ.); Zheng, Xiaoxiang (Zhejiang Univ.)

09:30-11:00 SaP113.2

Estimation of Direction of Attention Using EEG and Out-Of-Head Sound Localization **7417-7420**

Ebisawa, Masashi* (Nagaoka Univ. of Tech.); Kogure, Masumi (Nagaoka Univ. of Tech.); Yano, Shouhei (Nagaoka Natl. College of Tech.); Matsuzaki, Shuichi (Nagaoka Univ. of Tech., JAPAN); Wada, Yasuhiro (Nagaoka Univ. of Tech.)

09:30-11:00 SaP113.3

A Hybrid Brain Interface for a Humanoid Robot Assistant **7421-7424**

Finke, Andrea* (Bielefeld Univ., Bielefeld, Germany); Knoblauch, Andreas (Honda Research Inst. Europe); Koesling, Hendrik (Bielefeld Univ.); Ritter, Helge (CITEC, CoR-Lab, Bielefeld Univ., Bielefeld, Germany)

09:30-11:00 SaP113.4

Temporal Representation of Arm Force Direction Using Fnirs Signals **7425-7428**

Muto, Yasuyuki* (Nagaoka Univ. of Tech.); Ishii, Taiki (Nagaoka Univ. of Tech.); Matsuzaki, Shuichi (Nagaoka Univ. of Tech., JAPAN); Wada, Yasuhiro (Nagaoka Univ. of Tech.)

09:30-11:00 SaP113.5

EEG Correlates of Submovements **7429-7432**

Dipietro, Laura* (MIT); Poizner, Howard (UCSD); Krebs, Hermano Igo (MIT)

SaP114: 09:30-11:00 America Ballroom Westin
8.10.13 New Technologies and Methodologies in Medical Robotics and Biomechanics II (Poster Session)

09:30-11:00 SaP114.1

Strength Evaluation of a Variable Diameter Acetabular Trial Implant under
Realistic Loading Conditions **7433-7436**

Levasseur, Annie* (Imaging & Orthopaedic Research Laboratort); Petit, Yvan (École de Technologie Supérieure); Dansereau, Mathieu (École de technologie supérieure); Fernandes, Julio (Univ. of Montréal)

09:30-11:00 SaP114.2

Blood Flow Measurement Algorithms to Detect Bleeding Source Noninvasively **7437-7440**

Ito, Keiichiro* (Waseda Univ.); Asayama, Tomofumi (Waseda Univ.); Sugano, Shigeki (Waseda Univ.); Iwata, Hiroyasu (Waseda Univ.)

09:30-11:00 SaP114.3

Estimation of Intraoperative Blood Flow During Liver RF Ablation Using a
Finite Element Method-Based Biomechanical Simulation **7441-7445**

Watanabe, Hiroki* (Waseda Univ.); Yamazaki, Nozomu (Waseda Univ.); Kobayashi, Yo (Waseda Univ.); Miyashita, Tomoyuki (Waseda Univ.); Hashizume, Makoto (Kyushu Univ.); Fujie, Masakatsu G. (Waseda Univ.)

09:30-11:00 SaP114.4

Simulations and Experimental Demonstration of Coupling Molecular and
Macroscopic Level Modalities with a Robotic Manipulator **7446-7449**

Sonmez, Ahmet Eren* (Univ. of Houston); Hedayati, Yousef (Univ. of Houston); Ozcan, Alpay (Washington Univ. in St. Louis); Spees, William (Washington Univ. in St. Louis); Tsekos, Nikolaos (Univ. of Houston)

09:30-11:00   SaP115.1
Stability of a Double Inverted Pendulum Model During Human Quiet Stance with Continuous Delay Feedback Control 7450-7453
Suzuki, Yasuyuki* (Osaka Univ.); Nomura, Taishin (Osaka Univ.); Morasso, Pietro (Univ. of Genova)

09:30-11:00   SaP115.2
Local Analysis of Trabecular Bone Fracture 7454-7457
Tassani, Simone* (Inst. of Communication & Computer Systems); Demenegas, Fragiskos (Natl. Technical Univ. of Athens); Matsopoulos, George K (Inst of Comm & Computer Systems)

09:30-11:00   SaP115.3
Quantifying Anti-Gravity Torques in the Design of a Powered Exoskeleton 7458-7461
Ragonesi, Daniel* (Univ. of Delaware); Agrawal, Sunil (Univ. of Delaware); Sample, Whitney (A.I. duPont Hospital for Children); Rahman, Tariq (Nemours)

09:30-11:00   SaP115.4
Design and Evaluation of a Prosthetic Shoulder Controller 7462-7465
Barton, Joseph* (Univ. of Maryland School of Medicine)

11:15-11:30   SaB01.1
Control of an Omnidirectional Walking Support Walker by Forearm Pressures 7466-7469
Jiang, Yinlai* (Kochi Univ. of Tech.); Wang, Shuoyu (Kochi Univ. of Tech.); Ishida, Kenji (Kochi Medical School Hospital); Ando, Takeshi (Waseda Univ.); Fujie, Masakatsu G. (Waseda Univ.)

11:30-11:45   SaB01.2
Predicting Efficacy of Robot-Aided Rehabilitation in Chronic Stroke Patients Using an MRI-Compatible Robotic Device 7470-7473
Sergi, Fabrizio* (Univ. Campus Bio-Medico di Roma); Krebs, Hermano Igo (MIT); Groisser, Benjamin (Massachusetts General Hospital, Martinos Ctr. for Biomedical Imaging); Rykman, Avrielle (Burke Medical Research Inst.); Guglielmelli, Eugenio (Campus Bio-Medico Univ.); Volpe, Bruce (Cornell Univ.); Schaechter, Judith D. (Massachusetts General Hospital, Martinos Ctr. for Biomedical Imaging)

11:45-12:00   SaB01.3
Feasibility of Entrainment with Ankle Mechanical Perturbation to Treat Locomotor Deficit of Neurologically Impaired Patients 7474-7477
Ahn, Jooeun* (MIT); Patterson, Tara (Providence VA Medical Ctr.; Brown Univ.); Lee, Hyunglae (Massachusetts Inst. of Tech.); Klenk, Daniel (MIT); Lo, Albert (Brown Univ.; Dept. of Veteran Affairs); Krebs, Hermano Igo (MIT); Hogan, Neville (Massachusetts Inst. of Tech.)

12:00-12:15   SaB01.4
Development of a Dynamic Model for Bevel-Tip Flexible Needle Insertion into Soft Tissues 7478-7482
Haddadi, Amir* (Queen's Univ.); Hashtrudi-Zaad, Keyvan (Queen's Univ.)

12:15-12:30   SaB01.5
Develop a Wearable Ankle Robot for In-Bed Acute Stroke Rehabilitation 7483-7486
Ren, Yupeng (Rehabilitation Inst. of Chicago); Xu, Tao (Rehabilitation Inst. of Chicago); Wang, Liang (Illinois Inst. of Chicago); Guo, Xin (Hebei Univ. of Tech.); Harvey, Richard (Rehabilitation Inst. of Chicago); Zhang, Li-Qun* (Northwestern Univ.)

12:30-12:45   SaB01.6
Filtering Essential Tremor Noise on Surface EMG Based on Squared Sine Wave Approximation 7487-7491
Seki, Masatoshi* (Waseda Univ.); Matsumoto, Yuya (Waseda Univ.); Ando, Takeshi (Waseda Univ.); Kobayashi, Yo (Waseda Univ.); Iijima, Hiroshi (Yokohama Rehabilitation Foundation); Nagaoka, Masanori (Juntendo Univ., Graduate School); Fujie, Masakatsu G. (Waseda Univ.)

8.5.3 Robot-Assisted Training in Sports: Not Needed or Too Challenging? (Minisymposium)
Chair: Wolf, Peter *(ETH Zurich)*
Co-Chair: O'Malley, Marcia K. *(Rice Univ.)*

11:15-11:30   SaB02.1
Robot-Assisted Training in Sports: Haptic Rendering and Multimodal Feedback to Facilitate Motor Learning in Rowing .... *
Wolf, Peter* (ETH Zurich); Rauter, Georg (Sensory-Motor Systems Lab, ETH Zurich); Sigrist, Roland (Sensory-Motor Systems Lab, ETH Zurich); von Zitzewitz, Joachim (Sensory-Motor Systems Lab, ETH Zurich); Riener, Robert (ETH & Univ. Zurich)

11:30-11:45   SaB02.2
Robot-Assisted Training in Sports: Rowing Training from Task Analysis to Multimodal Feedback .... *
Ruffaldi, Emanuele* (Scuola Superiore S.Anna, Pisa, Italy); Filippeschi, Alessandro (Scuola Superiore S.Anna, Pisa, Italy)

11:45-12:00   SaB02.3
Robot-Assisted Training in Sports: Considerations for the Design and Implementation of Guidance Architectures .... *
O'Malley, Marcia K.* (Rice Univ.)

6.4.6 Development of a Retinal Prosthesis for the Blind: Technical and Biological Challenges (Minisymposium)
Chair: Rizzo, Joseph F. *(Boston VA Healthcare System)*
Co-Chair: Suaning, Gregg *(The Univ. of New South Wales)*

11:15-11:30   SaB03.1
Overview of the Boston Retinal Prosthesis: Challenges and Opportunities to Restore Useful Vision to the Blind 7492-7495
Rizzo, Joseph F.* (Boston VA Healthcare System); Shire, Douglas (Boston VA Healthcare System); Kelly, Shawn (Boston VA Healthcare System); Troyk, Philip (Illinois Inst. of Tech.); Gingerich, Marcus (Boston VA Healthcare System); McKee, Bruce (VA CIVR); Priplata, Attila (VA CIVR); Chen, Jinghua (Massachusetts Eye & Ear Infirmary); Drohan, William (Boston VA Healthcare System); Doyle, Patrick (Boston VA Research Inst.); Mendoza, Oscar (MIT); Theogarajan, Luke (Univ. of California); Cogan, Stuart (EIC Laboratories, Inc.); Wyatt, John (Massachusetts Inst. of Tech.)

11:30-11:45   SaB03.2
What Patients Can See with Subretinal Implants .... *
Zrenner, Eberhart* (Univ. of Tuebingen); Bruckmann, Anna (Univ. of Tuebingen); Greppmaier, Udo (Retina Implant AG); Kernstock, Christoph (Univ. of Tuebingen); Sliesoraityte, Ieva (Univ. of Tuebingen); Stingl, Katarina (Univ. of Tuebingen); Wilhelm, Barbara (Univ. of Tuebingen)

11:45-12:00   SaB03.3
The Supra-Choroidal Space: The Place to Be for Retinal Prosthesis? .... *
Suaning, Gregg* (The Univ. of New South Wales)

12:00-12:15   SaB03.4
Challenges for Epiretinal Prostheses .... *
Weiland, James* (Univ. of Southern California)

6.6.37 EMG Processing and Applications (Oral Session)
Chair: Holobar, Ales *(Univ. of Maribor, Faculty of Elec. Eng. & Computer Science)*
Co-Chair: Zhou, Ping *(Northwestern Univ. & Rehab Inst. of Chicago)*

11:15-11:30   SaB05.1
EMG and Acceleration Signal Analysis for Quantifying the Effects of Medication in Parkinson's Disease 7496-7499
  Rissanen, Saara Mirjami* *(Univ. of Eastern Finland)*; Kankaanpää, Markku Juhani *(Kuopio Univ. Hospital)*;
  Tarvainen, Mika *(Univ. of Eastern Finland)*; Nuutinen, Juho *(Univ. hospital of Kuopio)*;
  Airaksinen, Veikko Olavi Pietari *(Kuopio Univ. Hospital)*; Karjalainen, Pasi, A *(Univ. of Eastern Finland)*

11:30-11:45   SaB05.2
A SNR-Independent Formulation of a Double Threshold Algorithm for the Estimation of Muscle Activation Intervals 7500-7503
  Severini, Giacomo* *(Univerità degli Studi Roma Tre)*; Conforto, Silvia *(Univ. Roma TRE)*; De Marchis, Cristiano
  (Univ. degli Studi Roma Tre); Schmid, Maurizio *(Roma Tre Univ.)*; d'Alessio, Tommaso *(Univ. Roma TRE)*

11:45-12:00   SaB05.3
Alterations in Spike Amplitude Distribution of the Surface Electromyogram Post-Stroke 7504-7507
  Li, Xiaoyan* *(Rehabilitation Inst. of Chicago)*; Suresh, Aneesha *(Northwestern Univ.)*; Zhou, Ping *(Northwestern
  Univ. & Rehab Inst of Chicago)*; Rymer, William Zev *(Northwest. & Rehab Inst of Chicago)*

12:00-12:15   SaB05.4
Detection of Tremor Bursts from the sEMG Signal: An Optimization Procedure for Different Detection Methods 7508-7511
  De Marchis, Cristiano* *(Univ. degli Studi Roma Tre)*; Conforto, Silvia *(Univ. Roma TRE)*; Severini, Giacomo
  (Univerità degli Studi Roma Tre); Schmid, Maurizio *(Roma Tre Univ.)*; d'Alessio, Tommaso *(Univ. Roma TRE)*

12:15-12:30   SaB05.5
Noninvasive Analysis of Motor Unit Behavior in Pathological Tremor 7512-7515
  Holobar, Ales* *(Univ. of Maribor, Faculty of Elec. Eng. & Computer Science)*; Glaser, Vojko *(Univ. of Maribor,
  Faculty of Elec. Eng. & Computer Science)*; Gallego, Juan Alvaro *(Consejo Superior de Investigaciones
  Científicas CSIC)*; Dideriksen, Jakob *(Aalborg Univ.)*; Farina, Dario *(Bernstein Ctr. for Computational
  Neuroscience, Univ. Medical Ctr. Göttingen)*

12:30-12:45   SaB05.6
Trust Sensor Interface for Improving Reliability of EMG-Based User Intent Recognition 7516-7520
  Liu, Yuhong* *(Univ. of Rhode Island)*; Zhang, Fan *(Univ. of Rhode Island)*; Sun, Yan *(Univ. of Rhode Island)*;
  Huang, He *(Univ. of Rhode Island)*

6.3.11 Stimulation Techniques for Neuroprostheses (Oral Session)
Chair: Carmena, Jose M. *(Univ. of California, Berkeley)*
Co-Chair: Venkatraman, Subramaniam *(Univ. of California, Berkeley)*

11:15-11:30   SaB07.1
Designing Stimulation Patterns for an Afferent BMI: Representation of Kinetics in Somatosensory Cortex 7521-7524
  London, Brian* *(Northwestern Univ.)*; Ruiz Torres, Ricardo *(Northwestern Univ.)*;
  Slutzky, Marc *(Northwestern Univ.)*; Miller, Lee *(Northwestern Univ.)*

11:30-11:45   SaB07.2
Approaches to Optical Neuromodulation from Rodents to Non-Human Primates by Integrated Optoelectronic Devices 7525-7528
  Wang, Jing *(Brown Univ.)*; Ozden, Ilker *(Brown Univ.)*; Diagne, Mohamed *(Connecticut College)*;
  Wagner, Fabien *(Brown Univ.)*; Borton, David *(Brown Univ.)*; Brush, Benjamin *(Brown Univ.)*;
  Agha, Naubahar *(Brown Univ.)*; Burwell, Rebecca *(Brown Univ.)*; Sheinberg, David *(Brown Univ.)*;
  Diester, Ilka *(Stanford Univ.)*; Deisseroth, Karl *(Stanford Univ.)*; Nurmikko, Arto* *(Brown Univ.)*

11:45-12:00   SaB07.3

Chronically Implanted Hyperdrive for Cortical Recording and Optogenetic Control in Behaving Mice 7529-7532

  Siegle, Joshua (Massachusetts Inst. of Tech.); Carlen, Marie (Karolinska Inst.);
  Meletis, Konstantinos (Karolinska Inst.); Tsai, Li-Huei (Massachusetts Inst. of Tech.);
  Moore, Christopher (Massachusetts Inst. of Tech.); Ritt, Jason* (Boston Univ.)

