Forty-Eighth
Asilomar Conference on Signals, Systems and Computers

November 2–5, 2014
Asilomar Hotel and Conference Grounds

Technical Co-sponsor
Welcome from the General Chairman
Prof. Roger Woods
Queen’s University Belfast, UK

Welcome to the 48th Asilomar Conference on Signals, Systems, and Computers! I have had a long involvement with the Conference since my first publication in 1997 when I was immediately struck by the unique nature of the Asilomar conference environment. The picturesque sand dunes and warm sunshine provide a wonderful backdrop to a conference that allows easy access to, and interaction with key researchers. Understandably, over the years, I have needed little persuasion to attend. There will never be a better opportunity to capture the attention of a key researcher in your area of expertise than at Asilomar!

The technical program was crafted expertly by the Technical Program Chair, Geert Leus, and his team of Technical Area Chairs: Shengli Zhou, Zhengdao Wang, Bhaskar Rao, Michael Rabbat, Zhi Tian, Visa Koivunen, Selin Aviyente, Jorn Janneck, Mohsin Jamali, and Matt McKay. I would like to thank Geert and his team for assembling a high quality program with 439 accepted papers and 164 invited papers. The student paper contest this year has been chaired by Joe Cavallaro and he has selected a total of 11 submissions. The student finalists will present poster presentations to the judges on Sunday afternoon and of course, everyone is welcome to attend. The awards for the top three papers will be made at the plenary session. A key Innovation this year has been to inculcate two major themes, brain machine interface and neural networks, and processing of high dimensional large scale data.

This year’s plenary talk will be given by Professor Georgios B. Giannakis, from the University of Minnesota. I am pleased to have such a high profile speaker with a strong background in signal processing across a wide range of applications. Georgios will describe signal processing techniques to handle massive datasets which are noisy, incomplete, vulnerable to cyber-attacks and have outliers. The growth of Big Data represents a major ongoing challenge for humanity. The derivation of suitable data processing techniques is a vital activity and I am especially looking forward to seeing what can be accomplished in this area. Georgios has had a long engagement with the conference having acted as part of the technical committee as early as 1993 and presented his first paper at Asilomar in 1988.

I am privileged to have served as this year’s General Chair. I hope that you enjoy the 2014 Conference programme whilst taking some time out to encounter the very special environment and atmosphere that Asilomar has to offer.

Prof. Roger Woods
Queen’s University Belfast, UK, June 2014
Conference Steering Committee

PROF. MONIQUE P. FARGUES
President & Chair
Electrical & Computer Eng. Dept.
Code EC/Fa
Naval Postgraduate School
Monterey, CA 93943-5121
fargues@asilomarssc.org

PROF. SHERIF MICHAEL
Secretary
Electrical & Computer Eng. Dept.
Code EC/Mi
Naval Postgraduate School
Monterey, CA 93943-5121
michael@nps.edu

PROF. RIC ROMERO
Treasurer
Electrical & Computer Eng. Dept.
Code EC/Rr
Naval Postgraduate School
Monterey, CA 93943-5121
treasurer@asilomarssc.org

PROF. SCOTT ACTON
Electrical & Computer Eng. Dept.
University of Virginia
P. O. Box 400743
Charlottesville, VA 22904-4743
acton@virginia.edu

PROF. MAITE BRANDT-PEARCE
Electrical & Computer Eng. Dept.
University of Virginia
P. O. Box 400743
Charlottesville, VA 22904
mb-p@virginia.edu

PROF. LINDA DEBRUNNER
Publicity Chair
Electrical & Computer Eng. Dept.
Florida State University
2525 Pottsdamer Street, Room A-341-A
Tallahassee, FL 32310-6046
linda.debrunner@eng.fsu.edu

PROF. VICTOR DEBRUNNER
Electrical & Computer Eng. Dept.
Florida State University
2525 Pottsdamer Street, Room A-341-A
Tallahassee, FL 32310-6046
victor.debrunner@eng.fsu.edu

PROF. MILOS ERCEGOVAC
Computer Science Dept.
University of California at Los Angeles
Los Angeles, CA 90095

PROF. BENJAMIN FRIEDLANDER
Computer Eng. Dept.
University of California
1156 High Street, MS:SOE2
Santa Cruz, CA 95064
Benjamin.friedlander@gmail.com

PROF. FREDRIC J. HARRIS
Electrical Eng. Dept.
San Diego State University
San Diego, CA 92182
fred.harris@sdsu.edu

DR. RALPH D. HIPPENSTIEL
San Diego, CA 92126
rhippenstiel@yahoo.com

PROF. W. KENNETH JENKINS
Electrical Eng. Dept.
The Pennsylvania State University
209C Electrical Engineering West
University Park, PA 16802-2705
jenkins@engr.psu.edu

PROF. FRANK KRAHG
Electrical & Computer Eng. Dept.
Code EC/Kr
Naval Postgraduate School
Monterey, CA 93943-5121
frank.kragh@ieee.org

DR. MICHAEL B. MATTHEWS
Publications Chair
ATK Space Systems
10 Ragsdale Drive, Suite 201
Monterey, CA 93940
Michael.matthews@atk.com

DR. MARIOS PATTICHIS
Electrical & Computer Eng. Dept.
MSC01 1100
1 University of New Mexico
ECE Bldg., Room: 229A
Albuquerque, NM 87131
Pattichis@ece.unm.edu

PROF. JAMES A. RITCEY
Electrical Eng. Dept.
Box 352500
University of Washington
Seattle, Washington 98195
ritcey@ee.washington.edu

DR. MICHAEL SCHULTE
AMD
11400 Cherisse Dr.
Austin, TX 78739
Michael.schulte@amd.com

PROF. EARL E. SWARTZLANDER, JR.
Electrical & Computer Eng. Dept.
University of Texas at Austin
Austin, TX 78712
eswartzla@aol.com

PROF. KEITH A. TEAGUE
School Electrical & Computer
Engineering / 202ES
Oklahoma State University
Stillwater, OK 74078
Keith.teague@okstate.edu

DR. MILOŠ DOROSLOVAČKI
General Program Chair (ex officio)
Year 2012
Electrical and Computer Engineering Dept.
George Washington University
Washington, DC
doroslov@gwu.edu

DR. ROBERT HEATH
General Program Chair (ex officio)
Year 2013
Electrical & Computer Eng. Dept.
The University of Texas at Austin
Austin, TX 78712
rheath@ece.utexas.edu

2014 Asilomar Technical Program Committee

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Delft University of Technology

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G: ARCHITECTURE AND
Prof. Jörn W. Janneck
Lund University

