IEEE Signal Processing in Medicine and Biology Symposium (SPMB12)
Technical Program

http://bme.ccny.cuny.edu/IEEE-SPMB-2012/

Saturday, December 1, 2012
City College of New York

Grove School of Engineering
Steinman Hall, 140th Street and Convent Ave, New York, NY 10031

Schedule

9:05	Welcome
9:15	Morning Keynote High-resolution brain machine interfaces using flexible silicon electronics Jonathan Viventi, Polytechnic Inst. of New York University
10:00	Poster Session 1 *Coffee will be served*
10:45	Transfer entropy between cortical and basal ganglia electrophysiology Timothy Gilmour, John Brown University
11:15	Detecting in vivo changes of electrical properties of cerebral spinal fluid... Gregory Noetscher, Worcester Polytechnic Institute
11:45	A Bayesian approach to inferring fiber tract bundle labels in diffusion tensor imaging Xuwei Liang, University of South Carolina - Beaufort
12:15	Lunch *North Academic Center (NAC building), Faculty Dining Room (3rd floor)*
1:15	Afternoon Keynote Problems in bioimaging: opportunities for signal processing. Jelena Kovacevic, Carnegie Mellon University
2:00	Poster Session 2 *Coffee and cookies will be served*
2:45	Adaptive circadian rhythm estimator and its application to locomotor activity Jiaxiang Zhang, Rensselaer Polytechnic Institute
3:15	Mapping subcortical connectivity related to cortical gamma and theta oscillations Timothy M. Ellmore, The City College of New York
3:45	Break
4:00	Robustness analysis of sparsity based tumor localization under tissue configuration uncertainty Mohammad Pourhomayoun, Binghamton University
4:30	A new complexity-based algorithmic procedure for EEG segmentation Alexandra Piryatinska, San Francisco State University
5:00	Closure

Talks

(1) Transfer entropy between cortical and basal ganglia electrophysiology ○

Timothy Gilmour[1], Constantino Lagoa[2], W. Kenneth Jenkins[2], Anand N. Rao[3], Matthew A. Berk[3], Kala Venkiteswaran[3] and Thyagarajan Subramanian[3]

(1) John Brown University, Siloam Springs, AR

(2) Penn. State University, State College, PA

(3) Penn. State University College of Medicine, Hershey, PA

(2) Detecting in vivo changes of electrical properties of cerebral spinal fluid using microwave signals from small coil antennas – Numerical simulation ○

Gregory M. Noetscher[1], Aung Thu Htet[1], Jeffrey M. Elloian[1], Sergey N. Makarov[1], Francesca Sciré-Scappuzzo[2] and Alvaro Pascual-Leone[3]

(1) Worcester Polytechnic Institute, Worcester, MA

(2) Physical Sciences Inc., Andover, MA

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

(3) A Bayesian approach to inferring fiber tract bundle labels in diffusion tensor imaging ○

Xuwei Liang

University of South Carolina - Beaufort, Bluffton, SC

(4) Adaptive circadian rhythm estimator and its application to locomotor activity ○

Jiaxiang Zhang, John T. Wen and Agung Julius

Rensselaer Polytechnic Institute, Troy, NY

(5) Mapping subcortical connectivity related to cortical gamma and theta oscillations ○

Timothy M. Ellmore[1], Kathrin Tertel[2], Nadeeka R. Dias[2] and Nitin Tandon[2]

(1) The City College of New York, New York, NY

(2) The University of Texas Medical School at Houston, Houston, TX

(6) Robustness analysis of sparsity based tumor localization under tissue configuration uncertainty ○

Mohammad Pourhomayoun, Mark Fowler and Zhanpeng Jin

Binghamton University, Binghamton, NY

(7) A new complexity-based algorithmic procedure for electroencephalogram (EEG) segmentation ○

Boris Darkchovsky[1] and Alexandra Piryatinska[2]

(1) Institute for Systems Analysis RAS, Moscow, Russia

(2) San Francisco State University, San Francisco, CA

○: For talks and posters, the ○ symbol indicates a paper in the conference proceedings to appear in IEEE Xplore online.

