IEEE Signal Processing in Medicine and Biology Symposium (SPMB13)
Technical Program

http://poly.edu/spmb/

Saturday, December 7, 2013
Polytechnic Institute of New York University

Jacobs Academic Building – Room JAB 474
Jay Street, Brooklyn, NY 11201

Schedule

9:05 Welcome

9:15 Morning Keynote
Modeling the spread of epidemics
Jose Moura, Carnegie Mellon University

10:00 Poster Session 1 *Coffee will be served*

11:30 Virtual Musculoskeletal Arm and Robotic Arm Driven by a Biomimetic Model of Sensorimotor Cortex with Reinforcement Learning
Salvador Dura-Bernal, SUNY Downstate Medical Center

12:00 Continuous Wave Simulations on the Propagation of Electromagnetic Fields through the Human Head
Jeffrey Elloian, Worcester Polytechnic Institute

12:30 Lunch *Rogers Hall, Private Dining Room (ground floor)*

1:30 Afternoon Keynote
Evoked Potentials of the Brain Predict Human Behavior
Lucas Parra, City College of New York

2:15 Poster Session 2 *Coffee and cookies will be served*

3:30 Seizure Detection using Empirical Mode Decomposition and Time-Frequency Energy Concentration
Amal Feltane, University of Rhode Island

4:00 Instantaneous Frequency Analysis Shows Greater Sensitivity to Parasympathetic Components of Heart Rate than Spectral Analysis
Benjamin Griffel, Rutgers University

4:30 A Method to Detect Cardiac Arrhythmias with a Webcam
Lalit K. Mestha, Xerox Corporation

5:00 Closure

Talks

(1) Seizure Detection using Empirical Mode Decomposition and Time-Frequency Energy Concentration　　　○

Amal Feltane, G. Faye Boudreaux-Bartels, Yacine Boudria, and Walter Besio

University of Rhode Island, Kingston, RI

(2) Instantaneous Frequency Analysis Shows Greater Sensitivity to Parasympathetic Components of Heart Rate than Spectral Analysis　　　○

Benjamin Griffel, Steve E. Calvano, Susette M. Coyle, Marie A. Macor, Badar U. Jan, Michael Reddell, John L. Semmlow, Siobhan Corbett and Stephen F. Lowry

Robert Wood Johnson Medical School, Rutgers, The State University of New Jersey, Piscataway, NJ

(3) Virtual Musculoskeletal Arm and Robotic Arm Driven by a Biomimetic Model of Sensorimotor Cortex with Reinforcement Learning　　　○

Salvador Dura-Bernal[1], George L. Chadderdon[1], Samuel A. Neymotin[1], Xianlian Zhou[2], Andrzej Przekwas[2], Joseph T. Francis[1], William W. Lytton[1]

(1) State University of New York – Downstate Medical Center, Brooklyn, NY

(2) CFD Research Corporation Huntsville, AL

(4) Continuous Wave Simulations on the Propagation of Electromagnetic Fields through the Human Head　　　○

Jeffrey Elloian[1], Gregory Noetscher[1], Sergey Makarov[1], and Alvaro Pascual-Leone[2]

(1) Worcester Polytechnic Institute, Worcester, MA

(2) Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA

(5) A Method to Detect Cardiac Arrhythmias with a Webcam　　　○

Survi Kyal[1], Lalit K. Mestha[1], Beilei Xu[1], and Jean-Philippe Couderc[2]

(1) Xerox Research Center, Xerox Corporation, Webster, NY

(2) University of Rochester Medical Center Rochester, NY

Poster Session 1

(1) Speckle Reduction of Medical Ultrasound using Compressive Re-sampling and Instantaneous SNR　　　○

Richard Mammone[1], Lev Barinov[2], Ajit Jairaj[2], William Hulbert[2], and Christine Podilchuk[2]

(1) Rutgers University, Piscataway, NJ

(2) ClearView Diagnostics Inc., Piscataway, NJ

(2) Comparison of Cephalic and Extracephalic Montages for Transcranial Direct Current Stimulation — A Numerical Study　　　○

Janakinadh Yanamadala[1], Gregory M. Noetscher[1], Sergey N. Makarov[2], and Alvaro Pascual-Leone[2]