12:00-12:15   SaB07.4

**Effects of Spatial and Temporal Parameters of Primary Afferent Microstimulation on Neural
Responses Evoked in Primary Somatosensory Cortex of an Anesthetized Cat 7533-7536**

  *Hokanson, James (Univ. of Pittsburgh); Ayers, Christopher (Univ. of Pittsburgh); Gaunt, Robert (Univ. of
  Pittsburgh); Bruns, Tim M. (Univ. of Pittsburgh); Weber, Douglas* (Univ. of Pittsburgh)*

12:15-12:30   SaB07.5

**Robustness of Implantable Algorithms to Detect Epileptiform Activity in the Presence of
Broad-Spectrum Background Noise 7537-7540**

  Wingeier, Brett* (Neuropace, Inc.); Sillay, Karl (Univ. of Wisconsin-Madison)

12:30-12:45   SaB07.6

Rat Behavioral Model for High-Throughput Parametric Studies of Intracortical Microstimulation 7541-7544

  *Koivuniemi, Andrew (Purdue Univ.); Regele, Oliver (Purdue Univ.); Brenner, Jessica (Purdue Univ.);
  Otto, Kevin* (Purdue Univ.)*

SaB08: 11:15-12:45   Tremont Marriott
8.3.5 Exoskeletons for Functional Training (Minisymposium)
Chair: Agrawal, Sunil *(Univ. of Delaware)*
Co-Chair: Rahman, Tariq *(Nemours)*

11:15-11:30   SaB08.1

Robotic Exoskeletons for Gait Training of the Motor Impaired .... *

  Agrawal, Sunil* (Univ. of Delaware)

11:30-11:45   SaB08.2

Upper Extremity Exoskeletons for People with Disabilities .... *

  Rahman, Tariq* (Nemours)

11:45-12:00   SaB08.3

Mobility Training of Infants and Toddlers Using Novel Mobile Robots and Interfaces .... *

  Agrawal, Sunil (Univ. of Delaware); Chen, Xi (Univ. of Delaware); Galloway, James (Univ. of Delaware);
  Ragonesi, Christina (Univ. of Delaware)*

SaB09: 11:15-12:45   Regis Marriott
6.11.42 Epilepsy – I (Oral Session)
Chair: Dumont, Guy *(Univ. of British Columbia)*
Co-Chair: Dourado, António *(FCTUC, Univ. of Coimbra)*

11:15-11:30   SaB09.1

A Novel Unsupervised Spike Sorting Algorithm for Intracranial EEG 7545-7548

  Yadav, Rajeev (Concordia Univ.); Shah, Aashit K. (Wayne State Univ. School of Medicine, Detroit, Michigan);
  Loeb, Jeffrey A. (Ctr. for Molecular Medicine & Genetics, Wayne State Univ. School of Medicine, Detroit,
  Michigan); Swamy, M. N. S. (Concordia Univ.); Agarwal, Rajeev (Concordia Univ.)*

11:30-11:45   SaB09.2

Epileptic Seizure Prediction Using Variational Mixture of Gaussians 7549-7552

  Shahidi Zandi, Ali (The Univ. of British Columbia); Dumont, Guy (Univ. of British Columbia); Javidan, Manouchehr
  (Univ. of British Columbia & Vancouver General Hospital); Tafreshi, Reza (Texas A&M Univ. at Qatar)*

11:45-12:00   SaB09.3

Rapid Identification of Epileptogenic Sites in the Intracranial EEG 7553-7556

  Yadav, Rajeev* (Concordia Univ.); Swamy, M. N. S. (Concordia Univ.); Agarwal, Rajeev (Concordia Univ.)

12:00-12:15   SaB09.4

A Study of Multi-Site Brain Dynamics During Limbic Seizures **7557-7559**

Sobayo, Tiwalade (Illinois Inst. of Tech.); Fine, Ananda (Univ. of Illinois at Chicago); Mogul, David* (Illinois Inst. of Tech.)

12:15-12:30   SaB09.5

Transcranial Focal Stimulation via Concentric Ring Electrodes Reduced Power of Pentylenetetrazole-Induced Seizure Activity in Rat Electroencephalogram **7560-7563**

Makeyev, Oleksandr* (Univ. of Rhode Island); Liu, Xiang (Univ. of Rhode Island); Koka, Kanthaiah (Otologics LLC); Kay, Steven (Univ. of Rhode Island); Besio, W. G. (Univ. of Rhode Island)

12:30-12:45   SaB09.6

Seizure Prediction Based on Classification of EEG Synchronization Patterns with On-Line Retraining and Post-Processing Scheme **7564-7569**

Chiang, Cheng-Yi* (Natl. Taiwan Univ. DSP/IC Lab); Chang, Nai-Fu (Natl. Taiwan Univ.); Chen, Tung-Chien (Natl. Taiwan Univ.); Chen, Hong-Hui (Natl. Taiwan Univ.); Chen, Liang-Gee (NTU)

SaB10: 11:15-12:45   Simmons Marriott

10.1.3 Impact of Wireless Health on Proactive Loss Control and Wellness Strategies (Oral Session)
Chair: Reaston, Mary Rose *(Insight Diagnostics Inc.)*
Co-Chair: Patel, Shyamal *(Harvard Medical School)*

11:15-11:30   SaB10.1

Legal Changes Necessitate Proactive Management of Musculoskeletal Disorders: The Role of Electrodiagnostic Functional Assessment Soft Tissue Management Program **7570-7573**

Reaston, Mary Rose* (Insight Diagnostics Inc.); Carney, Brendan (Insight Diagnostics Inc.)

11:30-11:45   SaB10.2

Assessing Disease and Wellness in the Occupational Setting: Electrodiagnostic Functional Assessment from Wired to Wireless **7574-7576**

Seidner, Adam* (Travelers Insurance)

11:45-12:00   SaB10.3

Impact of Wireless Health on Proactive Loss Control and Wellness Strategies **7577-7580**

Davis, Michael* (Lockton)

12:00-12:15   SaB10.4

Event Detection in an Assisted Living Environment **7581-7584**

Stroiescu, Florin (Shimmer Research); Daly, Kieran* (Shimmer Research); Kuris, Benjamin (Shimmer Research)

12:15-12:30   SaB10.5

Electrodianostic Functional Assessment: Commercialization Issues .... *****

Colpoys, Matthew* (Insight Diagnostics Inc.)

SaB11: 11:15-12:45   Wellesley Marriott

10.5.5 Ambient Assisted Living and Smart Homes II (Oral Session)
Chair: Lichter, Patrick *(Koronis Biomedical Tech.)*
Co-Chair: Puiatti, Alessandro *(Univ. of Applied Science of Southern Switzerland)*

11:15-11:30   SaB11.1

Public Transportation Assistant for the Cognitively Impaired **7585-7588**

Riehle, Timothy H* (Koronis Biomed. Technologies Corp.); Anderson, Shane (Koronis Biomedical Technologies); Lichter, Patrick (Koronis Biomedical Technologies); Brown, Allen (Mayo Clinic, Rochester MN); Hedin, Daniel (Advanced Medical Electronics)

11:30-11:45   SaB11.2

Improving Acoustic Fall Recognition by Adaptive Signal Windowing **7589-7592**

Li, Yun (Univ. of Missouri); Popescu, Mihail* (Univ. of Missouri); Ho, K.C. (Univ. of Missouri); Nabelek, Daniel P. (Univ. of Missouri)

11:45-12:00   SaB11.3

Activity Recognition Using Correlated Pattern Mining for People with Dementia 7593-7597
Sim, Kelvin* (Inst. for Infocomm Research); Phua, Clifton (Inst. for Infocomm Research); Yap, Ghim-Eng (Inst. for Infocomm Research); Biswas, Jit (Inst. for Infocomm Research); Mokhtari, Mounir (Institut Telecom France)

12:00-12:15   SaB11.4

Indoor Localization Using Pedestrian Dead Reckoning Updated with RFID-Based Fiducials 7598-7601
House, Samuel* (Oregon State Univ.); Connell, Sean (Oregon State Univ.); Milligan, Ian (Oregon State Univ.); Austin, Daniel (Oregon Health & Science Univ.); Hayes, Tamara (Oregon Health & Science Univ.); Chiang, Patrick (Oregon State Univ.)

12:15-12:30   SaB11.5

Design of a Home-Based Adaptive Mixed Reality Rehabilitation System for Stroke Survivors 7602-7605
Baran, Michael* (Arizona State Univ.); Lehrer, Nicole (Arizona State Univ.); Siwiak, Diana (Arizona State Univ.); Chen, Yinpeng (Arizona State Univ.); Duff, Margaret (Arizona State Univ.); Ingalls, Todd (Arizona State Univ.); Rikakis, Thanassis (Arizona State Univ.)

12:30-12:45   SaB11.6

Quantitative Analysis of 180 Degree Turns for Fall Risk Assessment Using Video Sensors 7606-7609
Wang, Fang* (Univ. of Missouri); Skubic, Marjorie (Univ. of Missouri); Abbott, Carmen (Univ. of Missouri); Keller, James M (Univ. of Missouri)

SaB12: 11:15-12:45   Suffolk Marriott

5.1.22 Modeling the Respiratory Control System During Sleep:
Applications to Sleep Disordered Breathing (Minisymposium)
Chair: Wellman, David Andrew *(Harvard Medical School)*
Co-Chair: Yana, Kazuo *(Hosei Univ.)*

11:15-11:30   SaB12.1

Manipulating the Gain of the Ventilatory Feedback Loop As a Treatment for Obstructive Sleep Apnea .... *
Edwards, Bradley Allan* (Brigham & Women's Hospital & Harvard Medical School); Sands, Scott Aaron (Brigham & Women's Hospital & Harvard Medical School); Eckert, Danny J (Brigham & Women's Hospital & Harvard Medical School); White, David P (Brigham & Women's Hospital & Harvard Medical School); Butler, James P (Brigham & Women's Hospital & Harvard Medical School); Malhotra, Atul (Brigham & Women's Hospital & Harvard Medical School); Wellman, David Andrew (Harvard Medical School)

11:30-11:45   SaB12.2

Obstructive Sleep Apnea: A Mechanistic Approach .... *
Malhotra, Atul (Brigham & Women's Hospital & Harvard Medical School); White, David P (Brigham & Women's Hospital & Harvard Medical School); Eckert, Danny J (Brigham & Women's Hospital & Harvard Medical School); Edwards, Bradley Allan (Brigham & Women's Hospital & Harvard Medical School); Owens, Robert (Harvard Medical School); Sands, Scott Aaron (Brigham & Women's Hospital & Harvard Medical School); Nemati, Shamim (Harvard Medical School); Butler, James P (Brigham & Women's Hospital & Harvard Medical School); Passaglia, Chris (Boston Univ.); Jackson, Andrew (Boston Univ.); Wellman, David Andrew* (Harvard Medical School)

11:45-12:00   SaB12.3

Estimation of Respiratory Control Parameters and Loop Gain from Spontaneous Breathing .... *
Sands, Scott Aaron* (Brigham & Women's Hospital & Harvard Medical School); Nemati, Shamim (Harvard Medical School); Edwards, Bradley Allan (Brigham & Women's Hospital & Harvard Medical School); Wellman, David Andrew (Harvard Medical School); Skuza, Elizabeth (Monash Univ., Australia); Hamilton, Garun (Dept. of Respiratory & Sleep Medicine, Monash Medical Ctr., Melbourne, Australia); Naughton, Matthew (Monash Univ., Melbourn); Verghese, George (Massachusetts Inst. of Tech.); Malhotra, Atul (Brigham & Women's Hospital & Harvard Medical School); Butler, James P (Brigham & Women's Hospital & Harvard Medical School); Berger, Philip (Monash Univ., Australia)

4.6.14 Bioinformatics for Integrated Genomics II (Oral Session)
Chair: Chang, Hsun-Hsien *(Childen's Hospital Boston)*
Co-Chair: Wang, May Dongmei *(Georgia Tech. & Emory Univ.)*

11:15-11:30   SaB13.1
**Generation of Intervention Strategy for a Genetic Regulatory Network
Represented by a Family of Markov Chains** **7610-7613**
   Berlow, Noah (Texas Tech Univ.); Pal, Ranadip (Texas Tech Univ.)*

11:30-11:45   SaB13.2
A Dual Kalman Filter for Parameter-State Estimation in Real-Time DNA Microarrays **7614-7617**
   Shamaiah, Manohar (UT Austin); Vikalo, Haris (Caltech)*

11:45-12:00   SaB13.3
Exploring the Feasibility of Next-Generation Sequencing and Microarray Data Meta-Analysis **7618-7621**
   *Wu, Po-Yen (Georgia Inst. of Tech.); Phan, John H. (Georgia Inst. of Tech.);
Wang, May Dongmei* (Georgia Tech & Emory Univ.)*

7.10.1 Translational Tissue Engineering (Minisymposium)
Chair: Christman, Karen *(Univ. of California, San Diego)*
Co-Chair: Yang, Yunzhi *(Univ. of Texas Health Science Ctr. at Houston)*

11:15-11:30   SaB15.1
Biodegradable Photoluminescent Polymers for Tissue Engineering, Drug Delivery, and Bioimaging .... *****
   Yang, Jian (Univ. of Texas at Arlington)*

11:30-11:45   SaB15.2
Functionally Graded Scaffolds Regulated Biodegradation and Enhanced Bone Formation .... *****
   Yang, Yunzhi (Univ. of Texas Health Science Ctr. at Houston)*

11:45-12:00   SaB15.3
**Native Cardiac Extracellular Matrix As a Tool to Enhance Cardiac
Differentiation of Stem Cells Prior to Implantation** .... *****
   Black, Lauren (Tufts Univ.)*

12:00-12:15   SaB15.4
Voltage Mapping of Cardiac Grafts .... *****
   Jacot, Jeffrey G (Rice Univ./Texas Children's Hospital)*

12:15-12:30   SaB15.5
Bioengineered Silks for Tissue-Based Medical Devices .... *****
   Kaplan, David (Tufts Univ.)*

9.4.4 Neuromuscular Stimulation II (Oral Session)
Chair: ÓLaighin, Gearoid *(Natl. Univ. of Ireland Galway)*
Co-Chair: Micera, Silvestro *(École Polytechnique Fédérale de Lausanne)*

11:15-11:30   SaB16.1
**Neuromuscular Electrical Stimulation Training Results in Enhanced Activation of
Spinal Stabilizing Muscles During Spinal Loading and Improvements in Pain Ratings** **7622-7625**
   *Coghlan, Simon (Unviversity College Dublin); Crowe, Louis (Univ. College Dublin);
Minogue, Conor M (Biomedical Research Ltd); Caulfield, Brian* (UCD)*

11:30-11:45   SaB16.2
Central Sleep Apnea Detection and Stimulation **7626-7629**
   Kinio, Steven (McMaster Univ.); Islam, Mohammed (McMaster Univ.); Qasim, Taimur (McMaster Univ.)*

11:45-12:00   SaB16.3

Hemodynamic Performance of NMES During Recovery Post Orthopaedic Surgery 7630-7633
  Broderick, Barry (Natl. Univ. of Ireland Galway); Breathnach, Oisín (Mid-Western Regional Orthopaedic Hospital,
  Croom, Co. Limerick, Ireland); Masterson, Eric (Mid-Western Regional Orthopaedic Hospital, Croom, Co.
  Limerick, Ireland); Breen, Paul (Natl. Univ. of Ireland Galway); ÓLaighin, Gearoid (Natl. Univ. of Ireland Galway)*

12:00-12:15   SaB16.4

Preliminary Results on the Design of a Tool for Inserting of Transverse Intrafascicular
Multichannel Electrodes (TIME) into Peripheral Nervous System 7634-7638
  Ghionzoli, Alessio (Scuola Superiore Sant'Anna); Genovese, Vincenzo (Scuola Superiore Sant'Anna);*
  Bossi, Silvia (Scuola Superiore Sant'Anna); Stefanini, Cesare (Scuola Superiore Sant'Anna);
  Micera, Silvestro (École Polytechnique Fédérale de Lausanne)