H: SPEECH
Image and Video Processing
Prof. Mohsin M. Jamali
University of Toledo

VICE CHAIR
Prof. Matthew McKay
Hong Kong University of Science and Technology
2014 Asilomar Conference Session Schedule

Sunday Afternoon, November 2, 2014

3:00–7:00 PM Registration — Merrill Hall
4:00–6:30 PM Student Paper Contest — Heather
7:00–9:00 PM Welcoming Dessert Reception — Merrill Hall

Monday Morning, November 3, 2014

7:30–9:00 AM Breakfast – Crocker Dining Hall
8:00 AM–6:00 PM Registration
8:15–9:45 AM MA1a — Conference Welcome and Plenary Session — Chapel
9:45–10:15 AM Coffee Social
10:15 AM–11:55 AM MORNING SESSIONS
MA1b Learning and Optimization for Big Data
MA2b EEG Based Brain Computer Interface
MA3b Underwater Wireless Networks
MA4b Physical Layer Security I
MA5b Image and Video Processing
MA6b Sparse Estimation and Learning in Multi-Channel and Array Systems
MA7b Architectures for Detection and Decoding
MA8b1 Synchronization and Channel Estimation (Poster)
MA8b2 Relaying (Poster)
MA8b3 Active Sensing and Target Recognition (Poster)
MA8b4 Physiological Signal Processing (Poster)
12:00–1:00 PM Lunch – Crocker Dining Hall

Monday Afternoon, November 3, 2014

1:30–5:10 PM AFTERNOON SESSIONS
MP1a Big Data Analytics
MP1b Tensor-Based Signal Processing
MP2a Neural Engineering and Signal Processing
MP2b Brain Connectomics
MP3a Compressed Sensing I
MP3b Compressed Sensing II
MP4a Underwater Acoustic Communications and Networking
MP4b Massive MIMO I
MP5a Smart Grid: Learning and Optimization
MP5b Image and Video Quality
MP6a Array Calibration
MP6b Wireless Localization
MP7a Resource-aware and Domain-specific Computing
MP7b Detection and Estimation for Networked Data
MP8a1 Network Resource Allocation and Localization (Poster)
MP8a2 Bioinformatics and Medical Imaging (Poster)
MP8a3 Source Separation and Array Processing (Poster)
MP8a4 Digital Communications (Poster)
MP8a5 Image and Speech Processing (Poster)

Monday Evening, November 3, 2014

6:00–9:30 PM Conference Cocktail/Social — Merrill Hall
The Cocktail/Social takes the place of Monday’s dinner. No charge for conference attendees and a guest.

Tuesday Morning, November 4, 2014

7:30–9:00 AM Breakfast — Crocker Dining Hall
8:00 AM–5:00 PM Registration
8:15 AM–11:55 PM MORNING SESSIONS
TA1a High Dimensional and Large Volume Data
TA1b Big Data Signal Processing
TA2a Neural Spike Train Analysis
TA2b Dynamic Brain Functional Connectivity
TA3a Distributed Optimization over Networks
TA3b Latest Coding Advances
TA4a Enhanced MIMO for LTE-A and 5G Systems
TA4b Cognitive Radio I
TA5a Recent Advances in Speech Coding
TA5b Historic Photographic Paper Identification via Textural Similarity Assessment
TA6a Compressive Methods in Radar
TA6b Statistical Inference in Smart Grids
TA7a Computer Arithmetic I
TA7b MIMO Sensing
TA8a1 Channel Estimation and MIMO Feedback (Poster)
TA8a2 Image Processing I (Poster)
TA8a3 Signal Processing for Communications (Poster)
TA8a4 Adaptive Filtering (Poster)
TA8b1 Multiuser and Cellular Systems (Poster)
TA8b2 Computer Arithmetic II (Poster)
TA8b3 Array Processing Methods (Poster)
TA8b4 Compressed Sensing III (Poster)
12:00–1:00 PM Lunch – Crocker Dining Hall

Tuesday Afternoon, November 4, 2014

1:30–5:35 PM AFTERNOON SESSIONS
TP1a Covariance Mining
TP1b Large-Scale Learning and Optimization
TP2a Bioinformatics and DNA Computing
TP2b Echo Cancellation
TP3a Machine Learning
TP3b Sparse Signal Recovery
TP4a Optical Communications
TP4b Energy Harvesting Wireless Communications
TP5a Speech Enhancement
TP5b Full Duplex MIMO Radio
TP6a Passive and Multistatic Radars
TP6b Many-Core Platforms
TP7a Design Methodologies for Signal Processing
TP7b Optical Wireless Communications
TP8a1 Cognitive Radio II (Poster)
TP8a2 Signal Processing Methods (Poster)
TP8a3 Image Processing II (Poster)
TP8a4 Sensor and Wireless Networks (Poster)
TP8b1 Topics in Communication Systems (Poster)
TP8b2 Relays, Cognitive, Cooperative, and Heterogeneous Networks (Poster)
TP8b3 Signal Processing Architectures (Poster)
TP8b4 Signal Processing Theory and Applications (Poster)
12:00–1:00 PM Lunch – Crocker Dining Hall

Tuesday Evening Open Evening — Enjoy the Monterey Peninsula
2014 Asilomar Conference Session Schedule
(continued)

Wednesday Morning, November 5, 2014

7:30–9:00 AM  Breakfast — Crocker Dining Hall
8:00 AM–12:00 PM  Registration — Copyright forms must be turned in before the registration closes at 12:00 noon.

8:15 AM–11:55 PM  MORNING SESSIONS
WA1a  MIMO Design for mmWave Systems
WA1b  Massive MIMO II
WA2a  5G and Energy Efficient Cellular Networks
WA2b  Mobile Health
WA3a  Sparse Learning and Estimation
WA3b  Advances in Statistical Learning
WA4a  Physical Layer Security II
WA4b  Coding and Decoding
WA5a  Information Processing for Social and Sensor Networks
WA5b  Document Processing and Synchronization
WA6a  Adaptive Signal Design and Analysis
WA6b  Distributed Detection and Optimization
WA7a  Implementation of Sireless Systems
WA7b  Video Coding Architecture and Design

12:00–1:00 PM  Lunch — Meal tickets may be purchased at registration desk. This meal is not included in the registration.