Poster Session 1

(1) Vascular segmentation in magnetic resonance angiography: a modified region growing approach ○
Muder Mousa Almiani and Buket D. Barkana
University of Bridgeport, Bridgeport, CT

(2) Unobtrusive vital signs monitoring with range-controlled radar ○
Catherine Graichen[1], Jeffrey Ashe[1], Meena Ganesh[1] and Lijie Yu[2]
(1) GE Global Research, Niskayuna, NY
(2) GE Energy, Atlanta, GA

(3) Resiliency analysis and modeling for real-time cardiovascular diagnostic devices ○
Rodolfo Ledesma and Zhanpeng Jin
Binghamton University, Binghamton, NY

(4) An implementation of the EM algorithm in white matter fiber tract clustering ○
Xuwei Liang
University of South Carolina - Beaufort, Bluffton, SC

(5) Spatial and temporal analysis of interictal activity in the epileptic brain ○
Paul McCall, Mercedes Cabrerizo and Malek Adjouadi
Florida International University, FL

(6) Towards a method for early detection of congestive heart failure with an electrocardiogram and acoustic transducers ○
Alexander Kaiser, Carissa Pocock, Pratibha Sharma, Nickolas Browdues, Kimberly Newman and Frank Barnes
University of Colorado, Boulder, CO

(7) Adaptive dynamic programming as a theory of motor control ○
Yu Jiang and Zhong-Ping Jiang
Polytechnic Institute of New York University, Brooklyn, NY

(8) Glomeruli segmentation in H&E stained tissue using perceptual organization ○
Siddharth Samsi[1], Wael N. Jarjour[2] and Ashok Krishnamurthy[1]
(1) Ohio Supercomputer Center, Columbus, OH
(2) The Ohio State University Medical Center, Columbus, OH

(9) Image analysis of membrane-potential patterns seen during Xenopus frog embryo development
Haaris Ghafoor, Brian H. Tracey, Dany Adams and Eric L. Miller
Tufts University, Medford, MA

(10) A study of kernel CSP-based motor imagery brain computer interface classification ○
Hassan Albalawi and Xiaomu Song
Widener University, Chester, PA

(11) Using optical mapping to assess shock-induced tissue polarization inside the myocardial wall
Christian Zemlin
Old Dominion University, Norfolk, VA

(12) Mobile robot navigation through a brain computer interface ○
Yih-Choung[1] Yu, Ahsan Nawroj[2], Siyuan Wang[1] and Lisa Gabel[1]
(1) Lafayette College, Easton, PA
(2) Yale University New Haven, CT

(13) Speckle reduction using stepped-frequency continuous wave ultrasound ○

C. Podilchuk, M. Bajor, W. Stoddart, L. Barinov, W. Hulbert, A. Jairaj and R. Mammone

Clearview Diagnostics Inc, Piscataway, NJ

(14) An algorithm for deconvolution of simultaneous measurements of adrenocorticotropin and cortisol plasma levels

Rose T. Faghih[1,2], Munther A. Dahleh[1], Elizabeth B. Klerman[3] and Emery N. Brown[1,2]

(1) Massachusetts Institute of Technology, Cambridge, MA

(2) Massachusetts General Hospital, Boston, MA

(3) Brigham and Women's Hospital -Harvard Medical School, Boston, MA

(15) Simulation of DNA microarray spots using numerical method

Richard Kyung and Elizabeth Kim

Choice Research Foundation, Tenafly, NJ

(16) Optimized current stimulus patterns for targeted tDCS with flexible objectives and constraints

Seyhmus Guler[1], Moritz Dannhauer[2], Rob Macleod[2], Burak Erem[1], Don Tucker[3], Sergei Turovets[3], Chelsea Mattson[3] and Dana Brooks[1]

(1) Northeastern University, Boston, MA

(2) University of Utah, Salt Lake, UT

(3) Electrical Geodesics Inc. (EGI), Eugene, OR

(17) Characterization of spontaneous brain oscillations in 4-month old infants

Sue Peters[1], Gabriella Musacchia[1], Silvia Ortiz-Mantilla[1], Naseem Choudhury[1,2] and April A. Benasich[1]

(1) Center for Molecular & Behavioral Neuroscience, Rutgers University, Newark, NJ

(2) Ramapo College, Mahwah, NJ

(18) Sparse frequency analysis with sparse-derivative amplitude and phase functions

Yin Ding and Ivan W. Selesnick

Polytechnic Institute of New York University, Brooklyn, NY

(19) Real time analog signal processing at the nanomolecular level in the epilepsy and Parkinson's brain

Patricia A. Broderick

The Sophie Davis School of Biomedical Education, The City College of New York, New York, NY

Poster Session 2

(1) Radial k-space acquisition improves robustness of MR-based attenuation maps for MR/PET quantification in an animal imaging study of the abdomen ○

Jason Bini[1,2], Philip Robson[1], Claudia Calcagno[1], Antoine Millon[1,3], Mark Lobatto[1,4] and Zahi A. Fayad[1]