12:15-12:30   SaB16.5

Effect of Electrode Profile and Conductivity on Current Density and
Cutaneous Sensation During Transcranial DC Stimulation 7639-7642
  Dutta, Anirban (Georg-August-Univ.); Mudaliar, Ashvin (Univ. of Twente);*
  Chugh, Sanjay (Neuro-Psychiatric Clinic)

12:30-12:45   SaB16.6

Effect of Transcranial Direct Current Stimulation on Cortico-Muscular Coherence and
Standing Postural Steadiness 7643-7646
  Dutta, Anirban (Georg-August-Univ.); Chugh, Sanjay (Neuro-Psychiatric Clinic)*

SaB17**:** 11:15-12:45   Exeter Marriott
3.3.1 Advanced Lab on Chip Systems for In Vitro Testing (Oral Session)
Chair: Lymberis, Andreas *(European Commission)*
Co-Chair: Ruano, Jesus *(Ikerlan-Ik4)*

11:15-11:30   SaB17.1

Laboratory Skinpatches and Smart Cards Based on Foils 7647-7649
  Ruano, Jesus (Ikerlan-Ik4)*

11:30-11:45   SaB17.2

Micro-Sized Syringes for Single-Cell Fluidic Access Integrated on a Micro-Electrode Array CMOS Chip 7650-7653
  Huys, Roeland (IMEC); Braeken, Dries (IMEC); Micholt, Liesbeth (Imec); Jans, Danny (IMEC);*
  Stassen, Andim (Imec); Collaert, Nadine (Imec); Loo, Josine (IMEC); Bartic, Carmen (IMEC);
  Verstreken, Kris (IMEC); Eberle, Wolfgang (imec)

11:45-12:00   SaB17.3

Monolithically Integrated Mach-Zehnder Biosensors for Real-Time Label-Free
Monitoring of Biomolecular Reactions 7654-7657
  Makarona, Eleni (NCSR "Demokritos"); Petrou, Panagiota (NCSR "Demokritos"); Botsialas, Athanasios (NCSR
  "Demokritos"); Kitsara, Maria (NCSR "Demokritos"); Kakabakos, Sotirios (NCSR "Demokritos");
  Stoffer, Remco (PhoeniX BV); Jobst, Gerhard (Jobst Technologies GmbH); Nounesis, George (NCSR
  "Demokritos"); Raptis, Ioannis (NCSR "Demokritos"); Misiakos, Kostas (NCSRD Demokritos);*
  Bourkoula, Athanasia (NCSR "Demokritos")

SaB19**:** 11:15-12:45   Salons AB Marriott
3.5.26 Smart Clothes (Oral Session)
Chair: Ghovanloo, Maysam *(Georgia Inst. of Tech.)*
Co-Chair: Peixoto, Nathalia *(George Mason Univ.)*

11:15-11:30   SaB19.1

Evaluation of a Closed Loop Inductive Power Transmission System on an
Awake Behaving Animal Subject 7658-7661
  Kiani, Mehdi (Georgia Inst. of Tech.); Kwon, Ki Yong (Michigan State Univ.); Zhang, Fei (Michigan State Univ.);*
  Oweiss, Karim (Michigan State Univ.); Ghovanloo, Maysam (Georgia Inst. of Tech.)

11:30-11:45   SaB19.2
In-Vivo Signal Transmission Using an Intra-Corporal RF Transmitter **7662-7665**
  Just, Thomas* (Ilmenau Univ. of Tech.); Laqua, Daniel (Ilmenau Univ. of Tech.);
  Husar, Peter (Ilmenau Univ. of Tech.)

11:45-12:00   SaB19.3
A High Bandwidth Fully Implantable Mouse Telemetry System for Chronic ECG Measurement **7666-7669**
  Russell, David M.* (Univ. of Auckland); McCormick, Daniel (Univ. of Auckland); Taberner, Andrew (The Univ. of
  Auckland); Malpas, Simon (Univ. of Auckland); Budgett, David (Auckland Univ.)

12:00-12:15   SaB19.4
Fundamental Sensing Limit of Electrochemical Glucose Sensors **7670-7673**
  Louchis, Kevin* (Univ. of California at Davis); O'Driscoll, Stephen (Univ. of California, Davis)

12:15-12:30   SaB19.5
Development of Cost-Effective Biocompatible Packaging for Microelectronic Devices **7674-7677**
  Qian, Karen (IMEC); Malachowski, Karl (IMEC Belgium); Fiorini, Paolo (imec); Velenis, Dimitrios (Imec);
  Op de Beeck, Maaike* (IMEC); Van Hoof, Chris (IMEC)

12:30-12:45   SaB19.6
Optimization of Kinetic Energy Harvesters Design for Fully Implantable Cochlear Implants **7678-7681**
  Sudano, Angelo (Univ. Campus Bio-Medico di Roma); Accoto, Dino* (Campus Bio-Medico Univ.);
  Francomano, Maria Teresa (Univ. Campus Bio-Medico di Roma); Salvinelli, Fabrizio (Univ. CAMPUS
  Bio-Medico); Guglielmelli, Eugenio (Campus Bio-Medico Univ.)

SaB20: 11:15-12:45	Salons CD Marriott
3.1.28 Biosensors (Oral Session)	
Chair: Behbehani, Khosrow *(Univ. of Texas at Arlington)*	
Co-Chair: Guldiken, Rasim *(Univ. of South Florida)*	

11:15-11:30   SaB20.1
Eavesdropping on Echolocation: Recording the Bat's Auditory Experience **7682-7686**
  Austin, Kevin B.* (Fitchburg State Univ.); Thomas, Howard (Fitchburg State Univ.);
  Moosman, Paul (Virginia Military Inst.)

11:30-11:45   SaB20.2
In Vivo Characterization of Ultrasonic Transducers for the Detection of
Airway Occlusion in Sleep Disordered Breathing **7687-7690**
  Al-Abed, Mohammad* (Univ. of Texas at Arlington); Antich, Peter (Univ. of Texas Southwestern Medical Ctr. in
  Dallas); Watenpaugh, Donald (Sleep Consultants Inc.); Behbehani, Khosrow (Univ. of Texas at Arlington)

11:45-12:00   SaB20.3
A Label-Free Cell Separation Using Surface Acoustic Waves **7691-7694**
  Jo, Myeong Chan (Univ. of South Florida); Guldiken, Rasim* (Univ. of South Florida)

12:00-12:15   SaB20.4
Bioacoustics Response of Small Benign or Malignant Nodules **7695-7698**
  Gavriloaia, Gheorghe* (Univ. of Pitesti); Gavriloaia, Mariuca-Roxana (Medical & Pharmaceutical Univ. of
  Bucharest); Novac, Marian (Medical & Pharmaceutical Univ. of Bucharest)

12:15-12:30   SaB20.5
Design of a Clinically Viable Pneumatic System for the Acquisition of
Pressure Compensated Otoacoustic Emissions **7699-7702**
  Perez, Moises* (Univ. of Miami); Delgado, Rafael E. (Univ. of Miami); Ozdamar, Ozcan (Univ. of Miami)

1.1.4 Recent Advances in Time-Frequency Analysis of Biosignals II (Oral Session)
Chair: Virkkala, Jussi *(Finnish Inst. of Occupational Health)*
Co-Chair: Akay, Metin *(Univ. of Houston)*

11:15-11:30   SaB21.1
Feature Selection Using a Genetic Algorithm in a Motor Imagery-Based Brain Computer Interface 7703-7706
Corralejo, Rebeca* (Univ. of Valladolid); Hornero, Roberto (Univ. of Valladolid);
Álvarez, Daniel (Univ. of Valladolid)

11:30-11:45   SaB21.2
A Quality Parameter for the Detection of the Intentionality of Movement in Patients with
Neurological Tremor Performing a Finger-To-Nose Test 7707-7710
Grimaldi, Giuliana* (ULB-Erasme); Manto, Mario (FNRS, Bruxelles, Belgium);
Jdaoudi, Yassin (ULB-Erasme, Bruxelles, Belgium)

11:45-12:00   SaB21.3
Adaptive Control of Deep Brain Stimulator for Essential Tremor:
Entropy-Based Tremor Prediction Using Surface-EMG 7711-7714
Basu, Ishita* (Univ. of Illinois at Chicago); Tuninetti, Daniela (Univ. of Illinois at Chicago);
Graupe, Daniel (Univ. of Illinois at Chicago); Slavin, Konstantin (Univ. of Illinois at Chicago)

12:00-12:15   SaB21.4
Seizure Onset Detection Based on One sEMG Channel 7715-7718
Conradsen, Isa* (Technical Univ. of Denmark); Beniczky, Sandor (Danish Epilepsy Ctr.);
Hoppe, Karsten (DELTA); Wolf, Peter (Danish Epilepsy Ctr.); Sams, Thomas (Technical Univ. of Denmark);
Sorensen, Helge B D (Technical Univ. of Denmark)

12:15-12:30   SaB21.5
Time-Frequency Characterization of Mismatch Negativity in Nociceptive Responses 7719-7722
Melia, Umberto Sergio Pio* (Univ. Politècnica de Catalunya); Vallverdu, Montserat; Claria, Francesc (Lleida
Univ.); Casanova, Jordi (Dept. of Neurology, Hospital Clínic, IDIBAPS (Institut d'Investigació Augustí Pi i
Sunyer)); Valls-Solé, Josep (Dept. of Neurology, Hospital Clínic, IDIBAPS (Institut d'Investigació Augustí Pi i
Sunyer)); Caminal, Pere (Technical Univ. of Catalonia (UPC))

12:30-12:45   SaB21.6
Combined Frequency and Time Domain Sleep Feature Calculation 7723-7726
Virkkala, Jussi* (Finnish Inst. of Occupational Health)

1.1.5 Novel Time Series Analysis Approaches to Heart Rate Variability Complex Dynamics (Oral Session)
Chair: Barbieri, Riccardo *(Massachusetts General Hospital-Harvard Medical School-MIT)*
Co-Chair: Marmarelis, Vasilis *(Univ. of Southern California)*

11:15-11:30   SaB22.1
Framework for Adaptive Multiscale Analysis of Nonhomogeneous Point Processes 7727-7730
Helgason, Hannes* (KTH (Royal Inst. of Tech.)); Bartroff, Jay (Univ. of Southern California);
Abry, Patrice (ENS Lyon, CNRS)

11:30-11:45   SaB22.2
Diagnosis of Sleep Apnea by the Analysis of Heart Rate Variation: A Mini Review 7731-7734
Hayano, Junichiro* (Nagoya City Univ.); Watanabe, Eiichi (Fujita Health Univ.); Saito, Yuji (Fujita Health Univ.);
Sasaki, Fumihiko (Takaoka Clinic); Kawai, Kiyohiro (Suzuken Co); Kodama, Itsuo (Nagoya Univ.);
Sakakibara, Hiroki (Takaoka Clinic)

11:45-12:00   SaB22.3
Instantaneous Monitoring of Sleep Fragmentation by Point Process Heart Rate
Variability and Respiratory Dynamics 7735-7738
Citi, Luca (MGH/Harvard Medical School); Bianchi, Matt T. (Dept. of Neurology, Massachusetts General
Hospital -Harvard Medical School); Klerman, Elizabeth B. (Division of Sleep Medicine, Brigham & Women's
Hospital -Harvard Medical School); Barbieri, Riccardo* (MGH-Harvard Medical School-MIT)

12:00-12:15   SaB22.4

HRV Strongly Depends on Breathing. Are We Questioning the Right Suspect? **7739-7742**
Buchner, Teodor* (Warsaw Univ. of Tech.)

12:15-12:30   SaB22.5

Asymmetric Intermittency Observed in Human Heart Rate Dynamics **7743-7746**
Kiyono, Ken* (College of Eng., Nihon Univ.); Struzik, Zbigniew R. (The Univ. of Tokyo);
Hayano, Junichiro (Nagoya City Univ.)

12:30-12:45   SaB22.6

Heart Rate Variability Analysis for Newborn Infants Prolonged Pain Assessment **7747-7750**
De Jonckheere, Julien* (CHRU de Lille); Logier, Regis (CHRU de Lille); Jeanne, Mathieu (CHRU de Lille);
Jounwaz, Reza (Univ. Hospital of Lille, INSERM)

SaB23: 11:15-12:45   Salon G Marriott
2.3.10 Analysis of Optical Images (Oral Session)
Chair: Brooks, Dana *(Northeastern Univ.)*
Co-Chair: Ding, Lei *(Univ. of Oklahoma)*

11:15-11:30   SaB23.1

3D Segmentation of Keratin Intermediate Filaments in Confocal Laser Scanning Microscopy **7751-7754**
Herberich, Gerlind* (Inst. of Imaging & Computer Vision, RWTH Aachen Univ.); Windoffer, Reinhard (Inst. of
Molecular & Cellular Anatomy, RWTH Aachen Univ., Germany); Leube, Rudolf (Inst. of Molecular & Cellular
Anatomy, RWTH Aachen Univ., Germany); Aach, Til (RWTH Aachen Univ.)

11:30-11:45   SaB23.2

Motor Neuron Morphology Estimation for Its Classification in the Drosophila Brain **7755-7758**
Tsechpenakis, Gavriil* (Indiana Univ.-Purdue Univ. Indianapolis); Egoda Gamage, Ruwan (Indiana Univ.-
Purdue Univ. Indianapolis); Kim, Michael D. (Univ. of Miami); Chiba, Akira (Univ. of Miami)

11:45-12:00   SaB23.3

Fully Automated Detection of the Counting Area in Blood Smears for Computer Aided Hematology **7759-7762**
Rupp, Stephan (Fraunhofer Inst. (IIS)); Schlarb, Timo (Fraunhofer IIS); Haßlmeyer, Erik (Fraunhofer Inst. for
Integrated Circuits); Zerfaß, Thorsten* (Fraunhofer Inst. for Integrated Circuits IIS)

12:00-12:15   SaB23.4

Automated Detection of Cytokinesis-Blocked Micronuclei Using Fuzzy C-Means
Algorithm and Morphological Features **7763-7766**
an, jinggang (Tsinghua Univ.); Zhang, Dandan* (Beijing Normal Univ.); Ye, Datian (Tsinghua Univ.)

12:15-12:30   SaB23.5

Motion Flow Analysis in Cell Videos Using a Multi-Level Clustering Method **7767-7770**
Ataer-Cansizoglu, Esra* (Northeastern Univ.); Ghadarghadar, Nastaran (Northeastern Univ.);
Zareian, Ramin (Northeastern Univ.); Bas, Erhan (Northeastern Univ.); Ruberti, Jeffrey W. (Northeastern Univ.);
Erdogmus, Deniz (Northeastern Univ.)

12:30-12:45   SaB23.6

Refractive Effects on Optical Measurement of Alveolar Volume: A 2-D Ray-Tracing Approach **7771-7774**
Golabchi, Fatemeh Noushin* (Northwestern Univ.); Brooks, Dana (Northeastern Univ.);
Gouldstone, Andrew (Northwestern Univ.); DiMarzio, Charles (Northeastern Univ.)

SaB24: 11:15-12:45   Salon HI Marriott
2.4.12 X-Ray, CT, PET, and SPECT I (Oral Session)
Chair: Laine, Andrew *(Columbia Univ.)*
Co-Chair: Titus, Albert *(Univ. at Buffalo, The State Univ. of New York)*

11:15-11:30   SaB24.1

Breast Skin-Line Detection Using Dynamic Programming **7775-7778**
Silva, Carlos Alberto Batista* (Univ. do Minho); Lima, Carlos Manuel Gregorio Santos (Univ. of Minho);
Correia, Higino (Univ. of Minho)

11:30-11:45   SaB24.2

Segmenting Anatomy in Chest X-Rays for Tuberculosis Screening **7779-7782**

Karargyris, Alexandros* (Natl. Library of Medicine); Antani, Sameer (Natl. Library of Medicine);
Thoma, George (Natl. Library of Medicine, NIH)

11:45-12:00   SaB24.3

Automated Patient Couch Removal Algorithm on CT Images **7783-7786**

Bandi, Peter* (Mediso Medical Imaging Systems Ltd.); Zsoter, Norbert (Mediso Medical Imaging Systems Ltd.);
Seres, Laszlo (Mediso Medical Imaging Systems Ltd.); Toth, Zoltan (ScanoMed Ltd.);
Papp, Laszlo (Mediso Medical Imaging Systems Ltd.)