(1) Worcester Polytechnic Institute, Worcester, MA

(2) Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA

(3) Enhanced Eye Gaze Direction Classification Using a Combination of Face Detection, CHT and SVM　　　○

Amer Al-Rahayfeh and Miad Faezipour

University of Bridgeport, Bridgeport, CT

(4) Low-Power Signal Processing Methodologies for Implantable Biosensing Platforms　　　○

Robert A. Croce Jr.[1,2], Santhisagar Vaddiraju[1,2], Allen Legassey[1], Syed K. Islam[3], Fotios Papadimitrakopoulos,[2] and Faquir C. Jain[2]

(1) Biorasis, Inc., Storrs, CT

(2) University of Connecticut, Storrs, CT

(3) University of Tennessee, Knoxville, TN

(5) EMG-Force Estimation for Multiple Fingers ○

Pu Liu[1], Donald R. Brown[1], Edward A. Clancy[1], Francois Martel[2] and Denis Rancourt[2]

(1) Worcester Polytechnic Institute, Worcester, MA

(2) University of Sherbrooke, Sherbrooke, Quebec, Canada

(6) Resting State fMRI Data Analysis using Support Vector Machines ○

Xiaomu Song[1] and Nan-kuei Chen[2]

(1) Widener University, Chester, PA

(2) Duke University Hospital North, Durham, NC

(7) Improved Clustering of Spike Patterns through Video Segmentation and Motion Analysis of Micro Electrocortico-graphic Data ○

Bugra Akyildiz, Yilin Song, Jonathan Viventi, and Yao Wang

Polytechnic Institute of New York University Brooklyn, NY

(8) Optimal Chaotic Synchronization of stochastic Delayed Recurrent Neural Networks ○

Ziqian Liu

State University of New York Maritime College, Bronx, NY

(9) The Real-time AR Human Body Mobile App

Mark Skwarek and Maheshwar A. Singh

Polytechnic Institute of New York University, Brooklyn, NY

(10) Neural signature of a value based priority signal in humans

Annabelle Blangero and Simon Kelly

City College of New York, New York, NY

(11) Task-dependent Spatial Attention Modulation in Visual Cortex

Azeezat Azeez, Isabel Vanegas, Annabelle Blangero, and Simon Kelly

City College of New York, New York, NY

(12) EEG Dynamic Analysis in Epilepsy Source Localization

Biel Roig-Solvas[1], Burak Erem[2], Damon Hyde[2], Simon K. Warfield[2], Jurriaan M. Peters[2] and Dana H. Brooks[1]

(1) Northeastern University, Boston, MA

(2) ChildrenÕs Hospital Boston, Boston, MA

(13) Non-Invasive localization of discordant T-wave Alternans Using Inverse Spectral Method

Jaume Coll-Font[1], Burak Erem[2], Alain Karma[1], Dana H. Brooks[1]

(1) Northeastern University, Boston, MA

(2) ChildrenÕs Hospital Boston, Boston, MA

(14) Leveraging Big Data Resources for Automatic Interpretation of EEGs

Christian Ward, Dr. Iyad Obeid, and Dr. Joseph Picone, Mercedes Jacobson

Temple University and Temple University School of Medicine, Philadelphia, PA

(15) Empirical Mode Decomposition as an aid for resting state fMRI signal processing

Krishna Somandepalli and Clare Kelly

NYU Langone Medical Center, New York, NY

(16) Using Component Trees to Explore Biological Structures

Lucas M. Oliveira, T. Yung Kong, and Gabor T. Herman

The Graduate Center, CUNY, New York, NY

(17) Capturing Prefrontal Activation Changes Related to Working Memory Tasks in Individuals with TBI Using Near Infrared Spectroscopy

Maria Peifer[1], Amir H. Gandjbakhche[2], and Laleh Najafizadeh[1]

(1) Rutgers, The State University of New Jersey, NJ

(2) Section on Analytical and Functional BioPhotonics, National Institutes of Health

(18) Continuous decision formation processing during continuous monitoring for targets