Student Paper Contest
Heather - Sunday, November 2, 2014, 4:00–6:30 pm

Track A
“Everlasting Secrecy in Disadvantaged Wireless Environments against Sophisticated Eavesdroppers”
Azadeh Sheikholeslami, Dennis Goeckel, Hossein Pishro-nik, UMASS-Amherst, United States

“On Physical Layer Secrecy of Collaborative Compressive Detection”
Bhavya Kailkhura, Thakshila Wimalajeewa, Pramod Varshney, Syracuse University, United States

Track B
“Max-Min Fairness in Compact MU-MIMO Systems: Can the Matching Network Play a Role?”
Yahia Hassan, Armin Wittneben, ETH Zurich, Switzerland

Track C
“On the Convergence Rate of Swap-collide Algorithm for Simple Task Assignment”
Sam Safavi, Usman A. Khan, Tufts University, United States

“Secrecy Outage Analysis of Cognitive Wireless Sensor Networks”
Satyanarayana Vuppala, Jacobs University Bremen, Germany; Weigang Liu, Tharmalingam Ratnarajah, University of Edinburgh, United Kingdom; Giuseppe Abreu, Jacobs University Bremen, Germany

Track D
“Subspace Learning from Extremely Compressed Measurements”
Martin Azizyan, Akshay Krishnamurthy, Aarti Singh, Carnegie Mellon University, United States

“Abstract Algebraic-Geometric Subspace Clustering”
Manolis Tsakiris, Rene Vidal, Johns Hopkins University, United States

Track E
“Calibrating Nested Sensor Arrays with Model Errors”
Keyong Han, Peng Yang, Arye Nehorai, Washington University in St. Louis, United States

Track F
Alan Paris, Azadeh Vosoughi, George Atia, University of Central Florida, United States

Track G
“Hybrid Floating-Point Modules with Low Area Overhead on a Fine-Grained Processing Core”
Jon Pimentel, Bevan Baas, University of California, Davis, United States

Track H
“Crowdsourced Study of Subjective Image Quality”
Deepti Ghadiyaram, Alan Bovik, University of Texas at Austin, United States
Coffee breaks will be at 9:55 AM and 3:10 PM. (except Monday morning when refreshments will be served outside Merrill Hall from 9:45–10:15 AM)

Monday, November 3, 2014

CONFERENCE WELCOME AND PLENARY SESSION 8:15–9:45 AM

1. Welcome from the General Chairperson
   
   Prof. Roger Woods
   Queen’s University of Belfast

2. Session MA1a  Distinguished Lecture for the 2014 Asilomar Conference

   Learning Tools for Big Data Analytics
   
   Georgios B. Giannakis
   Univ. of Minnesota, USA

Abstract
We live in an era of data deluge. Pervasive sensors collect massive amounts of information on every bit of our lives, churning out enormous streams of raw data in various formats. Mining information from unprecedented volumes of data promises to limit the spread of epidemics and diseases, identify trends in financial markets, learn the dynamics of emergent social-computational systems, and also protect critical infrastructure including the smart grid and the Internet’s backbone network. While Big Data can be definitely perceived as a big blessing, big challenges also arise with large-scale datasets. The sheer volume of data makes it often impossible to run analytics using a central processor and storage, and distributed processing with parallelized multi-processors is preferred while the data themselves are stored in the cloud. As many sources continuously generate data in real time, analytics must often be performed “on-the-fly” and without an opportunity to revisit past entries. Due to their disparate origins, massive datasets are noisy, incomplete, prone to outliers, and vulnerable to cyber-attacks. These effects are amplified if the acquisition and transportation cost per datum is driven to a minimum. Overall, Big Data present challenges in which resources such as time, space, and energy, are intertwined in complex ways with data resources. Given these challenges, ample signal processing opportunities arise. This keynote lecture outlines ongoing research in novel models applicable to a wide range of Big Data analytics problems, as well as algorithms to handle the practical challenges, while revealing fundamental limits and insights on the mathematical trade-offs involved.

Biography
Georgios B. Giannakis received his Diploma in Electrical Engineering from the National Technical University of Athens, Greece, 1981. From 1982 to 1986 he was with the University of Southern California, where he received his MSc. in Electrical Engineering (1983), MSc. in Mathematics (1986), and Ph.D. in Electrical Engineering (1986). He became a Fellow of the IEEE in 1997. Since 1999, he has been a Professor with the University of Minnesota where he now holds an ADC Chair in Wireless Telecommunications in the ECE Department, and serves as director of the Digital Technology Center. His general interests span the areas of communications, networking and statistical signal processing – subjects on which he has published more than 370 journal papers, 630 conference papers, 20 book chapters, two edited books and two research monographs (h-index 108). Current research focuses on sparsity and big data analytics, wireless cognitive radios, mobile ad hoc networks, renewable energy, power grid, gene-regulatory, and social networks. He is the (co-) inventor of 22 patents issued, and the (co-) recipient of 8 best paper awards from the IEEE Signal Processing (SP) and Communications Societies, including the G. Marconi Prize Paper Award in Wireless Communications. He also received Technical Achievement Awards from the SP Society (2000), from EURASIP (2005), a Young Faculty Teaching Award, and the G. W. Taylor Award for Distinguished Research from the University of Minnesota. He is a Fellow of EURASIP, and has served the IEEE in a number of posts, including that of a Distinguished Lecturer for the IEEE-SP Society.
Program of the
2014 Asilomar Conference on
Signals, Systems, and Computers

Technical Program Chairman
Prof. Geert Leus
Delft University of Technology
Session MA1b  Learning and Optimization for Big Data

Co-Chairs: Konstantinos Slavakis, University of Minnesota and Nicholas D. Sidiropoulos, University of Minnesota

MA1b-1  FLEXA: A Fast Parallel Algorithm for Big-Data Optimization
Francisco Facchinei, Simone Sagratella, University of Rome, Italy; Gesualdo Scutari, University of Buffalo, the State University of New York, United States

MA1b-2  Fast and Robust Bootstrap in Analysing Large Multivariate Datasets
Shahab Basiri, Esa Ollila, Visa Koivunen, Aalto University, Finland

MA1b-3  Online Manifold Embedding and Reconstruction Using Dictionary Learning
Konstantinos Slavakis, University of Minnesota, United States

MA1b-4  Adaptive Estimation from Big Data via Censored Stochastic Approximation
Dimitrios Berberidis, University of Minnesota, Twin Cities, United States; Gang Wang, Beijing Institute of Technology, China; Georgios Giannakis, Vassilis Kekatos, University of Minnesota, Twin Cities, United States

Session MA2b  EEG Based Brain Computer Interface

Chair: Murat Akcakaya, Northeastern University

MA2b-1  Decoding the Focus of Auditory Attention from Single-Trial EEG Signals
Lenny Varghese, Inyong Choi, Siddharth Rajaram, Courtney Pacheco, Barbara Shinn-Cunningham, Boston University, United States

MA2b-2  Auditory Considerations for a Motor Imagery Brain-Computer Interface for Speech Synthesizer Control
Jonathan Brumberg, Jeremy Burnison, University of Kansas, United States