12:00-12:15   SaB24.4

EMCCD-Based High Resolution Dynamic X-Ray Detector for Neurovascular Interventions **7787-7790**

Sharma, Prateek* (Univ. at Buffalo); Setlur Nagesh, Swetadri Vasan (Univ. At Buffalo); Jain, Amit (Toshiba
Stroke Research Ctr., Univ. at Buffalo); Panse, Ashish (Toshiba Stroke Research Ctr., Univ. at Buffalo);
Titus, Albert (Univ. at Buffalo, The State Univ. of New York); Cartwright, Alexander (Elec. Eng., Univ. at Buffalo,
SUNY); Bednarek, Daniel (Univ. at Buffalo); Rudin, Stephen (Univ. at Buffalo)

12:15-12:30   SaB24.5

Development of Synchrotron Radiation X-Ray Intravital Microscopy for in Vivo
Imaging of Rat Heart Vascular Function **7791-7794**

Umetani, Keiji* (Japan Synchrotron Radiation Research Inst.); Pearson, James (Monash Univ.);
Schwenke, Daryl (Univ. of Otago); Shirai, Mikiyasu (Natl. Cardiovascular Ctr. Research Inst.)

SaB25: 11:15-12:45   Salon JK Marriott
2.8.31 Brain Image Analysis (Oral Session)
Chair: Baselli, Giuseppe *(Pol. di Milano)*
Co-Chair: Babacan, S. Derin *(Univ. of Illinois at Urbana-Champaign)*

11:15-11:30   SaB25.1

Two New Stable Anatomical Landmarks on the Central Sulcus: Definition, Automatic
Detection, and Their Relationship with Primary Motor Functions of the Hand **7795-7798**

Coulon, Olivier* (Laboratoire des Sciences de l'Information et des Systèmes, UMR CNRS 6168); Pizzagalli,
Fabrizio (INSERM U836 UJF-CEA-CHU (Grenoble Inst. of Neuroscience)); Operto, Grégory (Ctr. Neurospin,
CEA, France); Auzias, Guillaume (UMR CNRS 6168); Delon-Martin, Chantal (INSERM U836 UJF-CEA-CHU
(Grenoble Inst. of Neuroscience)); Dojat, Michel (INSERM U836 UJF-CEA-CHU (Grenoble Inst. of)

11:30-11:45   SaB25.2

Blob-Like Feature Extraction and Matching for Brain MR Images **7799-7802**

Razlighi, Qolamreza* (Columbia Univ., Taub Inst.); Yaakov, Stern (Columbia Univ.)

11:45-12:00   SaB25.3

Change Detection and Classification in Brain MR Images Using Change Vector Analysis **7803-7807**

Simoes, Rita* (Univ. of Twente); Slump, Cornelis (Signals & Systems Group, Faculty of Elec. Eng.,
Mathematics & Computer Science, Univ. of Twente)

12:00-12:15   SaB25.4

Comparison between Skeleton-Based and Atlas-Based Approach in the Assessment of Corpus
Callosum Damages in Mild Cognitive Impairment and Alzheimer Disease **7808-7811**

Preti, Maria Giulia* (Politecnico di Milano); Lagana, Maria Marcella (IRCCS S.Maria Nascente);
Baglio, Francesca (Fondazione Don Carlo Gnocchi, Milano); Griffanti, Ludovica (Fondazione Don Carlo
Gnocchi, Milano); Nemni, Raffaello (Fondazione Don Carlo Gnocchi Milano); Cecconi, Pietro (Fondazione Don
Gnocchi ONLUS – IRCCS S. Maria Nascente, Milano); Baselli, Giuseppe (Politecnico di Milano)

12:15-12:30   SaB25.5

Impact of Markov Random Field Optimizer on MRI-Based Tissue Segmentation in the Aging Brain **7812-7815**

Schwarz, Christopher G.* (Univ. of California, Davis); Tsui, Alex (Univ. of California, Davis);
Fletcher, Evan (Univ. of California, Davis); Singh, Baljeet (Univ. of California, Davis);
DeCarli, Charles (Univ. of California, Davis); Carmichael, Owen (Univ. of California, Davis)

12:30-12:45 SaB25.6

A Sparse Based Approach for Detecting Activations in Fmri 7816-7819

Guillen, Blanca* (Univ. Nacional Experimental del Táchira (UNET), SanCristóbal, Venezuela); Paredes, José-Luis, Paredesj (Univ. de los Andes (ULA), Mérida Venezuela); Medina, Rubén (Univ. de Los Andes)

SaB26: 10:30-11:45 Provincetown Marriott
4.4.3 Modeling Biomedical Systems II (Minisymposium)
Chair: Tidor, Bruce *(Massachusetts Inst. of Tech.)*
Co-Chair: Dai, Hongyue *(Merck Res. Lab. Boston, Massachusetts)*

10:30-11:00 SaB26.1

HEPAPrint: A Metagene Expression Signature for Individualized Risk Assessment of Hepatocellular Carcinoma after Surgery .... *

Luk, John M.* (NUHS)

11:00-11:45 SaB26.2

Systematic Study of HCC Tumors by RNA and DNA Profiling of Matched Tumor and Normal Tissues .... *

Dai, Hongyue* (Merck Research Laboratories, Boston, Massachusetts)

SaB27: 11:15-12:45 Staffordshire at the Westin
8.10.16 Mechanics of Locomotion and Balance (Oral Session)
Chair: Della Croce, Ugo *(Univ. of Sassari)*
Co-Chair: Iqbal, Kamran *(Univ. of Arkansas at Little Rock)*

11:15-11:30 SaB27.1

Functional Asymmetry in a Five-Link 3D Bipedal Walker 7820-7823

Gregg, Robert* (Northwestern Univ.); Dhaher, Yasin (Northwestern Univ.); Lynch, Kevin (Northwestern Univ.)

11:30-11:45 SaB27.2

Wireless Gyroscope Suit for Gait Stability Estimation 7824-7828

Gouwanda, Darwin (Monash Univ. Malaysia); Senanayake, S. Mudiyanselage Namal Arosha* (Univ. of Brunei)

11:45-12:00 SaB27.3

A Method to Simulate Motor Control Strategies to Recover from Perturbations: Application to a Stumble Recovery during Gait 7829-7832

Forner-Cordero, Arturo* (Polytechnic School. Univ. of Sao Paulo); Ackermann, Marko (Centro Univ. da FEI); Freitas, Mateus de Lima (Biomechatronics Lab. Mechatronics Dept. Polytechnic School. Univ. of Sao Paulo)

12:00-12:15 SaB27.4

The Effect of Perturbation Onset Timing and Length on Tripping Recovery Strategies 7833-7836

Shirota, Camila* (Northwestern Univ.); Simon, Ann (Rehabilitation Inst. of Chicago); Rouse, Elliott (Northwestern Univ.); Kuiken, Todd (Rehabilitation Inst. of Chicago)

12:15-12:30 SaB27.5

Mechanisms and Models of Postural Stability and Control 7837-7840

Iqbal, Kamran* (Univ. of Arkansas at Little Rock)

12:30-12:45 SaB27.6

Modeling the Walking Patterns of Reciprocating Gait Orthosis Users with a Novel Lower Limb Paralysis Simulator 7841-7844

Johnson, William Brett* (Northwestern Univ.); Fatone, Stefania (Northwestern Univ.); Gard, Steven (Northwestern Univ.)

SaP21: 15:30-17:00 America Ballroom Westin
1.2.10 Biomedical Signal Classification III (Poster Session)

15:30-17:00 SaP21.1

A Novel Method of Detection and Classification of Motor Nerve Late-Wave Activity 7845-7848

Iyer, Darshan* (NEUROMetrix, Inc.); Zheng, Ling (Draeger Medical Systems, Inc., Andover, MA); Williams, Michael (Neurometrix, Inc); Tracey, Brian (Tufts Univ.); Gozani, Shai (Neurometrix Inc)

15:30-17:00   SaP21.14

Optimum Gravity Vector and Vertical Acceleration Estimation Using a Tri-Axial Accelerometer for Falls and Normal Activities 7896-7899

Bourke, Alan* (Univ. of Limerick); O'Donovan, Karol (Shimmer Research); Clifford, Amanda (Dept. of Physiotherapy, Faculty of Education & Health Sciences, Univ. of Limerick, Ireland.); ÓLaighin, Gearoid (Natl. Univ. of Ireland Galway); Nelson, John (Univ. of Limerick)

15:30-17:00   SaP21.15

Gait Feature Extraction in Parkinson's Disease Using Low-Cost Accelerometers 7900-7903

Stamatakis, Julien* (Univ. catholique de Louvain); Crémers, Julien (Univ. de Liège); Maquet, Didier (Univ. de Liège); Macq, Benoit (Univ. catholique de Louvain); Garraux, Gaëtan (Univ. de Liège)

15:30-17:00   SaP21.16

Wireless Accelerometer iPod Application for Quantifying Gait Characteristics 7904-7907

LeMoyne, Robert* (Sandia Natl. Laboratories); Mastroianni, Timothy (Cognition Eng.)

SaP22: 15:30-17:00   America Ballroom Westin
1.6.16 Recent Developments in Adaptive and Kalman Filtering (Poster Session)

15:30-17:00   SaP22.1

Frequency Tracking and Variable Bandwidth for Line Noise Filtering without a Reference 7908-7911

Kelly, John* (Carnegie Mellon Univ.); Collinger, Jennifer (Univ. of Pittsburgh); Degenhart, Alan (Univ. of Pittsburgh); Siewiorek, Daniel (Carnegie Mellon Univ.); Smailagic, Asim (Carnegie Mellon Univ.); Wang, Wei (Univ. of Pittsburgh)

15:30-17:00   SaP22.2

Adaptive Cancellation of Variable Feedback Path for Hearing Aid Using Misalignment-Dependent Step Size Values 7912-7915

Ardestani Khoubrouy, Soudeh* (Univ. of Texas at Dallas); Panahi, Issa (Univ. of Texas at Dallas)

15:30-17:00   SaP22.3

Noise Reduction for Binaural Hearing Aids Using Unsupervised Diffuse Noise Estimator 7916-7919

Ji, Youna* (Yonsei Univ.); Park, Young Cheol (Yonsei Univ.); Kim, Dong W (Samsung); Sohn, Junil (Samsung Advanced Inst. of Tech.)

15:30-17:00   SaP22.4

A New Delayless Subband Filtering Method for Cancelling the Effect of Feedback Path in Hearing Aid Systems 7920-7923

Ardestani Khoubrouy, Soudeh* (Univ. of Texas at Dallas); Panahi, Issa (Univ. of Texas at Dallas); Milani, Ali (Univ. of Texas at Dallas)

15:30-17:00   SaP22.5

Eye Position Prediction in the Case of Nystagmus and Refixations 7924-7927

Savage, Craig Owen* (Univ. of Melbourne)

15:30-17:00   SaP22.6

Automatic Continuous ECG Monitoring System for Over-Drug Detection in Brugada Syndrome 7928-7931

Reis Gomes, Pedro Miguel Pinto* (Lusiada Univ.); Lima, Carlos Manuel Gregorio Santos (Univ. of Minho); Soares, Filomena (Univ. of Minho); Correia, Higino (Univ. of Minho)

15:30-17:00   SaP22.7

Adaptive Filtering for Suppression of Respiratory Artifact in Impedance Cardiography 7932-7936

Pandey, Vinod K. (Tata Consultancy Services,); Pandey, Prem C.* (IIT Bombay); Burkule, Nitin J. (Jupiter Hospital Thane); Subramanyan, L. R. (IIT Bombay)

15:30-17:00   SaP22.8

Adaptive Comb Filtering for Motion Artifact Reduction from PPG with a Structure of Adaptive Lattice IIR Notch Filter 7937-7940

Lee, Boreom* (Gwangju Inst. of Science & Tech. (GIST))

15:30-17:00   SaP22.9

CleanEMG – Power Line Interference Estimation in sEMG Using an Adaptive Least Squares Algorithm 7941-7944

Fraser, Graham D. (Carleton Univ.); Chan, Adrian (Carleton Univ.); Green, James R. (Carleton Univ.);
Abser, Nurul (Univ. of New Brunswick); MacIsaac, Dawn (Univ. of New Brunswick)*

15:30-17:00   SaP22.10

**Predicting Human Subcutaneous Glucose Concentration in Real Time:
A Universal Data-Driven Approach 7945-7948**

*Lu, Yinghui (BioTech. High Performance Software Applications Inst., Telemedicine & Advanced Tech.
Research Ctr., U.S. Army); Rajaraman, Srinivasan* (U.S. Army Medical Research & Materiel Command);
Ward, W. Kenneth (Oregon Health & Sciences Univ. & Legacy Health System); Vigersky, Robert A. (Director,
Diabetes Inst. Walter Reed Health Care System & Professor of Medicine Uniformed Service Univ. of the
Health); Reifman, Jaques (U.S. Army Medical Research)*

SaP23: 15:30-17:00   America Ballroom Westin
1.7.18 Support Vector Machine Applied to Biosignal Analysis (Poster Session)

15:30-17:00   SaP23.1

**Characterization of Subcortical Structures During Deep Brain Stimulation
Utilizing Support Vector Machines 7949-7952**

Guillen, Pablo (The Univ. of Texas at El Paso); Sanchez, Reinaldo (The Univ. of Texas at El Paso);
Argaez, Miguel (The Univ. of Texas at El Paso)*

15:30-17:00   SaP23.2

Parallel Artefact Rejection for Epileptiform Activity Detection in Routine EEG 7953-7956

*Kelleher, Daniel (Univ. College Cork); Temko, Andriy (Univ. College Cork); O' Regan, Simon (Univ. College
Cork); Nash, Derek (Univ. College Cork); McNamara, Brian (Univ. College Cork); Costello, Daniel (Univ.
College Cork); Marnane, Liam* (Univ. College Cork)*

15:30-17:00   SaP23.3

**Machine Learning Classification of MRI Features of Alzheimer's Disease and Mild Cognitive
Impairment Subjects to Reduce the Sample Size in Clinical Trials 7957-7960**

Escudero, Javier* (Univ. of Plymouth); Ifeachor, Emmanuel (Univ. of Plymouth)

15:30-17:00   SaP23.4

Ventricular Repolarization Variability for Hypoglycemia Detection 7961-7964

Nuryani, Nuryani (Univ. of Tech. Sydney); Ling, Steve (Univ. of Tech. Sydney);
Nguyen, Hung T. (Univ. of Tech., Sydney)*

15:30-17:00   SaP23.5

**Classification of Astrocytomas and Oligodendrogliomas from Mass Spectrometry
Data Using Sparse Kernel Machines 7965-7968**

Huang, Jacob (Georgia Inst. of Tech.); Gholami, Behnood (Brigham & Women's Hospital, Harvard Medical
School); Agar, Nathalie (Brigham & Women's Hospital, Harvard Medical School); Norton, Isaiah (Brigham &
Women's Hospital, Harvard Medical School); Haddad, Wassim (Georgia Inst. of Tech.);
Tannenbaum, Allen (Georgia Inst. of Tech.)*

SaP24: 15:30-17:00   America Ballroom Westin
**2.7.30 Image Processing: Filtering, Enhancement, Segmentation, Registration,
Classification, Compression, and Coding** (Poster Session)

15:30-17:00   SaP24.1

**Brain Tissue Segmentation in PET-CT Images Using Probabilistic Atlas and
Variational Bayes Inference 7969-7972**

Xia, Yong (The Univ. of Sydney); Wang, Jiabin (Univ. of Sydney); Eberl, Stefan (Royal Prince Alfred Hospital);
Fulham, Michael (Royal Prince Alfred Hospital); Feng, Dagan (The Univ. of Sydney)*