Sarita Tamang, M. Isabel Vanegas and Simon P Kelly

The City College of the City University of New York, NY

(19) Baseline Removal using Sparse Signal Modeling

Xiaoran Ning and Ivan W. Selesnick

Polytechnic Institute of New York University, Brooklyn, NY

Poster Session 2

(1) Preprocessing for Improved Computer Aided Detection in Medical Ultrasound ○

Richard Mammone[1], Lev Barinov[2], William Hulbert[2], Ajit Jairaj[2], and Christine Podilchuk[2]

(1) Rutgers University, Piscataway, NJ

(2) ClearView Diagnostics Inc., Piscataway, NJ

(2) Modeling the temporal dependency of brain responses to rapidly presented stimuli in ERP based BCIs

Délia Fernandez-Canellas, Umut Orhan, Murat Akcakaya, Jaume Coll-Font, Dana H. Brooks and Deniz Erdogmus

Northeastern University, Boston, MA

(3) Initial Assessment of Artifact Filtering for RSVP Keyboard[TM] ○

M.Haghighi[1], M. Akcakaya[1], U. Orhan[1], D. Erdogmus[1], B. Oken[2], and M. Fried-Oken[2]

(1) Northeastern University, Boston, MA,

(2) Oregon Health and Science University, Portland, OR

(4) Wavelet Based Photoplethysmogram Foot Delineation for Heart Rate Variability Applications ○

Nicholas J. Conn and David A. Borkholder

Rochester Institute of Technology Rochester, NY

(5) Emulating Conventional Disc Electrode with the Outer Ring of the Tripolar Concentric Ring Electrode in Phantom and Human Electroencephalogram Data ○

Oleksandr Makeyev, Yacine Boudria, Zhenghan Zhu, Thomas Lennon, and Walter G. Besio

University of Rhode Island, Kingston, RI

(6) Functional Connectivity Network based on Graph Analysis of Scalp EEG for Epileptic Classification ○

Saman Sargolzaei, Mercedes Cabrerizo, Mohammed Goryawala, Anas Salah Eddin, and Malek Adjouadi

Florida International University Miami, FL

(7) Reduced-Order Nonlinear Arterial Compliance Parameter Estimation Under Vasoactive States ○

Timothy S. Phan and John K-J. Li

Rutgers University, Piscataway, NJ

(8) Robust Adaptive Dynamic Programming for Sensorimotor Control with Signal-Dependent Noise ○

Yu Jiang and Zhong-Ping Jiang

Polytechnic Institute of New York University, Brooklyn, NY

(9) Monostatic and Bistatic Cardiac Radar System for Biometric Identification

Daniel J. Rissacher, Luke K. Rumbaugh, William D. Jemison, and Stephanie Schuckers

Clarkson University, Potsdam, NY

(10) Physiological Clustering: A noise-reduction approach in Myocardial Perfusion PET

Hassan Mohy-ud-Din

Johns Hopkins University, Baltimore, MD

(11) Replication Artifact in Data Collected by Soft X-ray Microscopy

Joanna Klukowska and Gabor T. Herman

Graduate Center, CUNY, New York, NY

(12) Pre-Saccadic Modulation of the Visual Evoked Potential

Leslie Guadron, Annabelle Blangero, and Simon P. Kelly

The City College of the City University of New York, New York, NY

(13) Assessment of Brain Activation during Imagery and Actual Finger Tapping Tasks Using Near Infrared Spectroscopy

Li Zhu, Maria Peifer, and Laleh Najafizadeh

Rutgers University, NJ

(14) Observer-based estimation of nonhomogeneous Poisson processes applied to an example of chemotactic response of E. coli

Maja Skataric and Eduardo Sontag

Rutgers University, Piscataway, NJ

(15) Electrophysiological markers of effective learning in the time and frequency domain

Natalie A. Steinemann, Clara Moisello, M. Felice Ghilardi, and Simon P. Kelly

The City College of the City University of New York, New York, NY

(16) Decoding the Comorbidity of Developmental Dyslexia and ADHD

Nicolas Langer[1,2,3,4], Christopher Benjamin[5], ChrisGorgolewski[6], Bryce Becker[1,2], and Nadine Gaab[1,2]