MA2b-3  Single-Trial Identification of Failed Memory Retrieval
Eunho Noh, University of California, San Diego, United States; Matthew Mollison, Tim Curran, University of Colorado Boulder, United States; Virginia de Sa, University of California, San Diego, United States

MA2b-4  Utilization of Temporal Trial Dependency in ERP based BCIs
Umut Orhan, CorTech, LLC, United States; Delia Fernandez-Canellas, Universitat Politècnica de Catalunya, Spain; Murat Akcakaya, Dana H. Brooks, Deniz Erdogmus, Northeastern University, United States

Session MA3b  Underwater Wireless Networks

Chair: Milica Stojanovic, Northeastern University

MA3b-1  On the Feasibility of Fully Wireless Remote Control for ROVs
Federico Favaro, Filippo Campagnaro, Paolo Casari, Michele Zorzi, University of Padova, Italy

MA3b-2  Modeling Realistic Underwater Acoustic Networks using Experimental Data
Mandar Chitre, Gabriel Chua, National University of Singapore, Singapore

MA3b-3  Scalable Collision-Tolerant Localization in Underwater Acoustic Sensor Networks
Hamid Ramezani, Geert Leus, Technical University of Delft, Netherlands; Milica Stojanovic, Northeastern University, United States

MA3b-4  New Frontiers in Underwater Acoustic Communications
Andrew Singer, Thomas Riedl, University of Illinois at Urbana Champaign, United States

Session MA4b  Physical Layer Security I

Chair: Yingbin Liang, Syracuse University

MA4b-1  On Physical Layer Secrecy of Collaborative Compressive Detection
Bhavya Kailkhura, Thakshila Wimalajeewa, Pramod Varshney, Syracuse University, United States

MA4b-2  Converse Results for Secrecy Generation over Channels
Himanshu Tyagi, University of California, San Diego, United States; Shun Watanabe, University of Tokushima, Japan

MA4b-3  Robust Transmission over Wiretap Channels with Secret Keys
Rafael F. Schaefer, H. Vincent Poor, Princeton University, United States

MA4b-4  Secret Key-Private Key Generation for Multiple Terminals
Huishuai Zhang, Syracuse University, United States; Lifeng Lai, Worcester Polytechnic Institute, United States; Yingbin Liang, Huishuai Zhang, Syracuse University, United States

Session MA5b  Image and Video Processing

Chair: Marios S. Pattichis, University of New Mexico

MA5b-1  Robust Image Recognition by Multi-Kernel Dictionary Learning
Rituaparna Sarkar, Sedat Ozer, Scott Acton, Kevin Skadron, University of Virginia, United States
MA5b-2 Robust Dual-Band MWIR/LWIR Infrared Target Tracking
Chuong Nguyen, Joseph Havlicek, University of Oklahoma, United States; Guoliang Fan, Oklahoma State University, United States; John Caulfield, Cyan Systems, United States; Marios Pattichis, University of New Mexico, United States

MA5b-3 Crowdsourced Study of Subjective Image Quality
Deepti Ghadiyaram, Alan Bovik, University of Texas at Austin, United States

MA5b-4 Detecting Coronal Holes for Solar Activity Modeling
Marios Pattichis, University of New Mexico, United States; Rachel Hock, AFRL/RVBXS Space Vehicles Directorate, United States; Venkatesh Jatla, University of New Mexico, United States; Carl Henney, Charles Arge, AFRL/RVBXS Space Vehicles Directorate, United States

Session MA6b Sparse Estimation and Learning in Multi-Channel and Array Systems
Co-Chairs: Palghat P. Vaidyanathan, California Institute of Technology and Piya Pal, University of Maryland

MA6b-1 Characterization of Orthogonal Subspaces for Alias-Free Reconstruction of Damped Complex Exponential Modes in Sparse Arrays
Pooria Pakrooh, Ali Pezeshki, Louis L. Scharf, Colorado State University, United States

MA6b-2 Exploiting Sparsity during the detection of High-Order QAM Signals in Large Dimension MIMO Systems
Oleg Tanchuk, Bhaskar Rao, University of California, San Diego, United States

MA6b-3 Structured Sparse Representation with Low-Rank Interference
Minh Dao, Yuanming Suo, Sang (Peter) Chin, Trac Tran, Johns Hopkins University, United States

Piya Pal, University of Maryland, College Park, United States; P. P. Vaidyanathan, California Institute of Technology, United States

Session MA7b Architectures for Detection and Decoding
Chair: Joseph R. Cavallaro, Rice University

MA7b-1 A Reduced-Complexity Iterative Decoding Scheme for Quasi-Cyclic Low-Density Parity-Check Codes
Shu Lin, Keke Liu, Juane Li, University of California, Davis, United States

MA7b-2 Efficient Adaptive List Successive Cancellation Decoder for Polar Codes
Chuan Zhang, National Mobile Communications Research Laboratory, China; Zhongfeng Wang, Broadcom Corporation, United States; Xiaohu You, National Mobile Communications Research Laboratory, China

MA7b-3 Decoder Diversity Architectures for Finite Alphabet Iterative Decoders for LDPC Codes
Bane Vasic, University of Arizona, United States; David Declercq, Universite de Cergy-Pontoise, France; Shiva Planjery, Codelucida, United States

MA7b-4 Asynchronous Design for Precision-Scaleable Energy-Efficient LDPC Decoder
Jingwei Xu, Gwan Choi, Texas A&M university, United States

Session MA8b1 Synchronization and Channel Estimation
Chair: Shengli Zhou, University of Connecticut

10:15 AM–11:55 AM

MA8b1-1 Frequency Tracking with Intermittent Wrapped Phase Measurement Using the Rao-Blackwellized Particle Filter
Maryam Eslami Rasekh, Upamanyu Madhow, University of California, Santa Barbara, United States; Raghuraman Mudumbai, University of Iowa, United States

MA8b1-2 Improving IEEE 1588v2 Time Synchronization Performance with Phase Locked Loop
Rico Jahja, Suk-seung Hwang, Goo-Rak Kwon, Jae-young Pyun, Seokjoo Shin, Chosun University, Indonesia

MA8b1-3 Superimposed Pilots based Secure Communications for Multiple Antenna System
Yejian Chen, Bell Laboratories, Alcatel-Lucent, Germany

MA8b1-4 An Improved ESPRIT-Based Blind CFO Estimation Algorithm In OFDM Systems
Yen-Chang Pan, See-May Phoong, National Taiwan University, Taiwan; Yuan-Pei Lin, National Chiao Tung University, Taiwan

MA8b1-5 Blind, Low Complexity Estimation of Time and Frequency Offsets in OFDM Systems
Rohan Ramlall, University of California, Irvine, United States