15:30-17:00   SaP24.12

Digital Staining of Histopathology Multispectral Images by the Combined Application of Spectral Enhancement and Spectral Transformation **8013-8016**

Bautista, Pinky* (Massachusetts General Hospital, Harvard Medical School);
Yagi, Yukako (Massachusetts General Hospital)

15:30-17:00   SaP24.13

Substituting Depth for Intensity and Real-Time Phosphene Rendering: Visual Navigation under Low Vision Conditions **8017-8020**

Lieby, Paulette* (Natl. ICT Australia); Barnes, Nick (NICTA Canberra Research Ctr.); McCarthy, Chris (NICTA); Liu, Nianjun (Natl. ICT Australia Limited); Dennett, Hugh (Australian Natl. Univ.); Walker, Janine (Australian Natl. Univ.); Botea, Viorica (Natl. ICT Australia); Scott, Adele F. (Natl. ICT Australia)

15:30-17:00   SaP24.14

Automatic Quantification and 3D Visualisation of Edema in Cardiac MRI **8021-8024**

Kadir, Kushsairy* (Univ. of Strathcylde); Gao, Hao (Univ. of Strathclyde & Univ. of Glasgow); Payne, Alexander (Univ. of Glasgow); Soraghan, John J (Univ. of Strathclyde); Berry, Colin (Univ. of Glasgow)

15:30-17:00   SaP24.15

An Extended Registration Framework for the Triple Registration of IBZM SPECT, DATSCAN SPECT and MRI Brain Images to Support the Evaluation of Brain Dopamine Receptor Scintigraphies **8025-8028**

Papp, Laszlo* (Mediso Medical Imaging Systems Ltd.); Zsoter, Norbert (Mediso Medical Imaging Systems Ltd.); Bandi, Peter (Mediso Medical Imaging Systems Ltd.); Barna, Sandor (Medical Univ. of Debrecen); Luetzen, Ulf (Medical Univ. of Kiel, Dept. of Nuclear Medicine)

15:30-17:00   SaP24.16

A Fully Automatic Method to Register the Prostate Gland on T2-Weighted and EPI-DWI Images **8029-8032**

De Luca, Massimo (IRCC, Candiolo); Giannini, Valentina* (Politecnico of Turin); Vignati, Anna (FPRC-IRCC); Mazzetti, Simone (Inst. for Cancer Research & Treatment); Bracco, Christian (Inst for Cancer Research & Treatment); Stasi, Michele (Inst. for Cancer Research & Treatment); Armando, Enrico (Inst. for Cancer Research & Treatment); Russo, Filippo (Inst. for Cancer Research & Treatment); Bollito, Enrico (San Luigi Gonzaga Hospital); Porpiglia, Francesco (San Luigi Gonzaga Hospital); Regge, Daniele (Inst. for Cancer research & Treatment)

15:30-17:00   SaP24.17

Segmentation of Lumbar Vertebrae from Clinical CT Using Active Shape Models and GVF-Snake **8033-8036**

Alomari, Raja'* (Univ. at Buffalo, SUNY); Al-Zoubi, M. B. (The Univ. of Jordan); Al-Helo, Samah (The Univ. of Jordan)

15:30-17:00   SaP24.18

Investigation on the Use of Deformable Registrations in Lymph Node Tracking Over Time **8037-8040**

Yu, Peicong (Nanyang Technological Univ.); Sheah, Kenneth (Radlink Diagnostic Imaging Pte Ltd); Poh, Chueh Loo* (Nanyang Technological Univ.)

15:30-17:00   SaP24.19

Estimation of Affine Motion from Projection Data Using a Mass Conservation Model **8041-8044**

Negahdar, Mohammadreza* (Univ. of Louisville); Amini, Amir (Univ. of Louisville)

15:30-17:00   SaP24.20

Simultaneous Segmentation and Inhomogeneity Correction in Magnetic Resonance Images **8045-8048**

Li, Yue* (Johns Hopkins Univ.); Mori, Susumu (Johns Hopkins Univ. School of Medicine)

15:30-17:00   SaP24.21

Elastic Registration Based on Particle Filter in Radiotherapy Images with Brain Deformations **8049-8052**

Mejia-Rodriguez, Aldo Rodrigo (Politecnico di Milano); Arce-Santana, Edgar (Facultad de Ciencias); Scalco, Elisa (Polythecnic Univ. of Milan); Tresoldi, Daniele (Polythecnic Univ. of Milan); Mendez, Martin Oswaldo (Univ. Autonoma de San Luis Potosi); Bianchi, Anna Maria* (Politecnico di Milano); Cattaneo, Giovanni Mauro (Scientific Inst. San Raffaele); Rizzo, Giovanna (Natl. Research Council (CNR))

15:30-17:00 SaP24.22

A Fully Automated Method Using Active Contours for the Evaluation of the Intima-Media Thickness in Carotid US Images **8053-8057**

Petroudi, Styliani* (Univ. of Oxford); Loizou, Christos (Intercollege); Pattichis, Marios (Univ. of New Mexico,); Pattichis, Constantinos (Univ. of Cyprus)

15:30-17:00 SaP24.23

Motion Estimation in Ultrasound Imaging Applied to the Diagnostic of Pelvic Floor Disorders **8058-8061**

Basarab, Adrian* (Univ. de Toulouse); Vidal, Fabien (Univ. Hospital, Toulouse); Abbal, Rémi (Univ. of Toulouse, IRIT UMR CNRS 5505); Delachartre, Philippe (INSA-Lyon); Vayssiere, Christophe (Univ. Hospital, Toulouse); Léguevaque, Philippe (Univ. Hospital, Toulouse); Kouamé, Denis (Univ. de Toulouse, IRIT UMR CNRS 5505)

15:30-17:00 SaP24.24

Medical Image Integrity Control and Forensics Based on Watermarking – Approximating Local Modifications and Identifying Global Image Alterations **8062-8065**

Huang, Hui (INSERM, GET ENST Bretagne); Coatrieux, Gouenou* (Institut Telecom – Telecom Bretagne – Inserm); Shu, Huazhong (Southeast Univ.); Luo, Limin (Univ. of Southeast); Roux, Christian (TELECOM Bretagne – INSERM)

15:30-17:00 SaP24.25

A Joint Watermarking/Encryption Algorithm for Verifying Medical Image Integrity and Authenticity in Both Encrypted and Spatial Domains **8066-8069**

Bouslimi, Dalel* (Telecom Bretagne); Coatrieux, Gouenou (Institut Telecom – Telecom Bretagne – Inserm); Roux, Christian (TELECOM Bretagne – INSERM)

15:30-17:00 SaP24.26

A 2D 3D Registration with Low Dose Radiographic System for in Vivo Kinematic Studies **8070-8073**

Jerbi, Taha* (LaTIM, Telecom Bretagne); Burdin, Valérie (Institut Telecom/Telecom Bretagne – INSERM U650); Stindel, Eric (Univ. de Bretagne Occidentale); Roux, Christian (TELECOM Bretagne – INSERM)

15:30-17:00 SaP24.27

An Efficient Point Based Registration of Intra-Operative Ultrasound Images with MR Images for Computation of Brain Shift; a Phantom Study **8074-8077**

Farnia, Parastoo (Univ.); Ahmadian, Alireza (Tehran Univ. of Medical Sciences); Khoshnevisan, Alireza (Tehran Univ. of Medical Science, Iran); Jaberzadeh Ansari, Amir Hossein (Tehran Univ. of Medical Sciences); Dadashi Serej, Nassim (Tehran Univ. of Medical Sciences); Fathi Kazerooni, Anahita* (Dept. of Biomedical Eng. & Biophysics, Medical School, Tehran Univ. of Medical Sciences, Tehran, Iran)

15:30-17:00 SaP24.28

Towards Segmentation of the Thymus in Fat and Water Parametric MR Images **8078-8081**

Makrogiannis, Sokratis* (Natl. Inst. on Aging, NIH); Ramachandran, Ramona (Natl. Inst. on Aging, NIH); Fishbein, Kenneth (Natl. Inst. on Aging, NIH); Kapogiannis, Dimitrios (Natl. Inst. on Aging, NIH); Spencer, Richard (Natl. Inst. on Aging, NIH); Chia, Chee (Natl. Inst. on Aging, NIH)

15:30-17:00 SaP24.29

Automatic Segmentation of Time-Lapse Microscopy Images Depicting a Live Dharma Embryo **8082-8085**

Zacharia, Eleni (Univ. of Houston); Bondesson, Maria (Univ. of Houston); Riu, Anne (Dept. of Biology & Biochemistry, Univ. of Houston); Ducharme, Nicole A. (Dept. of Biology & Biochemistry, Univ. of Houston); Kakadiaris, Ioannis* (Univ. of Houston)

15:30-17:00 SaP24.30

Lossless 3-D Reconstruction and Registration of Semi-Quantitative Gene Expression Data in the Mouse Brain **8086-8089**

Enlow, Matthew (Pacific Northwest Natl. Lab.); Ju, Tao (Washington Univ. in St. Louis); Kakadiaris, Ioannis (Univ. of Houston); Carson, James* (Pacific Northwest Natl. Lab.)

15:30-17:00 SaP24.31

Simple and Effective Ultrasound Needle Guidance System **8090-8093**

Floryan, Caspar (Harvard Univ.); Hauser, Oliver* (Harvard Univ.); Nguyen, Michael (Brigham & Women's Hospital); Yong, Robert Jason (Brigham & Women's Hospital); Kesner, Samuel B. (Harvard Univ.); Corn, Stephan (Harvard Medical School); Walsh, Conor (Massachusetts General Hospital)

15:30-17:00   SaP24.32

Similarity Enhancement for Automatic Segmentation of Cardiac Structures in Computed Tomography Volumes **8094-8097**

   Vera, Miguel* (Univ. de Los Andes – Venezuela)

15:30-17:00   SaP24.33

Speckle Detection in Ultrasonic Images Using Unsupervised Clustering Techniques **8098-8101**

   Akbarian Azar, Arezou* (Drexel Univ. & Johns Hopkins Univ. School of Medicine);
   Boctor, Emad M. (Johns Hopkins Univ. School of Medicine); Rivaz, Hasan (McGill Univ.)

SaP25: 15:30-17:00	America Ballroom Westin
6.12.58 Advances in Brain Functional Imaging (Poster Session)	

15:30-17:00   SaP25.1

Independent Component Analysis of Resting Brain Activity Reveals Transient Modulation of Local Cortical Processing by Transcranial Direct Current Stimulation **8102-8105**

   Venkatakrishnan, Anusha* (Univ. of Maryland, NINDS/NIH); Contreras-Vidal, José (Univ. of Maryland);
   Sandrini, Marco (NINDS, NIH); Cohen, Leonardo G. (NINDS, NIH)

15:30-17:00   SaP25.2

Relationship between Pulse Number of Rtms and Inter Reversal Time of Perceptual Reversal **8106-8109**

   Nojima, Kazuhisa* (Kyushu Uviversity); Ge, Sheng (Kyushu Univ.); Katayama, Yoshinori (Kyushu Univ.);
   Iramina, Keiji (Kyushu Univ., Japan)

15:30-17:00   SaP25.3

Investigation on the Pleasantness of Music Perception in Monolateral and Bilateral Cochlear Implant Users by Using Neuroelectrical Source Imaging: A Pilot Study **8110-8113**

   Vecchiato, Giovanni (Univ. of Rome Sapienza); Mattia, Donatella (Fondazione Santa Lucia IRCCS);
   Astolfi, Laura (Univ. of Rome); Scorpecci, Alessandro (Ospedale Pediatrico "Bambino Gesù" – IRCCS);
   Babiloni, Fabio* (Univ. of Rome)

15:30-17:00   SaP25.4

Functional Connectivity in Vergence and Saccade Eye Movement Tasks Assessed Using Granger Causality Analysis **8114-8117**

   Alkan, Yelda* (New Jersey Inst. of Tech.); Alvarez, Tara (New Jersey Inst. of Tech.); Gohel, Suril (Univ. of Medicine & Dentistry of New Jersey); Taylor, Paul (Univ. of Medicine & Dentistry of New Jersey); Biswal, Bharat (Univ. of Medicine & Dentistry of New Jersey)

15:30-17:00   SaP25.5

Mechanisms of Neural Reorganization in Chronic Stroke Subjects after Virtual Reality Training **8118-8121**

   Saleh, Soha (NJIT); Bagce, Hamid (UMDNJ); Qiu, Qinyin* (NJIT); Fluet, Gerard (UMDNJ); Merians, Alma (UMDNJ); Adamovich, Sergei (NJIT); Tunik, Eugene (Univ. of Medicine & Dentistry of New Jersey (UMDNJ))

15:30-17:00   SaP25.6

Estimation of Neuronal Responses from fMRI Data **8122-8125**

   Havlicek, Martin (Brno Univ. of Tech.); Jan, Jiri* (Brno Univ. of Tech.); Brazdil, Milan (Masaryk Univ. Brno);
   Calhoun, Vince (The Mind Research Network/Univ. of New Mexico)

SaP26: 15:30-17:00	America Ballroom Westin
8.3.7 Wearable Robotic Orthoses (Poster Session)	

15:30-17:00   SaP26.1

A Pneumatically-Actuated Lower-Limb Orthosis **8126-8129**

   Wu, Sai-Kit (Univ. of Alabama); Jordan, Matthew (Univ. of Alabama); Shen, Xiangrong* (Univ. of Alabama)

15:30-17:00   SaP26.2

Design Considerations for an Active Soft Orthotic System for Shoulder Rehabilitation **8130-8134**

   Kesner, Samuel B.* (Harvard Univ.); Jentoft, Leif (Harvard Univ.); Hammond, Frank L. (Harvard Univ.);
   Howe, Robert (Harvard Univ.); Popovic, Marko (Worchester Polytechnic Inst.)

15:30-17:00   SaP26.3

On the Mechanics of the Ankle in the Stance Phase of the Gait 8135-8140

Shamaei, Kamran* (Yale Univ.); Cenciarini, Massimo (Yale Univ.); Dollar, Aaron (Yale Univ.)