(1) Mount Sinai School of Medicine, New York, NY

(2) City College of New York, New York, NY

(3) University Hospital of Lyon Lyon, France

(4) Academic Medical Center Amsterdam, The Netherlands

(2) Time warping multichannel averaging for ECG signals

Ramon Martinez Orellana, Burak Erem and Dana H. Brooks

Northeastern University, Boston, MA

(3) Distribution of intravascular and extravascular extracellular volume fractions for neovascularization assessment by dynamic contrast-enhanced magnetic resonance imaging ○

Yi Sun and Ze Ye

The City College of New York, New York, NY

(4) Synchronization of coupled FitzHugh-Nagumo neurons via cubic coupling

Rose T. Faghih[1], Ketan Savla[2], Munther A. Dahleh[1] and Emery N. Brown[3]

(1) Massachusetts Institute of Technology, MA

(2) University of Southern California, Los Angeles, CA

(3) Massachusetts General Hospital, Boston, MA

(5) RSVP Keyboard: A BCI typing system with no requirement of precise eye gaze control

Umut Orhan[1], Kenneth E. Hild II[2], Deniz Erdogmus[1], Brian Roark[3], Barry Oken[3] and Melanie Fried-Oken[3]

(1) Northeastern University, Boston, MA

(2) Lab126

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

(6) Analysis of coexisting neuronal populations in optogenetic and conventional BOLD data ○

Henning U. Voss and Ana I. Domingos

Weill Cornell Medical College, New York, NY

(7) Adaptive signal processing methods for removing maternal interference noise from fetal electro-cardiograms

J. Sultanova, W. Kenneth Jenkins and A. David Salvia

The Pennsylvania State University, University Park, PA

(8) Wavelet application to detect spikes in EEG signals due to epileptic seizure

Liwen Sun, Manasa Gopireddy, Tomislav Bujanovic and Prasanta Ghosh

Syracuse University, Syracuse, NY

(9) Quantification of motion artifacts in 4DCT using global Fourier analysis ○

Jie Wei[1] and Guang Li[2]

(1) The City College of New York, New York, NY

(2) Memorial Sloan-Kettering Cancer Center,New York, NY

(10) Automated detection of ischemic and infarcted cardiac tissue using optical mapping

Frency Varghese and Christian Zemlin

Old Dominion University, Norfolk, VA

(11) Filtering of movies of cardiac activity: how to improve signals without distorting them

Fei Xie and Christian Zemlin

Old Dominion University, Norfolk, VA

(12) Activity of neuronal ensembles during the development of hearing: evidence for clusters of co-active neurons in the auditory brainstem of rats
Phillip Cloud, Ellis Shaffer, Asohan Amarasingham and Adrian Rodriguez-Contreras
The City College of New York, New York, NY

(13) Modal frequency response analysis of the bioprosthetic heart valve using numerical methods
Elizabeth Kim, Alex Kim, Kyounglin Song and Richard Kyung
Choice Research Foundation, Tenafly, NJ

(14) Patch-based denoising of sensory nerve evoked potentials
Saber Bahrani Fard, Brian H. Tracey and Eric L. Miller
Tufts University, Medford, MA

(15) Direct electrophysiological metrics of visual surround suppression in humans
M. Isabel Vanegas, Annabelle Blangero and Simon P. Kelly
The City College of New York, New York, NY

(16) ECG denoising and QRS detection based on sparse derivatives
Xiaoran Ning and Ivan W. Selesnick
Polytechnic Institute of New York University, Brooklyn, NY

(17) Semi-automatic mitral valve segmentation using level set representation
Tiantian Xu, Xuan Zhao, Yao Wang and Edward Wong
Polytechnic Institute of New York University, Brooklyn, NY

(18) Learning-based segmentation of the whole breast in CT imaging for radiotherapy
Xuan Zhao[1], Yao Wang[1] and Gabor Jozsef[2]
(1) Polytechnic Institute of New York University, Brooklyn, NY
(2) New York University School of Medicine, New York, NY

(19) Supercontinuum generation using photonic crystal fibers with normal and anomalous dispersion regions with all normal dispersion
Zabir Hossain and Robert R. Alfano
The City College of New York, New York, NY

Organizing Committee

Conference Chair	Lucas Parra	City College of New York, NY
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The symposium will be held in the main auditorium of Steinman Hall.
Lunch will be held in Faculty Dining Room on the 3rd floor of the the North Academic Center (NAC building).