MA8b1-6 Efficient NLOS Optical Wireless Channel Estimation based on Sparse Pulse
Xiaoke Zhang, Chen Gong, Zhengyuan Xu, University of Science and Technology of China, China

MA8b1-7 Channel Estimation and Precoder Design for Millimeter-Wave Communications: The Sparse Way
Philip Schniter, Ohio State University, United States; Akbar Sayeed, Wisconsin, United States
Session MA8b2  Relaying
Chair: Guiseppe Caire, TU Berlin

10:15 AM–11:55 AM

MA8b2-1 Performance Analysis of Fixed Gain MIMO AF Relaying with Co-Channel Interferences
Min Lin, Min Li, PLA University of Science and Technology, China; Wei-Ping Zhu, Concordia University, Canada; Kang An, PLA University of Science and Technology, China

MA8b2-2 On Carrier-Cooperation in Parallel Gaussian MIMO Relay Channels with Partial Decode-and-Forward
Christoph Hellings, Wolfgang Utschick, Technische Universität München, Germany

MA8b2-3 Enhanced Relay Cooperation via Rate Splitting
Ivana Maric, Dennis Hui, Ericsson, United States

MA8b2-4 Alternate versus Simultaneous Relaying in MIMO Cellular Relay Networks: A Degrees of Freedom Study
Aya Salah, Amr El-Keyi, Nile University, Egypt; Mohammed Nafie, Cairo University, Egypt

MA8b2-5 Low-Complexity Two-Way AF MIMO Relay Strategy for Wireless Relay Networks
Kanghee Lee, Republic of Korea Air Force, Republic of Korea; Visvakumar Aravinthan, Sungmoon Moon, Wichita State University, United States; Jongbum Ryoo, Sungo Kim, Changki Moon, Inha Hyun, Republic of Korea Air Force, Republic of Korea

MA8b2-6 Blind Self-Interference Cancellation for Full-Duplex Relays
Gustavo Gonzalez, Fernando Gregorio, Juan Cousseau, CONICET - Universidad Nacional del Sur, Argentina; Armin Wittneben, ETH Zurich, Switzerland

Session MA8b3  Active Sensing and Target Recognition
Chair: Mark R. Bell, Purdue University

10:15 AM–11:55 AM

MA8b3-1 Proximal Constrained Waveform Design Algorithms for Cognitive Radar STAP
Pawan Setlur, Wright State Research Institute, United States; Muralidhar Rangaswamy, Air Force Research Laboratory, United States

MA8b3-2 The Generalized Sinusoidal Frequency Modulated Waveform for High Duty Cycle Active Sonar
David Hague, John Buck, University of Massachusetts Dartmouth, United States

MA8b3-3 Concurrent Exploration of Orthogonal Waveform and Co-Prime Array for Quick and High Resolution Scanning
Shuo Yang, Xin Wang, Xuehong Lin, Stony Brook University, United States

Session MA8b4  Physiological Signal Processing
Chair: Alessio Medda, Georgia Tech

10:15 AM–11:55 AM

MA8b4-1 Sample-Based Cross-Frequency Coupling Analysis with CFAR Detection
Charles Creusere, Nathan McRae, Mark Norman, Philip Davis, New Mexico State University, United States

MA8b4-2 Classification of Human Viewers using SVM
Philip Davis, Charles Creusere, Jim Kroger, New Mexico State University, United States

MA8b4-3 Activity Recognition using Statistical Gait Parameters from a Single Accelerometer
Andrew Vaughan, Alessio Medda, Brian Liu, Shean Phelps, Georgia Tech Research Institute, United States

MA8b4-4 Intra-Patient and Inter-Patient Seizure Prediction from Spatial-Temporal EEG Features
Shuoxin Ma, Daniel Bliss, Arizona State University, United States

MA8b4-5 Effective Connectivity in fMRI from Mutual Prediction Approach
Marisel Villafañe-Delgado, Selin Aviyente, Michigan State University, United States
Session MP1a  Big Data Analytics
Chair: Ali Tajer, Rensselaer Polytechnic Institute

MP1a-1 Universal Sequential Outlier Hypothesis Testing  1:30 PM
Yun Li, Sirin Nitinawarat, Venugopal Veeravalli, University of Illinois at Urbana-Champaign, United States

MP1a-2 Parsimonious Models for Random Variables and Stochastic Processes  1:55 PM
Wei Yu Xu, University of Iowa, United States

MP1a-3 Fundamental Limits on Information-Friction Energy of Big-Data Computing  2:20 PM
Majid Mahzoon, Pulkit Grover, Carnegie Mellon University, India

MP1a-4 Quickest Search Over Correlated Sequences  2:45 PM
Ali Tajer, Wayne State University, United States

Session MP1b  Tensor-Based Signal Processing
Chair: Phillip A. Regalia, NSF

MP1b-1 Memory-Efficient Parallel Computation of Tensor and Matrix Products for Big Tensor Decomposition  3:30 PM
Niranjan Ravindran, Nicholas Sidiropoulos, Shaden Smith, George Karypis, University of Minnesota, United States

MP1b-2 Recent Advances on Tensor Models and their Relevance for Multidimensional Data Processing  3:55 PM
Salah Bourennane, Julien Marot, Ecole Centrale Marseille - Institut Fresnel, France

MP1b-3 Tensor-Based Channel Estimation for Non-Regenerative Two-Way Relaying Networks with Multiple Relays  4:20 PM
Jianshu Zhang, Kristina Naskovska, Martin Haardt, Ilmenau University of Technology, Germany

MP1b-4 Fast Non-Unitary Simultaneous Diagonalization of Third-Order Tensors  4:45 PM
Victor Maurandi, Eric Moreau, University of Toulon, France

Session MP2a  Neural Engineering and Signal Processing
Chair: Ervin Sejdic, University of Pittsburgh

MP2a-1 Electroencephalography-based Alzheimer’s Disease Diagnosis: Where we are at Now and Where we are Heading  1:30 PM
Tiago Falk, Institut National de la Recherche Scientifique, Canada

MP2a-2 EEG Event Detection Using Big Data  1:55 PM
Iyad Obeid, Amir Harati, Joseph Picone, Temple University, United States

MP2a-3 A Source Localization Approach to Creating a Neural Interface with the Peripheral Nervous System  2:20 PM
Jose Zariffa, Toronto Rehabilitation Institute - University Health Network, Canada

MP2a-4 A Picture is Worth a Thousand Words: Some Examples of the Utility of Biomedical Image Processing in Brain Research  2:45 PM
Negar Memarian, University of California, Los Angeles, United States