SaP27: 15:30-17:00   America Ballroom Westin

8.10.22 Modeling and Simulation in Musculoskeletal Biomechanics II (Poster Session)

15:30-17:00   SaP27.1

A Detailed 3D Ankle-Foot Model for Simulate Dynamics of Lower Limb Orthosis 8141-8145

Inoue, Jun (Waseda Univ.); Yu, Wenwei (Univ. of Chiba); Kawamura, Kazuya (Waseda Univ.);
Fujie, Masakatsu G. (Waseda Univ.)*

15:30-17:00   SaP27.2

**Control of Human Spine in Repetitive Sagittal Plane Flexion and Extension
Motion Using a CPG Based ANN Approach** 8146-8149

Sedighi, Alireza (Sharif Univ. of Tech.); Sadati, Nasser (The Univ. of British Columbia);
Nasseroleslami, Bahman (Univ. of Strathclyde); Khorsand Vakilzadeh, Majid (Sharif Univ. of Tech.);
Narimani, Roya (Sharif Univ. of Tech.); Parnianpour, Mohammad (Sharif Univ. of Tech.)*

15:30-17:00   SaP27.3

**Experimental Validation of a Reach-And Grasp Optimization Algorithm
Inspired to Human Arm-Hand Control** 8150-8153

Cordella, Francesca (Univ. of Naples Federico II); Zollo, Loredana (Campus Bio-Medico Univ.);
Salerno, Antonino (Univ. Campus Bio-Medico di Roma); Guglielmelli, Eugenio (Campus Bio-Medico Univ.);
Siciliano, Bruno (Univ. Napoli Federico II)*

15:30-17:00   SaP27.4

Redundancy and Joint Limits of a Seven Degree of Freedom Upper Limb Exoskeleton 8154-8157

Miller, Levi Makaio (Univ. of Washington); Kim, Hyunchul (Univ. of California Santa Cruz);
Rosen, Jacob (Univ. of California – Santa Cruz)*

15:30-17:00   SaP27.5

Upper Extremity Wheelchair Kinematics in Children with Spinal Cord Injury 8158-8161

Slavens, Brooke (Univ. of Wisconsin-Milwaukee); Graf, Adam (Shriners Hospital for Children);
Krzak, Joe (Shriners Hospital of Chicago); Vogel, Lawrence (Shriners Hospital for Children-Chicago);
Harris, Gerald (Marquette Univ.)*

15:30-17:00   SaP27.6

Towards Using Musculoskeletal Models for Intelligent Control of Physically Assistive Robots 8162-8165

Carmichael, Marc Garry* (Univ. of Tech., Sydney); Liu, Dikai (Univ. of Tech., Sydney)

SaP28: 15:30-17:00   America Ballroom Westin

8.10.30 Joint Biomechanics (Poster Session)

15:30-17:00   SaP28.1

Contributions of Non-Spherical Hip Joint Cartilage Surface to Hip Joint Contact Stress 8166-8169

Gu, Dong-Yun (Shanghai Ninth People's Hospital); Hu, Fei (Shanghai Jiaotong Univ.); Wei, Jian-He (Shanghai
Jiaotong Univ.); Dai, Kerong (Shanghai Second Medical Univ.); Chen, Yazhu (Shanghai jiaotong Univ.)*

15:30-17:00   SaP28.2

Preliminary Design of a Novel System for Estimating End-Point Stiffness 8170-8174

Masia, Lorenzo* (Istituto Italiano Di Tecnologia); Sandini, Giulio (Univ. of Genoa); Morasso, Pietro (Univ. of Genova)

15:30-17:00   SaP28.3

A Novel Energy-Efficient Rotational Variable Stiffness Actuator 8175-8178

Rao, Shodhan* (Univ. of Groningen); Carloni, Raffaella (Univ. of Twente); Stramigioli, Stefano (Univ. of Twente)

15:30-17:00   SaP28.4

Design and Validation of a Platform Robot for Determination of Ankle Impedance During Ambulation ... 8179-8182

Rouse, Elliott (Northwestern Univ.); Hargrove, Levi (Rehabilitation Inst. of Chicago);
Peshkin, Michael (Northwestern Univ.); Kuiken, Todd (Rehabilitation Inst. of Chicago)*

15:30-17:00   SaP28.5

An Analysis of Leg Joint Synergy During Bipedal Walking in Japanese Macaques 8183-8186

Kaichida, Shoko* (Yamaguchi Univ.); Hashizume, Yoshimitsu (Yamaguchi Univ.);
Ogihara, Naomichi (Keio Univ.); Nishii, Jun (Yamaguchi Univ.)

15:30-17:00   SaP28.6

Influence of Muscular Fatigue on Skiing Performance During Parallel Turns 8187-8190

Kiryu, Tohru* (Niigata Univ.); Murayama, Toshio (Niigata Univ.); Ushiyama, Yukihiko (Niigata Univ.)

SaP29: 15:30-17:00	America Ballroom Westin
10.6.15 Recent Developments in Health Information Management and Electronic Health Records (Poster Session)	

15:30-17:00   SaP29.1

SERVANDO: An Extensible Platform for Home-Care Services Providing 8191-8194

Teijeiro, Tomás* (Centro de Investigación en Tecnoloxías daInformación(CITUS),
Univ. de Santiago de Compostela)

15:30-17:00   SaP29.2

Lossless Watermarking of Categorical Attributes for Verifying Medical Data Base Integrity 8195-8198

Coatrieux, Gouenou* (Institut Telecom – Telecom Bretagne – Inserm); Chazard, Emmanuel (Lille Univ.
Hospital); Beuscart, Régis (Univ. hospital of Lille); Roux, Christian (TELECOM Bretagne – INSERM)

15:30-17:00   SaP29.3

MiRTE: Mixed Reality Triage and Evacuation Game for Mass Casualty
Information Systems Design, Testing and Training 8199-8202

Yu, Xunyi (Univ. of Massachusetts); Ganz, Aura* (Univ. of Massachusetts, Amherst)

15:30-17:00   SaP29.4

Design of an X-Ray / Ventilator Synchronization System in an Integrated Clinical Environment 8203-8206

Arney, David* (CIMIT, Univ. of Pennsylvania); Bhatia, Kunal (Boston Univ.); Bhatia, Sanchit (Boston Univ.);
Sutton, Michael (Boston Univ.); Rausch, Tracy L. (DocBox Inc); Karlinsky, Joel (VA);
Goldman, Julian (Massachusetts General Hospital, CIMIT)

15:30-17:00   SaP29.5

Portable and Cost-Effective Pixel Super-Resolution On-Chip
Microscope for Telemedicine Applications 8207-8210

Bishara, Waheb* (Univ. of California, Los Angeles); Sikora, Uzair (UCLA); Yaglidere, Oguzhan (UCLA);
Mudanyali, Onur (UCLA); Su, Ting-Wei (Univ. of California, Los Angeles); Luckhart, Shirley (UC Davis);
Ozcan, Aydogan (UCLA)

15:30-17:00   SaP29.6

Development of a Ubiquitous Healthcare Monitoring System Combined with Non-Conscious and
Ambulatory Physiological Measurements and Its Application to Medical Care 8211-8214

Motoi, Kosuke* (Kanazawa Univ.); Taniguchi, Sayaka (Fujimoto Hayasuzu Hospital); Yuji, Tadahiko (Fujimoto
Hayasuzu Hospital); Ogawa, Mitsuhiro (Kanazawa Univ.); Tanaka, Naoto (Kanazawa Univ.); Hata, Kazuhiro
(Kanazawa Univ.); Baek, Mina (Kanazawa Univ.); Ueno, Hiroshi (Imizu City Hospital); Wakugawa, Morikuni
(Fujimoto Hayasuzu Hospital); Sonoda, Takumi (Fujimoto Hayasuzu Hospital); Fukunaga, Seiji (Fujimoto
Hayasuzu Hospital); Higashi, Yuji (Fujimoto Hayasuzu Hospital); Matsumura, Kenta (Kanazawa Univ.);
Yamakoshi, Takehiro (Kanazawa Univ.); Tanaka, Shinobu (Kanazawa Univ.); Fujimoto, Toshiro (Fujimoto
Hayasuzu Hospital); Asanoi, Hidetsugu (Imizu City Hospital); Yamakoshi, Ken-ichi (Kanazawa Univ.)

15:30-17:00   SaP29.7

Investigating the Efficiency of IEEE 802.15.4 for Medical Monitoring Applications 8215-8218

Pelegris, Panagiotis (Brunel Univ.); Banitsas, Konstantinos* (Brunel Univ.)

15:30-17:00   SaP29.8

Secure Communications for PACS in a Cloud Environment 8219-8222

Teng, Chia-Chi* (Brigham Young Univ.)

17:15-17:30   SaD01.1

The Effects of Voluntary, Involuntary, and Forced Exercises on Motor Recovery in a Stroke Rat Model 8223-8226

Ke, Zheng (The Hong Kong Polytechnic Univ.); Yip, Shea Ping (The Hong Kong Polytechnic Univ.); Li, Le (The First Affiliated Hospital, Sun Yat-sen Univ.); Zheng, Xiaoxiang (Zhejiang Univ.); Tam, Wing Kin (the Hong Kong Polytechnic Univ.); Tong, Kai Yu, Raymond* (The Hong Kong Polytechnic Univ.)

17:30-17:45   SaD01.2

A Quantitative and Standardized Robotic Method for the Evaluation of
Arm Proprioception after Stroke 8227-8230

Simo, Lucia (Northwestern Univ.); Ghez, Claude (Columbia Univ. Medical Ctr.); Botzer, Lior (Marquette Univ.); Scheidt, Robert A.* (Marquette Univ.)

17:45-18:00   SaD01.3

Quantifying Loss of Independent Joint Control in Acute Stroke with a
Robotic Evaluation of Reaching Workspace 8231-8234

Ellis, Michael* (Northwestern Univ.); Kottink, Anke (Roessingh Research & Development); Prange, G.B. (Roessingh Research & Development); Rietman, Johan S (Roessingh Research & Development, Univ. of Twente, The Netherlands); Buurke, Jacob Hilbert (Roessingh Research & Development); Dewald, Julius P. A. (Northwestern Univ.)

18:00-18:15   SaD01.4

Dynamic Time Warping As a Spatial Assessment of Sensorimotor Impairment Resulting from Stroke 8235-8238

Chalmers, Nathan* (Queen's Univ.)

18:15-18:30   SaD01.5

Influence of Visual Feedback in the Regulation of Arm Stiffness Following Stroke 8239-8242

Piovesan, Davide* (Rehabilitation Inst. of Chicago); Casadio, Maura (Northwestern Univ.); Morasso, Pietro (Univ. of Genova); Giannoni, Psiche (ART Education & Rehabilitation Dept. srl)

18:30-18:45   SaD01.6

Examination of Motor Unit Control Properties in Stroke Survivors Using Surface
EMG Decomposition: A Preliminary Report 8243-8246

Suresh, Nina* (Rehabilitation Inst. of Chicago); Li, Xiaoyan (Rehabilitation Inst. of Chicago); Zhou, Ping (Northwestern Univ. & Rehab Inst of Chicago); Rymer, William Zev (Northwest. & Rehab Inst of Chicago)

SaD02: 17:15-18:45   St. George CD Westin
8.9.19 Optimization and Machine Learning in Biomechanics (Oral Session)
Chair: O'Malley, Marcia K. *(Rice Univ.)*
Co-Chair: Popovic, Marko *(Worchester Pol. Inst.)*

17:15-17:30   SaD02.1

Towards a Complete Description of Grasping Kinematics: A Framework for
Quantifying Human Grasping and Manipulation 8247-8250

Fu, Qiushi* (Arizona State Univ.); Santello, Marco (Arizona State Univ.)

17:30-17:45   SaD02.2

Cortical Network Modeling for Inverse Kinematic Computation of an Anthropomorphic Finger 8251-8254

Gentili, Rodolphe* (Univ. of Maryland; School of Public Health); Oh, Hyuk (Univ. of Maryland, College Park); Molina-Vilaplana, Javier (Dept. of Systems Eng. & Automation. Technical Univ. of Cartagena); Contreras-Vidal, José (Univ. of Maryland)

17:45-18:00   SaD02.3

Comparing a Passive-Elastic and a Powered Prosthesis in Transtibial Amputees 8255-8258

Mancinelli, Chiara* (Harvard Medical School); Patritti, Ben (Harvard Medical School); Tropea, Peppino (Scuola Superiore Sant'Anna); Greenwald, Richard (Simbex); Casler, Rick (iWalk); Herr, Hugh (MIT); Bonato, Paolo (Harvard Medical School)

18:00-18:15   SaD02.4
Knee-Extension-Assist for Knee-Ankle-Foot Orthoses **8259-8262**
Spring, Alexander* (Univ. of Waterloo); Kofman, Jonathan (Univ. of Waterloo);
Lemaire, Edward (The Ottawa Hospital Rehab Ctr.)

18:15-18:30   SaD02.5
Cost Function Tuning Improves Muscle Force Estimation Computed by
Static Optimization During Walking **8263-8266**
Monaco, Vito (Scuola Superiore Sant'Anna, Pisa); Coscia, Martina (Scuola Superiore Sant'Anna);
Micera, Silvestro* (École Polytechnique Fédérale de Lausanne)

18:30-18:45   SaD02.6
A Neuromuscular Elbow Model for Analysis of Force and Movement Variability in Slow Movements **8267-8270**
Celik, Ozkan* (San Francisco State Univ.); O'Malley, Marcia K. (Rice Univ.)

SaD03: 17:15-18:45   Essex Ballroom South Westin
6.2.5 Neural Decoding in Brain-Machine Interfaces (Minisymposium)
Chair: Malik, Wasim Q. *(Massachusetts Inst. of Tech.)*
Co-Chair: Brown, Emery N. *(Massachusetts General Hospital-Harvard Medical School-MIT)*

17:15-17:30   SaD03.1
Neural Decoding in BCIs: So Many Questions, so Little Time .... *
Hochberg, Leigh* (VA/Brown U./MGH/Harvard Med. School)

17:30-17:45   SaD03.2
A Challenge for Closed-Loop Control: Dissociating Motor Cortex from the Motor .... *
Schieber, Marc* (Univ. of Rochester)

17:45-18:00   SaD03.3
Using Naturalistic Kinesthetic Feedback for Brain Machine Control .... *
Hatsopoulos, Nicholas* (Univ. of Chicago); Suminski, Aaron (Univ. of Chicago);
Fagg, Andrew (Univ. of Oklahoma)

18:00-18:15   SaD03.4
Real-Time Brain-Machine Interface Control by Combining Target Intent and
Kinematic Movement Information from Neural Spiking Activity .... *
Brown, Emery N* (MGH-Harvard Medical School-MIT)

SaD05: 17:15-18:45   Essex Ballroom North Westin
6.1.1 Wireless Miniature Neurostimulation Devices (Minisymposium)
Chair: Pikov, Victor *(HMRI & Univ. of Southern California)*
Co-Chair: Unlu, Selim *(Boston Univ.)*

17:15-17:30   SaD05.1
A Light-Activated Wireless Micro-Stimulator .... *
Sahin, Mesut* (New Jersey Inst. of Tech.); Abdo, Ammar (NJIT); Freedman, David (Boston Univ.);
Spuhler, Philipp (Boston Univ.); Unlu, Selim (Boston Univ.)

17:30-17:45   SaD05.2
The Design of an Independently Addressable Wireless Light-Activated Micro-Stimulator .... *
Freedman, David* (Boston Univ.); Spuhler, Philipp (Boston Univ.); Cevik, Elif (Boston Univ.);
Unlu, Selim (Boston Univ.); Sahin, Mesut (New Jersey Inst. of Tech.)

17:45-18:00   SaD05.3
MEMS-Based Implantable RF Wireless Neurostimulators .... *
Lee, Jeong-Bong* (Univ. of Texas at Dallas)

6.1.2 Optogenetics: Novel Tools for Probing and Manipulating Neural Circuits (Minisymposium)
Chair: Oweiss, Karim *(Michigan State Univ.)*
Co-Chair: Boyden, Edward *(MIT)*

17:15-17:30   SaD08.1
Optogenetics, Neural Ensemble Recordings and Graphical Models: Characterizing Neuroplasticity in Vivo .... *
  Oweiss, Karim* (Michigan State Univ.)

17:30-17:45   SaD08.2
Optogenetics .... *
  Boyden, Edward* (MIT)

17:45-18:00   SaD08.3
Optogenetics and Brain-Machine Interfaces .... *
  Diester, Ilka (Stanford Univ.); Kaufman, Matthew (Stanford Univ.); Goo, Werapong (Stanford Univ.);
  O'Shea, Dan (Stanford Univ.); Kalanithi, Paul (Stanford Univ.); Deisseroth, Karl (Stanford Univ.);
  Shenoy, Krishna V.* (Stanford Univ.)

6.11.43 Epilepsy – II (Oral Session)
Chair: Dumont, Guy *(Univ. of British Columbia)*
Co-Chair: Worrell, Gregory A. *(Mayo Clinic)*

17:15-17:30   SaD09.1
Dynamic Imaging of Ictal Rhythmic Activity Using Dense-Array EEG 8271-8274
  Yang, Lin* (Univ. of Minnesota); Wilke, Christopher (Univ. of Minnesota); Brinkmann, Benjamin (Mayo
  Foundation); Worrell, Gregory A. (Mayo Clinic); He, Bin (Univ. of Minnesota)

17:30-17:45   SaD09.2
Markerless Video Analysis for Movement Quantification in Pediatric Epilepsy Monitoring 8275-8278
  Lu, Haiping* (Inst. for Infocomm Research); Eng, How-Lung (Inst. for Infocomm Research);
  Mandal, Bappaditya (Inst. for Infocomm Research); Chan, Derrick W. S. (KK Women's &
  Children's Hospital); Ng, Yen-Ling (KK Women's & Children's Hospital)

17:45-18:00   SaD09.3
Multivariate Analysis of SEEG Signals During Seizure 8279-8282
  Kerr, Matthew* (Johns Hopkins Univ.); Burns, Samuel (Johns Hopkins Univ.);
  Gale, John (Cleveland Clinic); Sarma, Sridevi V. (Johns Hopkins Univ.)