(1) ChildrenÕs Hospital Boston,Boston, MA

(2) Harvard Medical School,Boston, MA

(3) City College New York, New York, NY

(4) Child Mind Institute, New York, NY

(5) UCLA, Semel Institute, Los Angeles, CA

(6) Max Planck Institute Leipzig, Germany

(17) Multi-electrode current stimulus optimization for directional and localized tDCS in a realistic head model with anisotropy

Seyhmus Guler[1,2], Moritz Dannhauer[2], Burak Erem[3], Rob Macleod[2], Don Tucker[4], Sergei Turovets[4], Phan Luu[4], Deniz Erdogmus[1] and Dana H. Brooks[1,2]

(1) Northeastern University, Boston, MA

(2) University of Utah, Salt Lake, UT

(3) ChildrenÕs Hospital Boston, Boston, MA

(4) Electrical Geodesics Inc., Eugene, OR

(18) Investigation of 'Multi-Tone Modulation' for ADSL and Cloud Download Using Hamming Code with the Comparison of Discrete Wavelet Transform

Jasem Hamoud Almotiri and Abdelshakour A. Abuzneid

University Of Bridgeport, Bridgeport, CT

(19) Prediction of Longterm Outcome of Neuropsychological Tests of MTBI Patients Using Imaging Features ○

Shervin Minaee[1], Yao Wang[1], and Yvonne W Lui[2]

(1) Polytechnic Institute of New York University, Brooklyn, NY

(2) New York University, New York, NY

(20) Fast Nonlinear Sparse-Derivative Signal Decomposition Algorithm for Artifact Excision
   Tong Zhang and Ivan W. Selesnick
   Polytechnic Institute of New York University, Brooklyn, NY

The symbol ○ indicates the paper will appear in the SPMB13 online proceedings in IEEE Xplore.

Organizing Committee

Conference Chair	Ivan Selesnick	Polytechnic Institute of NYU
Conference Co-chair	Charles Rubenstein	Pratt Institute
Technical Program Chair	Simon Kelly	City College of New York
Publications Chair	M. Nazrul Islam	Farmingdale State College

Technical Program Committee

Ali Abdi	New Jersey Institute of Technology
Gene DiResta	Polytechnic Institute of New York University
Harry Graber	SUNY Downstate Medical Center
Chin-Tuan Tan	NYU Medical Center
Jonathan Viventi	Polytechnic Institute of New York University
Henning Voss	Weill Cornell Medical College

The symposium will be held in JAB 474 (Jacob Academic Building) at NYU-Poly (1 on the map).
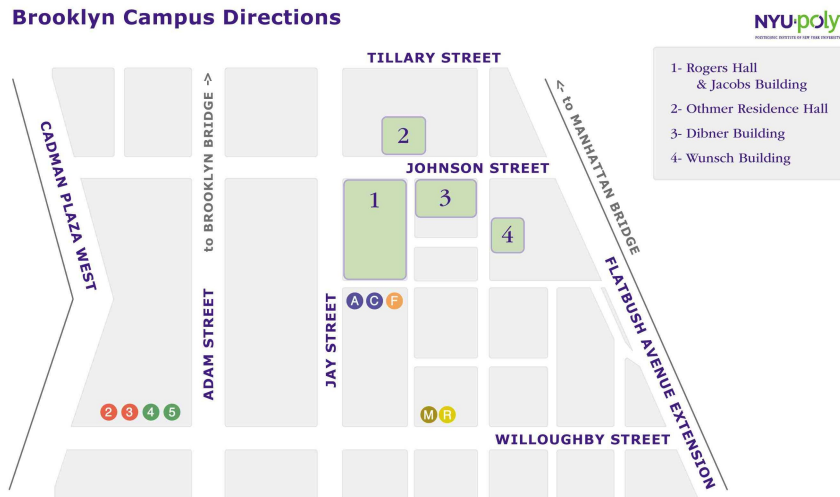
Detailed directions to the Brooklyn campus of NYU-Poly are available on the web at
http://www.poly.edu/about/contacts/brooklyn

Lunch will be held in Private Dining Room on the first floor of Rogers Hall.

Contact email: biomedsigproc@poly.edu