Session MP2b  Brain Connectomics
Chair: Dimitri Van De Ville, EPFL

MP2b-1 Brain-Network Continua Revealed with Multivariate Performance Metrics.  3:30 PM
Stephen Strother, Baycrest and University of Toronto, Canada

MP2b-2 Learning with Multi-Site fMRI Graph Data  3:55 PM
Gabriel Castrillon, Seyed-Ahmad Ahmadi, Nassir Navab, Technische Universität München, Germany; Jonas Richiardi, Stanford University, United States

MP2b-3 Using Computer Vision to Understand Biological Vision  4:20 PM
Dmitri Chklovskii, Simons Center for Data Analysis, United States

MP2b-4 Dynamic Functional Connectivity: Probing Spontaneous Network Reorganization  4:45 PM
Dimitri Van De Ville, Nora Leonardi, École Polytechnique Fédérale de Lausanne / University of Geneva, Switzerland

Session MP3a  Compressed Sensing I
Chair: Aleksandar Dogandzic, Iowa State University

MP3a-1 Tensor Analytic Methods for Single Pixel Video Compressive Sensing  1:30 PM
Zemin Zhang, Shuchin Aeron, Tufts University, United States; Petros Boufounos, Mitsubishi Electric Research Laboratory, United States

MP3a-2 On the Applicability of Matrix Completion on MIMO Radars  1:55 PM
Shungiao Sun, Athina Petropulu, Rutgers University, United States
MP3a-3 Subspace Learning from Extremely Compressed Measurements
Martin Azizyan, Akshay Krishnamurthy, Aarti Singh, Carnegie Mellon University, United States

MP3a-4 Analysis of Misfocus Effects in Compressive Optical Imaging
Wenbing Dang, Ali Pezeshki, Randy Bartels, Colorado State University, United States

Session MP3b Compressed Sensing II
Chair: George Atia, University of Central Florida

MP3b-1 Filter Design for a Compressive Sensing Delay Estimation Framework
Misagh Khayambashi, Lee Swindlehurst, University of California, Irvine, United States

MP3b-2 Adaptive Sequential Compressive Detection
Davood Mardani, George Atia, University of Central Florida, United States

MP3b-3 A Recursive Way for Sparse Reconstruction of Parametric Spaces
Oguzhan Teke, Bilkent University, Turkey; Ali Cafer Gurbuz, TOBB University of Economics and Technology, Turkey; Orhan Arikan, Bilkent University, Turkey

MP3b-4 Subspace Methods for Recovery of Low Rank & Joint Sparse Matrices
Sampurna Biswas, Mathews Jacob, Soura Dasgupta, University of Iowa, United States

Session MP4a Underwater Acoustic Communications and Networking
Chair: Zhaohui Wang, Michigan Technological University

MP4a-1 Experimental Study of Secret Key Generation in Underwater Acoustic Channels
Yi Huang, University of Connecticut, United States; Lifeng Lai, Worcester Polytechnic Institute, United States; Shengli Zhou, Zhijie Shi, University of Connecticut, United States

MP4a-2 Random Linear Packet Coding for Fading Channels: Joint Power and Rate Control
Rameez Ahmed, Milica Stojanovic, Northeastern University, United States

MP4a-3 Underwater Acoustic Communications in Great Lakes and in Oceans: What is the Difference?
Wensheng Sun, Mohsen Jamalabdollahi, Zhaohui Wang, Seyed Zekavat, Michigan Technological University, United States

MP4a-4 Information-Guided Pilot Insertion for Capacity Improvement in OFDM Underwater Acoustic Communications
Xilin Cheng, Colorado State University, United States; Miaowen Wen, Xiang Cheng, Peking University, China; Liuqing Yang, Colorado State University, United States

Session MP4b Massive MIMO I
Chair: Erik Larsson, Linköping University

MP4b-1 Jsdm and Multi-Cell Networks: Handling Inter-Cell Interference Through Long-Term Antenna Statistics
Ansuman Adhikary, University of Southern California, United States; Giuseppe Caire, Technical University Berlin, Germany

MP4b-2 Enabling Massive MIMO Systems in the FDD Mode thanks to D2D Communications
Haifan Yin, Laura Cottatellucci, David Gesbert, Eurecom, France

MP4b-3 Massive MIMO As a Cyber-Weapon
Erik G. Larsson, Linkoping University, Sweden; Marcus Karlsson, Linköping University, Sweden

MP4b-4 Large Antenna Array and Propagation Environment Interaction
Xiang Gao, Meifang Zhu, Fredrik Rusek, Fredrik Tufvesson, Ove Edfors, Lund University, Sweden

Session MP5a Smart Grid: Learning and Optimization
Chair: Gonzalo Mateos, University of Minnesota

MP5a-1 Dynamic Attacks on Power Systems Economic Dispatch
Jinsub Kim, Lang Tong, Robert Thomas, Cornell University, United States

MP5a-2 Line Outage Detection in Power Transmission Networks Via Message Passing Algorithms
Jianshu Chen, University of California, Los Angeles, United States; Yue Zhao, Andrea Goldsmith, Stanford University, United States; H. Vincent Poor, Princeton University, United States

MP5a-3 Online Learning Approaches for Dynamic Optimal Power Flow
Seung-Jun Kim, Georgios Giannakis, University of Minnesota, United States

MP5a-4 Decentralized Primary Frequency Control in Power Networks
Changhong Zhao, Steven Low, California Institute of Technology, United States

Session MP5b Image and Video Quality
Chair: Pamela C. Cosman, University of California, San Diego

MP5b-1 Image Assisted Upsampling of Depth Map via Nonlocal Similarity
Wentian Zhou, Xin Li, Daryl Reynolds, West Virginia University, United States
Session MP6a  Array Calibration

Chair: Visa Koivunen, Aalto University

MP6a-1  Bilinear Compressed Sensing for Array Self-Calibration
Benjamin Friedlander, University of California, Santa Cruz, United States; Thomas Strohmer, University of California, Davis, United States

MP6a-2  Calibrating Nested Sensor Arrays with Model Errors
Keyong Han, Peng Yang, Arye Nehorai, Washington University in St. Louis, United States

MP6a-3  A New Method for DOA Estimation in the Presence of Unknown Mutual Coupling of an Antenna Array
Eric Wei-Jhong Ding, Borching Su, National Taiwan University, Taiwan

MP6a-4  An Angular Sampling Theorem for the Usable Frequency Range of Antenna Array Calibration Measurements
Chung-Cheng Ho, Scott Douglas, Southern Methodist University, United States