18:00-18:15   SaD09.4
Algorithm for Automatic Detection of Pentylenetetrazole-Induced Seizures in Rats 8283-8286
  Besio, W. G.* (Univ. of Rhode Island); Liu, Xiang (Univ. of Rhode Island); Liu, Yuhong (Univ. of Rhode Island);
  Sun, Yan (Univ. of Rhode Island); Medvedev, Andrei (Georgetown Univ.); Koka, Kanthaiah (Otologics LLC)

18:15-18:30   SaD09.5
Noise-Assisted Intrinsic Mode Function Coherence in Seizure Anticipation 8287-8290
  Moller, Daniel William* (Louisiana Tech Univ.); Chiu, Alan Wing Lun (Louisiana Tech Univ.)

10.7.13 Data Mining, Information Processing and Decision Support Systems (Oral Session)
Chair: Kahya, Yasemin P. *(Bogazici Univ.)*
Co-Chair: Pepper, Noah *(Qmedtrix)*

17:15-17:30   SaD10.1
Using Support Vector Machines to Detect Medical Fraud and Abuse 8291-8294
  Francis, Charles (Qmedtrix); Pepper, Noah (Qmedtrix); Strong, Homer* (Qmedtrix)

17:30-17:45 SaD10.2

An Intelligent Decision Support System for the Treatment of Patients Receiving Ventricular Assist Device (VAD) Support **8295-8298**

Karvounis, Evaggelos (Univ. of Ioannina); Katertsidis, Nikolaos (FORTH-BRI); Exarchos, Themis P. (Unit of Medical Tech & Intelligent Info); Fotiadis, Dimitrios I.* (Univ. of Ioannina)

17:45-18:00 SaD10.3

A Personalized Approach for Predicting the Effect of Aerobic Exercise on Blood Pressure Using a Fuzzy Inference System **8299-8302**

Honka, Anita* (VTT Technical Research Ctr. of Finland); van Gils, Mark (VTT Tech Research Ctr. of Finland); Pärkkä, Juha (VTT)

18:00-18:15 SaD10.4

Heterogeneous Data Fusion and Intelligent Techniques Embedded in a Mobile Application for Real-Time Chronic Disease Management **8303-8306**

Bellos, Christos (FORTH BRI Foundation for Research & Tech. – Hellas,Biomedical Research); Papadopoulos, Athanasios (Foundation for Research & Tech.); Rosso, Roberto (Tesan S.p.A.); Fotiadis, Dimitrios I.* (Univ. of Ioannina)

18:15-18:30 SaD10.5

Gene Expression Profiling towards the Prediction of Oral Cancer Reoccurrence **8307-8310**

Exarchos, Konstantinos* (Univ. of Ioannina); Goletsis, Yorgos (Univ. of Ioannina); Poli, Tito (Azienda Ospedaliero Univ. of Parma); Fotiadis, Dimitrios I. (Univ. of Ioannina)

18:30-18:45 SaD10.6

Mining Data from CFD Simulation for Aneurysm and Carotid Bifurcation Models **8311-8314**

Filipovic, Nenad* (Univ. of Kragujevac); Radovic, Milos (Univ. of Kragujevac); Petrovic, Dejan (BioIRC, Univ. of Kragujevac)

SaD12: 17:15-18:45 — Suffolk Marriott

5.10.20 Development of Sleep and Respiratory Analysis Systems using Reference Data Sets from Databases of Physiological Signals; Physionet (US) and Siesta (EU) as Examples (Oral Session)

Chair: Leder, Ron *(Univ. Nacional Autonoma de Mexico)*
Co-Chair: Verma, Naveen *(Princeton Univ.)*

17:15-17:30 SaD12.1

Open-Access MIMIC-II Database for Intensive Care Research **8315-8318**

Lee, Joon* (MIT); Scott, Daniel (Massachusetts Inst. of Tech.); Villarroel, Mauricio (Univ. of Oxford); Clifford, Gari (Massachusetts Inst. of Tech.); Saeed, Mohammed (MIT); Mark, Roger (Massachusetts Inst. of Tech.)

17:30-17:45 SaD12.2

Developing Quantitative Physiological Phenotypes of Sleep Apnea for Epidemiological Studies **8319-8322**

Kirkness, Jason Paul* (Johns Hopkins Univ.); McGinley, Brian (Johns Hopkins Univ.); Sgambati, Francis (Johns Hopkins Univ.); Patil, Susheel (Johns Hopkins Univ.); Smith, Philip L. (Johns Hopkins Univ.); Schwartz, Alan R. (Johns Hopkins Univ.); Schneider, Hartmut (Johns Hopkins Univ.)

17:45-18:00 SaD12.3

The SIESTA Database and the SIESTA Sleep Analyzer **8323-8326**

Penzel, Thomas* (Charite Univ. Hospital); Glos, Martin (Charite-Univ.smedizin Berlin); Garcia, Carmen (Charité Univ. Hospital Berlin, Sleep Medicine Ctr.); Schoebel, Christoph (Charite Univ.smedizin Berlin); Fietze, Ingo (Charite-Univ.smedizin Berlin)

18:00-18:15 SaD12.4

PhysioNet: Physiologic Signals, Time Series and Related Open Source Software for Basic, Clinical, and Applied Research **8327-8330**

Moody, George* (Masssachusetts Inst. of Tech.); Mark, Roger (Massachusetts Inst. of Tech.)

18:15-18:30 SaD12.5

Snoring Analysis for the Screening of Sleep Apnea Hypopnea Syndrome with a Single-Channel Device Developed Using Polysomnographic and Snoring Databases **8331-8333**

Jané, Raimon* (Univ. Politècnica de Catalunya)

7.6.1 Gene and Drug Delivery (Oral Session)
Chair: Wang, Chun *(Univ. of Minnesota)*
Co-Chair: Xu, Qiaobing *(Tufts Univ.)*

17:15-17:30   SaD15.1
Delivery of Mrna Using a Combinatorial Library of Lipidoids .... *
  Xu, Qiaobing* (Tufts Univ.)

17:30-17:45   SaD15.2
Chimeric Nanoparticles with Viral Core and Stimuli-Degradable Shell for Synergistic Gene Therapy .... *
  Kwon, Young Jik* (Univ. of California, Irvine)

17:45-18:00   SaD15.3
Non-Viral Engineered Stem Cells As Drug Delivery Vehicles for Therapeutic Angiogenesis .... *
  Yang, Fan* (Stanford Univ.)

18:00-18:15   SaD15.4
Facilitated Self-Assembly of Novel Dendron-Based Copolymers 8334-8336
  *Pearson, Ryan (Univ. of Illinois at Chicago); Bae, Jin Woo (Univ. of Illinois at Chicago); Sunoqrot, Suhair (Univ.
  of Illinois at Chicago); Uddin, Sayam (Univ. of Illinois at Chicago); Hong, Seungpyo* (Univ. of Illinois at Chicago)*

18:15-18:30   SaD15.5
Drug-Polyester Conjugated Nanoparticles for Cancer Drug Delivery 8337-8339
  *Tong, Rong (MIT); Tang, Li (Univ. of Illinois at Urbana Champaign); Yin, Qian (Univ. of Illinois at Urbana
  Champaign); Cheng, Jianjun* (Univ. of Illinois at Urbana-Champaign)*

SaD16: 17:15-18:45   Darthmouth Marriott
9.6.2 Hardware Design for Medical Applications (Oral Session)
Chair: Yana, Kazuo *(Hosei Univ.)*
Co-Chair: Tunay, Ilker *(Stereotaxis, Inc.)*

17:15-17:30   SaD16.1
Sensor Architecture for a Two-Actuator Robotic Endoscope Tip 8340-8343
  Chen, Yi* (MIT); Oliveira, Jillian M. (MIT); Hunter, Ian (Massachusetts Inst. of Tech.)

17:30-17:45   SaD16.2
Distributed Parameter Statics of Magnetic Catheters 8344-8347
  Tunay, Ilker* (Stereotaxis, Inc.)

17:45-18:00   SaD16.3
Neuroscience Robotics to Investigate Multisensory Integration and Bodily Awareness 8348-8352
  Duenas, Julio (ETH Zurich); Chapuis, Dominique (Eidgenössische Technische Hochschule Zürich);
  Pfeiffer, Christian (LNCO, EPFL); Martuzzi, Roberto (LNCO, EPFL); Ionta, Silvio (LNCO, EPFL);
  Blanke, Olaf (LNCO, EPFL); Gassert, Roger (ETH Zurich)*

18:00-18:15   SaD16.4
**Structural Design of a Newly Developed Pediatric Circulatory Assist Device for
Fontan Circulation by Using Shape Memory Alloy Fiber** 8353-8355
  Shiraishi, Yasuyuki (Tohoku Univ.); Sugai, Telma Keiko (Tohoku Univ.); Tanaka, Akira (Fukushima Univ.);
  Yambe, Tomoyuki (Tohoku Univ.); Yoshizawa, Makoto (Tohoku Univ.)*

18:15-18:30   SaD16.5
Wireless Power Delivery for Retinal Prostheses 8356-8360
  Ng, David, C (NICTA); Allen, Penelope J (Royal Victorian Eye & Ear Hospital); Bai, Shun (Univ. of Melbourne);
  Meffin, Hamish (Natl. ICT Australia); Halpern, Mark E (NICTA Victoria Res. Lab.);
  Skafidas, Stan (NICTA Victoria Research Lab)*

18:30-18:45 SaD16.6

A Programmable and Configurable Multi-Port System-On-Chip for Stimulating Electrokinetically-Driven Microfluidic Devices **8361-8364**

Lopez, Martha Salome (Univ. Tech Inst. of Monterrey, Mexico); Gerstlauer, Andreas (The Univ. of Texas at Austin); Avila, Alfonso (Tecnologico de Monterrey); Martinez-Chapa, Sergio O. (Tecnologico de Monterrey)*

SaD17: 17:15-18:45 Exeter Marriott
3.7.2 Smart Textile and Wearable Systems (Oral Session)
Chair: Lymberis, Andreas *(European Commission)*
Co-Chair: De Rossi, Danilo *(Univ. of Pisa)*

17:15-17:30 SaD17.1

Biosensing and Environmental Sensing for Emergency and Protection E-Textiles **8365-8368**

Magenes, Giovanni (Univ. of Pavia); Curone, Davide (Univ. degli Studi di Pavia); Secco, Emanuele Lindo (Eucentre); Bonfiglio, Annalisa (Univ. of Cagliari)*

17:30-17:45 SaD17.2

Electroactive Polymer Patches for Wearable Haptic Interfaces **8369-8372**

De Rossi, Danilo (Univ. of Pisa); Carpi, Federico (Univ. of Pisa); Carbonaro, Nicola (Univ. of pisa); Tognetti, Alessandro (Univ. of Pisa); Scilingo, Enzo Pasquale (Univ. of Pisa)*

17:45-18:00 SaD17.3

Elastic Components for Prosthetic Skin **8373-8376**

Lacour, Stéphanie (EPFL); Graz, Ingrid (Johannes Kepler Univ.); Cotton, Darryl (Univ. of Cambridge); Bauer, Siegfried (Johannes Kepler Univ.); Wagner, Sigurd (Princeton Univ.)*

18:00-18:15 SaD17.4

Fabric Opto-Electronics Enabling Healthcare Applications; a Case Study **8377-8379**

van Pieterson, Liesbeth (Philips Research); van Abeelen, Frank (Philips Research); van Os, Koen (Philips Research); Hornix, Eefje (Philips Research); Zhou, Guofu (Philips Research); Oversluizen, Gerrit (Philips Research)*

SaD19: 17:15-18:45 Salons AB Marriott
3.8.10 Microfluidic Techniques, Methods and Systems (Oral Session)
Chair: Demirci, Utkan *(Harvard-MIT/HST)*
Co-Chair: Mabuchi, Kunihiko *(The Univ. of Tokyo)*

17:15-17:30 SaD19.1

Miniaturized Osmotic Pump for Oromucosal Drug Delivery with External Readout Station **8380-8383**

Herrlich, Simon (HSG-IMIT); Lorenz, Thomas (HSG-IMIT); Marker, Michael (HSG-IMIT); Spieth, Sven (HSG-IMIT); Messner, Stephan (Hahn-Schickard-Institut für Mikro- und Informationstechnik – HSG-IMIT); Zengerle, Roland (Hahn-Schickard-Institut für Mikro- und Informationstechnik – HSG-IMIT)*

17:30-17:45 SaD19.2

A Low Cost Solution for the Fabrication of Dielectrophoretic Microfluidic Devices and Embedded Electrodes **8384-8387**

Sano, Michael B. (Virginia Tech); Caldwell, John L. (Virginia Tech); Davalos, Rafael (Virginia Tech)*

17:45-18:00 SaD19.3

An Integrated Open-Cavity System for Magnetic Bead Separation and Manipulation **8388-8391**

Abu-Nimeh, Faisal (Michigan State Univ.); Salem, Fathi (Michigan State Univ.)*

18:00-18:15 SaD19.4

PCR-Free, Microfluidic Single Molecule Analysis of Circulating Nucleic Acids in Lung Cancer Patient Serum **8392-8395**

Liu, Kelvin J (Johns Hopkins Univ.); Wang, Tza-Huei (Johns Hopkins Univ.)*

18:15-18:30 SaD19.5

Capillary Fractionation of HPLC Substrates by a Microfluidic Droplet Generator for High Throughput Analysis **8396-8399**

Hamed, Shereef (Wayne State Univ.); Shay, Brian (Univ. of Michigan); Basu, Amar (Wayne State Univ.)*

18:30-18:45 SaD19.6

Green Microfluidics Made of Corn Proteins **8400-8403**

  Hsiao, Austin* (Univ. of Illinois Urbana Champaign); Luecha, Jarupat (Univ. of Illinois Urbana Champaign);
  Kokini, Jozef (Univ. of Illinois Urbana Champaign); Liu, Logan (Univ. of Illinois at Urbana-Champaign)

SaD20: 17:15-18:45 Salons CD Marriott
3.8.29 Implantable Systems II (Oral Session)
Chair: Maglaveras, Nikolaos *(Aristotle Univ. of Thessaloniki)*
Co-Chair: de Jongh Curry, Amy *(The Univ. of Memphis)*

17:15-17:30 SaD20.1

On-Chip Incubation System for Long-Term Microfluidic Cell Culture **8404-8407**

  Takano, Atsushi* (Frontier R&D Ctr., Tokyo Denki Univ.); Ogawa, Tomohisa (Tokyo Denki Univ.);
  Tanaka, Masato (Tokyo Denki Univ.); Futai, Nobuyuki (Tokyo Denki Univ.)

17:30-17:45 SaD20.2

Towards a Cellular Multi-Parameter Analysis Platform: Fluorescence in Situ
Hybridization (FISH) on Microhole-Array Chips **8408-8411**

  Kurz, Christian* (Fraunhofer Inst. for Biomedical Eng.); v.d. Moosdijk, Stefan (Fraunhofer Institute for
  Biomedical Eng.); Thielecke, Hagen (Fraunhofer Inst. for Biomedical Eng.); Velten, Thomas (Fraunhofer Inst.)

17:45-18:00 SaD20.3

A Robust Microfluidic *in Vitro* Cell Perifusion System **8412-8415**

  Morris, Christina (Imperial College London); Banks, Dylan James* (Imperial College London);
  Gaweda, Lukasz Gaweda (Imperial College London); Scott, Steve (Imperial College London);
  Zhu, XiXi (Imperial College London); Panico, Maria (Imperial College London);
  Georgiou, Pantelis (Imperial College London); Toumazou, Christofer (Imperial College London)

18:00-18:15 SaD20.4

Optimization for Enhancement of Signal Effectiveness in Three-Dimensional (3D)
Cell Based Electrochemical Biosensor **8416-8419**

  Jeong, Se Hoon* (Samsung Electro-Mechanics); Ku, Bosung (Samsung Electro-Mechanics);
  Yi, Sang Hyun (Samsung Electro-Mechanics); Lee, Dong Woo (Samsung Electro-Mechanics);
  Lee, Hye Seon (Samsung Medical Ctr.); Kim, Jhingook (Samsung Medical Ctr.)