Session MP6b  Wireless Localization

Chair: Petar M. Djuric, Stony Brook University

MP6b-1  Direct Localization of Emitters Using Widely Spaced Sensors in Multipath Environments
Nil Garcia, New Jersey Institute of Technology, United States; Marco Lops, Università degli Studi di Cassino, Italy; Martial Coulon, University of Toulouse, France; Alexander Haimovich, New Jersey Institute of Technology, United States; Jason Dabin, Space and Naval Warfare Systems Command - Systems Center Pacific, United States

MP6b-2  Millimeter-Wave Personal Radars for 3D Environment Mapping
Anna Guerra, Francesco Guidi, Davide Dardari, University of Bologna, Italy

MP6b-3  Simultaneous Tracking and RSS Model Calibration by Robust Filtering
Juan Manuel Castro-Arvizu, Universitat Politècnica de Catalunya, Spain; Jordi Vilà-Valls, Pau Closas, Centre Tecnològic de Telecomunicacions de Catalunya, Spain; Juan Fernández-Rubio, Universitat Politècnica de Catalunya, Spain

Session MP7a  Resource-aware and Domain-specific Computing

Chair: Frank Hannig, Friedrich-Alexander University Erlangen-Nürnberg

MP7a-1  Partial Expansion of Dataflow Graphs for Resource-Aware Scheduling of Multicore Signal Processing Systems
George Zaki, IGI Technologies, United States; William Plishker, Shuvra Bhattacharyya, University of Maryland, College Park, United States; Frank Fruth, Texas Instruments, United States

MP7a-2  Performance Analysis of Weakly-Consistent Scenario-Aware Dataflow Graphs
Marc Geilen, TU Eindhoven, Netherlands; Joachim Falk, University of Erlangen-Nuremberg, Germany; Christian Haubelt, Universität Rostock, Germany; Twan Basten, TU Eindhoven, Netherlands; Bart Theelen, TNO-ESI, Netherlands; Sander Stuijk, TU Eindhoven, Netherlands

MP7a-3  Application-driven Reconfiguration of Shared Resources for Timing Predictability of MPSoC Platforms
Deepak Gangadharan, Ericles Sousa, Vahid Lari, Frank Hannig, Juergen Teich, University of Erlangen-Nuremberg, Germany

MP7a-4  Accelerating the Dynamic Time Warping Distance Measure using Logarithmic Arithmetic
Joseph Tarango, University of California, Riverside / Intel, United States; Eamonn Keogh, Philip Brisk, University of California, Riverside, United States

Session MP7b  Detection and Estimation for Networked Data

Chair: Yue Lu, Harvard University

MP7b-1  Detecting Convoys in Networks of Short-Range Sensors
Sean Lawlor, Michael Rabbat, McGill University, Canada

MP7b-2  Distributed SPRT for Gaussian Binary Hypothesis Testing: Performance Analysis and Fundamental Trade-offs
Ant Sahu, Soummya Kar, Carnegie Mellon University, United States
Session MP8a1  Network Resource Allocation and Localization

Chair: Azadeh Vosoughi, University of Central Florida

1:30 PM–3:10 PM

MP8a1-1  Optimal Scheduling Policies and the Performance of the CDF Scheduling
PhuongBang Nguyen, Bhaskar Rao, University of California, San Diego, United States

MP8a1-2 Joint Interference and User Association Optimization in Cellular Wireless Networks
Changkyu Kim, Russell Ford, Sundeep Rangan, New York University, Polytechnic School of Engineering, United States

MP8a1-3 Throughput Maximization in Wireless Powered Communication Networks with Energy Saving
Rui Wang, Donald Brown, Worcester Polytechnic Institute, United States

MP8a1-4 Optimal Flow Bifurcation in Networks with Dual Base Station Connectivity and Non-ideal Backhaul
Amitav Mukherjee, Hitachi America, Ltd., United States

MP8a1-5 Joint Sequential Target State Estimation and Clock Synchronization in Wireless Sensor Networks
Jichuan Li, Arye Nehorai, Washington University in St. Louis, United States

MP8a1-6 High-Accuracy Vehicle Position Estimation Using a Cooperative Algorithm with Anchors and Probe Vehicles
Ramez L. Gerges, First Responder System Testbed (FiRST), United States; John J. Shynk, University of California, Santa Barbara, United States

MP8a1-7 Statistical Scheduling of Economic Dispatch and Energy Reserves of Hybrid Power Systems with High Renewable Energy Penetration
Yi Gu, Huaiguang Jiang, University of Denver, United States; Yingchen Zhang, National Renewable Energy Laboratory, United States; David Wenzhong Gao, University of Denver, United States

MP8a1-8 Packet Loss and Route Loss Mitigation for Video in Mobile Ad-hoc Networks
Yiting Liao, Jerry Gibson, University of California, Santa Barbara, United States

Session MP8a2  Bioinformatics and Medical Imaging

Chair: George Atia, University of Central Florida

1:30 PM–3:10 PM

MP8a2-1 Comparison and Integration of Genomic Profiles Predict Brain Cancer Survival and Drug Targets
Katherine Aiello, Orly Alter, University of Utah, United States

MP8a2-2 Tensor GSVD for Comparison of Two Large-Scale Multidimensional Datasets
Theodore Schomay, Orly Alter, University of Utah, United States

MP8a2-3 An Efficient ADMM-based Sparse Reconstruction Strategy for Multi-Level Sampled MRI
Joshua Trzasko, Eric Borisch, Paul Weavers, Armando Manduca, Phillip Young, Stephen Riederer, Mayo Clinic, United States

MP8a2-4 Multiscale Functional Networks in Human Resting State Functional MRI
Jacob Billings, Emory University, United States; Alessio Medda, Georgia Tech Research Institute, United States; Shella Keilholz, Georgia Institute of Technology / Emory University, United States

MP8a2-5 Piecewise Linear Slope Estimation
Atul Ingle, William Sethares, Tomy Varghese, James Bucklew, University of Wisconsin-Madison, United States

MP8a2-6 Fast Magnetic Resonance Parametric Imaging via Model-Based Low-Rank Matrix Factorization
Parisa Amiri Eliasi, New York University, Polytechnic School of Engineering, United States; Li Feng, Ricardo Otazo, New York University, School of Medicine, United States; Sundeep Rangan, New York University, Polytechnic School of Engineering, United States

MP8a2-7 A Signal Model for Forensic DNA Mixtures
Ullrich Mönich, Massachusetts Institute of Technology, United States; Catherine Grgicak, Boston University, United States; Viveck Cadambe, Yonglin Wu, Massachusetts Institute of Technology, United States; Genevieve Wellner, Boston University, United States; Ken Duffy, National University of Ireland Maynooth, Ireland; Muriel Médard, Massachusetts Institute of Technology, United States

Session MP8a3  Source Separation and Array Processing

Chair: Douglas Cochran, Arizona State University

1:30 PM–3:10 PM

MP8a3-1 Forward - Backward Greedy Algorithms for Signal Demixing
Nikhil Rao, Parikshit Shah, Stephen Wright, University of Wisconsin, United States
Session MP8a4  Digital Communications

Chair: James Glenn-Anderson, Supercomputer Systems Inc.