18:15-18:30 SaD20.5

A Planar Structure Sensitive to Out-Of-Plane Forces for the Force-Controlled
Injection of Suspended and Adherent Cells **8420-8423**

  Desmaële, Denis* (CEA, LIST); Boukallel, Mehdi (Univ. Pierre et Marie Curie-Paris 6, CNRS-FRE 2507);
  Regnier, Stéphane (Univ. Paris 6 – CNRS)

18:30-18:45 SaD20.6

An Inexpensive Alternative Bath System for Electrophysiological
Characterization of Isolated Cardiac Tissue **8424-8427**

  Villa, Emanuel* (Univ. of Memphis); White, Alayne Stewart (Univ. of Memphis); Liao, Jun (Mississippi
  State Univ.); de Jongh Curry, Amy (The Univ. of Memphis)

SaD21: 17:15-18:45 Salon E Marriott
1.4.3 Cardiovascular Signal Processing and Modeling: Intraoperative Haemodynamic Monitoring (Oral Session)
Chair: Cerutti, Sergio *(Politecnico di Milano)*
Co-Chair: Toschi, Nicola *(Univ. Tor Vergata, Rome, Italy)*

17:15-17:30 SaD21.1

Arterial Blood Pressure Regulation Following Aorta Clamping and Declamping During Surgery **8428-8431**

  Ferrario, Manuela* (Politecnico di Milano); Aletti, Federico (Politecnico di Milano); Toschi, Nicola (Univ. Tor
  Vergata, Rome, Italy); Canichella, Antonio (Univ. of Rome "Tor Vergata"); Coniglione, Filadelfo (Univ. of Rome
  "Tor Vergata"); Sabato, Elisabetta (Univ. of Rome "Tor Vergata"); Della Badia Giussi, Florencia (Univ. of Rome
  "Tor Vergata"); Dauri, Mario (Univ. of Rome "Tor Vergata"); Sabato, Alessandro Fabrizio (Univ. of Rome "Tor
  Vergata"); Guerrisi, Maria (Univ. of Rome "Tor Vergata"); Cerutti, Sergio (Politecnico di Milano)

17:30-17:45   SaD21.2
Cold Intermittent Cardioplegia Reduces the Acidosis During Prolonged
Cardiac Surgery with Cardiopulmonary Bypass **8432-8435**
  Nollo, Giandomenico* (Univ. of Trento); Ferrari, Paolo (CIMEC Ctr. for Mind-Brain Sciences, Univ. of Trento);
  Graffigna, Angelo (Division of Cardiac Surgery, S.Chiara Hospital, Trento)

17:45-18:00   SaD21.3
Challenges in Intraoperative Monitoring **8436-8439**
  Subramaniam, Balachundhar* (Beth Israel Deaconess Medical Ctr.)

18:00-18:15   SaD21.4
Intra and Inter-Beat Modeling of Cardiovascular Dynamics and Control:
Assessing Haemodynamic Stability and Responsiveness **8440-8443**
  Toschi, Nicola* (Univ. Tor Vergata, Rome, Italy); Duggento, Andrea (Univ. of Rome "Tor Vergata");
  Canichella, Antonio (Univ. of Rome "Tor Vergata"); Coniglione, Filadelfo (Univ. of Rome "Tor Vergata");
  Dauri, Mario (Univ. of Rome "Tor Vergata"); Sabato, Alessandro Fabrizio (Univ. of Rome "Tor Vergata");
  Guerrisi, Maria (Univ. of Rome "Tor Vergata")

18:15-18:30   SaD21.5
Instantaneous Assessment of Autonomic Cardiovascular Control During General Anesthesia **8444-8447**
  Chen, Zhe (Harvard Medical School/MIT); Citi, Luca (MGH/Harvard Medical School);
  Purdon, Patrick L (Massachusetts General Hospital); Brown, Emery N (MGH-Harvard Medical School-MIT);
  Barbieri, Riccardo* (MGH-Harvard Medical School-MIT)

SaD22: 17:15-18:45   Salon F Marriott
1.4.2 Modeling and Analysis of Human Dynamics (Minisymposium)
Chair: Yamamoto, Yoshiharu *(The Univ. of Tokyo)*
Co-Chair: Patel, Shyamal *(Harvard Medical School)*

17:15-17:30   SaD22.1
Locomotor Activity Disturbances As BioBehavioral Markers for Attention
Deficit Hyperactivity Disorder and Bipolar Disorder .... *****
  Teicher, Martin* (Harvard Medical School/McLean Hospital); Ohashi, Kyoko (Harvard Medical
  School/McLean Hospital); Baroni, Argelinda (New York Univ. Child Study Ctr.); Polcari, Ann (McLean
  Hospital & Northeastern Univ.); Vitaliano, Gordana (Harvard Medical School/McLean Hospital);
  Faedda, Gianni (Lucio Bini' Mood Disorders Ctr.)

17:30-17:45   SaD22.2
Depressed Human Dynamics: Behavioral Organization of Locomotor Activity and Its Modeling .... *****
  Nakamura, Toru* (The Univ. of Tokyo); Yamamoto, Yoshiharu (The Univ. of Tokyo)

17:45-18:00   SaD22.3
Human Dynamics: From Mobility to Predictability .... *****
  Barabasi, Albert-Laszlo* (Northeastern Univ.)

SaD23: 17:15-18:45   Salon G Marriott
2.3.8 Optical Image Reconstruction Algorithms (Oral Session)
Chair: Vinegoni, Claudio *(Vinegoni Claudio)*
Co-Chair: Markey, Mia *(The Univ. of Texas at Austin)*

17:15-17:30   SaD23.1
Voxel-Based, Parallel Simulation of Light in Skin Tissue for the
Reconstruction of Subsurface Skin Lesion Volumes **8448-8451**
  D'Alessandro, Brian* (New Jersey Inst. of Tech.); Dhawan, Atam (New Jersey Inst. of Tech.)

17:30-17:45   SaD23.2
3-D Image-Guided Diffuse Optical Tomography Using Boundary Element
Method and MPI Implementation **8452-8454**
  Srinivasan, Subhadra* (Dartmouth College); Ghadyani, Hamid (Dartmouth College)

17:45-18:00   SaD23.3

Automated Spatial Alignment of 3D Torso Images **8455-8458**
 *Bose, Arijit (Univ. of Houston); Shah, Shishir (Univ. of Houston); Reece, Gregory (The Univ. of Texas MD
 Anderson Cancer Ctr.); Crosby, Melissa (The Univ. of Texas MD Anderson Cancer Ctr.); Beahm, Elisabeth
 (The Univ. of Texas MD Anderson Cancer Ctr.); Fingeret, Michelle (The Univ. of Texas MD Anderson Cancer
 Ctr.); Markey, Mia (The Univ. of Texas at Austin); Merchant, Fatima* (Univ. of Houston)*

18:00-18:15   SaD23.4

A Photogrammetry-Based System for 3D Surface Reconstruction of Prosthetics and Orthotics **8459-8462**
 Li, Guangkun (BioCax LLC); Gao, Fan (UT Southwestern Medical Ctr. at Dallas);
 Wang, Zhigang (BioCAX LLC)*

18:15-18:30   SaD23.5

Optofluidic On-Chip Tomography **8463-8466**
 Isikman, Serhan (UCLA); Bishara, Waheb (Univ. of California, Los Angeles);
 Zhu, Hongying (UCLA); Ozcan, Aydogan (UCLA)*

18:30-18:45   SaD23.6

Tractographic Reconstruction Protocol Optimization in the Rat Brain In-Vivo: Towards a Normal Atlas **8467-8470**
 *Preti, Maria Giulia (Politecnico di Milano); Di Marzio, Alessandro (Dept. of BioEng., Politecnico di Milano);
 Mastropietro, Alfonso (Dept. of BioEng., Politecnico di Milano); Aquino, Domenico (Fondazione IRCCS Istituto
 Neurologico Carlo Besta); Baselli, Giuseppe* (Politecnico di Milano); Lagana, Maria Marcella (IRCCS S.Maria
 Nascente); Zucca, Ileana (Fondazione IRCCS Istituto Neurologico Carlo Besta); Frassoni, Carolina
 (Fondazione IRCCS Istituto Neurologico Carlo Besta); Spreafico, Roberto (Fondazione IRCCS Istituto
 Neurologico C. Besta, via Celoria 11, Milano, Italy)*

SaD24: 17:15-18:45   Salon HI Marriott
2.4.13 X-Ray, CT, PET, and SPECT II (Oral Session)
Chair: Akay, Metin *(Univ. of Houston)*
Co-Chair: Adhami, Reza *(The Univ. of Alabama in Huntsville)*

17:15-17:30   SaD24.1

**A Correlation and LS-SVM Based Approach to Mitigate Motion Artifacts in
FDK Based 3D Cone-Beam Tomography** **8471-8474**
 Bhowmik, Ujjal* (The Univ. of Alabama in Huntsville, USA)

17:30-17:45   SaD24.2

Segmentation of Brain Blood Vessels Using Projections in 3-D CT Angiography Images **8475-8478**
 Babin, Danilo* (Ghent Univ.)

17:45-18:00   SaD24.3

A Graph-Theoretic Approach for Segmentation of PET Images **8479-8482**
 Bagci, Ulas (Natl. Inst. of Health); Yao, Jianhua (Natl. Inst. of Health); Caban, Jesus (Natl. Inst. of Health);
 Turkbey, Evrim (NIH); Aras, Omer (Univ. of Maryland); Mollura, Daniel J. (Natl. Inst. of Health)*

18:00-18:15   SaD24.4

**The Impact of Reconstruction Algorithms on Semi-Automatic Small Lesion
Segmentation for PET: A Phantom Study** **8483-8486**
 Ballangan, Cherry Galatia (The Univ. of Sydney); Chan, Chung (Univ. of Sydney);
 Wang, Xiu Ying (The Univ. of Sydney); Feng, Dagan (The Univ. of Sydney)*

18:15-18:30   SaD24.5

**Constrained Bayesian Streak Artifact Reduction Approach for Contrast Enhanced Computed
Tomography Imaging of the Intervertebral Disc** **8487-8490**
 Wong, Alexander* (Univ. of Waterloo)

18:30-18:45   SaD24.6

Image Enhancement by Spectral-Error Correction for Dual-Energy Computed Tomography **8491-8494**
 Park, Kyung-Kook* (Korea Univ.); Oh, Chang-Hyun (Korea Univ.); Akay, Metin (Univ. of Houston)

SaD25: 17:15-18:45 — Salon JK Marriott
2.2.6 High Frequency Ultrasound and Elastography (Oral Session)
Chair: Molinari, Filippo *(Pol. di Torino)*
Co-Chair: Gao, Yingxin *(Cornell Univ.)*

17:15-17:30 — SaD25.1
Using Ultrasound Imaging to Identify Landmarks in Vertebra Models to Assess Spinal Deformity 8495-8498
 Chen, Wei* (Univ. of Alberta); Lou, Edmond H. (Univ. of Alberta); Le, Lawrence H (Univ. of Alberta)

17:30-17:45 — SaD25.2
Ultrasonic Tissue Characterization of Prostate Biopsy Tissues by Ultrasound Speed Microscope 8499-8502
 Tanoue, Hideki (Tohoku Univ.); Hagiwara, Yoshihiro (Tohoku Univ. Graduate School of Medicine); Kobayashi, Kazuto (Honda Elec.Co., Ltd.); Saijo, Yoshifumi* (Tohoku Univ.)

17:45-18:00 — SaD25.3
Three-Dimensional Mapping of Strain in Ex Vivo Porcine Cornea with an Ultrasound Elasticity Microscope 8503-8506
 Hollman, Kyle* (Sound Sight Research); Tripathy, Sakya (Simulia); Kim, Kang (Univ. of Michigan)

18:00-18:15 — SaD25.4
Simulating Ultrasound Fields for 2D Phased-Array Probes Design Optimization 8507-8510
 Matrone, Giulia (Univ. of Pavia); Quaglia, Fabio (STMicroelectronics); Magenes, Giovanni* (Univ. of Pavia)

18:15-18:30 — SaD25.5
Integrating Active Shape Models into Ultrasound Elastography to Diagnose Musculoskeletal Injuries: A 2D Simulation Study 8511-8514
 Cochran, Amy* (Cornell Univ.); Gao, Yingxin (Cornell Univ.)

18:30-18:45 — SaD25.6
Stiffness Mapping Prostate Biopsy Samples Using a Tactile Sensor 8515-8518
 Peng, Qiyu* (Lawrence Berkeley Natl. Lab.); Omata, Sadao (Nihon Univ.); Peehl, Donna M. (Stanford Univ. School of Medicine); Constantinou, Chris (Stanford Univ. School of Medicine)

SaD27: 17:15-18:45 — Staffordshire at the Westin
8.3.9 Biomechanics and Robotics: Clinical Evaluation in Rehabilitation and Orthopedics (Oral Session)
Chair: Zequera Diaz, Martha Lucia *(Pontificia Univ. Javeriana)*
Co-Chair: Della Croce, Ugo *(Univ. of Sassari)*

17:15-17:30 — SaD27.1
Antagonistic Active Knee Prosthesis. A Metabolic Cost of Walking Comparison with a Variable-Damping Prosthetic Knee. 8519-8522
 Martinez-Villalpando, Ernesto Carlos* (Massachusetts Inst. of Tech.); Mooney, Luke (MIT Massachusetts Inst. of Tech.); Elliott, Grant (MIT); Herr, Hugh (MIT)

17:30-17:45 — SaD27.2
Static Ankle Impedance in Stroke and Multiple Sclerosis: A Feasibility Study 8523-8526
 Lee, Hyunglae* (Massachusetts Inst. of Tech.); Patterson, Tara (Providence VA Medical Ctr.; Brown Univ.); Ahn, Jooeun (MIT); Klenk, Daniel (MIT); Lo, Albert (Brown Univ.; Dept. of Veteran Affairs); Krebs, Hermano Igo (MIT); Hogan, Neville (Massachusetts Inst. of Tech.)

17:45-18:00 — SaD27.3
Accuracy and Reliability of Haptic Spasticity Assessment Using HESS (Haptic Elbow Spasticity Simulator) 8527-8530
 Kim, Jonghyun* (Natl. Inst. of Health); Damiano, Diane (Natl. Inst. of Health); Park, Hyung-Soon (Natl. Inst. of Health)

18:00-18:15 — SaD27.4
Assessment of the Effect of Time in the Repeatability of the Stabilometric Parameters in Diabetic and Non-Diabetic Subjects During Bipedal Standing Using the LorAn Pressure Distribution Measurement System 8531-8534
 Zequera Diaz, Martha Lucia* (Pontificia Univ. Javeriana)

18:15-18:30   SaD27.5

Comparison of Tone Compensation and Spring Assistance for Hand Rehabilitation in HEXORR 8535-8538

Godfrey, Sasha Blue* (Catholic Univ. of America); Holley, Rahsaan (Natl. Rehabilitation Hospital);
Lum, Peter (Natl. Rehabilitation Hospital, Catholic Univ. of America, Veteran Affairs)

18:30-18:45   SaD27.6

A Novel Cable-Driven Robotic Training Improves Locomotor Function in Individuals Post-Stroke 8539-8542

Wu, Ming* (Rehabilitation Inst. of Chicago); Landry, Jill (Rehabilitation Inst. of Chicago);
Yen, Sheng-che (Rehabilitation Inst. of Chicago); Schmit, Brian (Marquette Univ.);
Hornby, George (Rehabilitation Inst. of Chicago); Rafferty, Miriam (Rehabilitation Inst. of Chicago)