1:30 PM–3:10 PM

MP8a4-1  High-throughput DOCSIS Upstream QC-LDPC Decoder
Bei Yin, Michael Wu, Rice University, United States; Christopher Dick, Xilinx Incorporated, United States; Joseph R. Cavallaro, Rice University, United States

MP8a4-2  On the Performance of LDPC and Turbo Decoder Architectures with Unreliable Memories
Joao Andrade, Instituto de Telecomunicações, Universidade de Coimbra, Portugal; Aida Vosoughi, Guohui Wang, Rice University, United States; Georges Karakonstantis, Andreas Burg, Telecommunication Circuits Lab, EPFL, Switzerland; Gabriel Falcao, Vitor Silva, Instituto de Telecomunicações, Universidade de Coimbra, Portugal; Joseph R. Cavallaro, Rice University, United States

MP8a4-3  Successive Cancellation List Polar Decoder using Log-likelihood Ratios
Bo Yuan, Keshab K. Parhi, University of Minnesota, Twin Cities, United States

MP8a5  Image and Speech Processing

1:30 PM–3:10 PM

MP8a5-1  Large Margin Nearest Neighborhood Metric Learning for I-Vector Based Speaker Verification
Waquar Ahmad, Harish Karnick, Rajesh M Hegde, Indian Institute of Technology Kanpur, India

MP8a5-2  Acoustic Echo and Noise Cancellation using Kalman Filter in a Modified GSC Framework
Subhash Tanan, Karan Nathwani, Ayush Jain, Rajesh M Hegde, Indian Institute of Technology Kanpur, India; Ruchi Rani, Abhijit Tripathy, Samsung R&D Institute India Delhi, India

MP8a5-3  Paper Texture Classification via Multi-Scale Restricted Boltzmann Machines
Arash Sangari, William Sethares, University of Wisconsin-Madison, United States

MP8a5-4  Regularized Logistic Regression Based classification for Infrared Images
Golrokh Mirzaei, Mohsin M. Jamali, University of Toledo, United States; Jeremy Ross, Peter Gorsevski, Verner Bingman, Bowling Green State University, United States
MP8a5-5  Localizing Near and Far Field Acoustic Sources with Distributed Microphone Arrays  
Martin Weiss Hansen, Jesper Rindom Jensen, Mads Gresbøll Christensen, Aalborg University, Denmark

MP8a5-6  Graph Wavelet Transform: Application to Image Segmentation  
Alp Ozdemir, Selin Aviyente, Michigan State University, United States

MP8a5-7  Histogram Transform Model Using MFCC Features for Text-Independent Speaker Identification  
Hong Yu, Zhanyu Ma, Beijing University of Posts and Telecommunications, China; Minyue Li, Jun Guo, Google, Inc., Sweden

Session TA1a  High Dimensional and Large Volume Data
Chair: Sergiy Vorobyov, Aalto University

TA1a-1  Tensor Restricted Isometry Property for Multilinear Sparse System of Genomic Interactions  
Alexandra Fry, Carmeliza Navasca, University of Alabama at Birmingham, United States

TA1a-2  Analysis of a Separable STAP Algorithm for Very Large Arrays  
Jie Chen, Feng Jiang, A. Lee Swindlehurst, University of California, Irvine, United States

TA1a-3  Spatial-Temporal Characterization of Synchrophasor Measurement Systems - A Big Data Approach for Smart Grid System Situational Awareness  
Huaiguang Jiang, University of Denver, United States; Lei Huang, Electric Power Research Institute, China Southern Power Grid, China; Jun Zhang, University of Denver, United States; Yingchen Zhang, National Renewable Energy Laboratory, United States; David Wenzhong Gao, University of Denver, United States

TA1a-4  Performance Analysis of the Tucker HOSVD for Extracting Low-Rank Structure from Multiple Signal-Plus-Noise Matrices  
Himanshu Nayar, Rajesh Nadakuditi, University of Michigan, Ann Arbor, United States

Session TA1b  Big Data Signal Processing
Chair: Georgios B. Giannakis, University of Minnesota

TA1b-1  A Comparison of Clustering and Missing Data Methods for Health Sciences  
Ran Zhao, Claremont Graduate University, United States; Deanna Needell, Claremont McKenna College, United States; Christopher Johansen, Jerry Grenard, Claremont Graduate University, United States

TA1b-2  Discovery of Principles of Nature from Matrix and Tensor Modeling of Large-Scale Molecular Biological Data  
Orly Alter, University of Utah, United States

Session TA2a  Neural Spike Train Analysis
Chair: Rebecca Willett, University of Wisconsin-Madison

TA2a-1  Neural Spike Train Denoising by Point Process Re-weighted Iterative Smoothing  
Demba Ba, Massachusetts Institute of Technology, United States; Behtash Babadi, University of Maryland, College Park, United States; Emery Brown, Massachusetts Institute of Technology / Harvard University, United States

TA2a-2  Neurally Inspired Objective Function for Subspace Tracking and Online Feature Learning  
Dmitri Chklovskii, Simons Center for Data Analysis, United States

TA2a-3  Tracking Influence in Dynamic Neural Networks  
Rebecca Willett, University of Wisconsin-Madison, United States; Eric Hall, Duke University, United States

TA2a-4  A Design and Implementation Framework for Unsupervised High-resolution Recursive Filters in Neuromotor Prosthesis Applications  
Islam Badreldin, Karim Oweiss, Michigan State University, United States

Session TA2b  Dynamic Brain Functional Connectivity
Chair: Laleh Najafizadeh, Rutgers University

TA2b-1  Functional Connectivity Differences in Brain Networks: Contributions of Shared and Unshared Variance  
Michael Cole, Rutgers University, United States; Grega Repovs?, University of Ljubljana, United States; Alan Anticevic, Yale University, United States

TA2b-2  Beyond Brain Maps: Functional Connectivity versus Task-Based Activations in Mental State Prediction  
Irina Rish, IBM T. J. Watson Research Center, United States

TA2b-3  Approaches for Capturing Dynamic Connectivity States in fMRI data  
Vince Calhoun, University of New Mexico, United States

TA2b-4  Characterizing whole Brain Modulatory Interactions in Resting-State  
Bharat Biswal, New Jersey Institute of Technology, United States
Session TA3a  Distributed Optimization over Networks
Chair: Philippe Ciblat, TELECOM ParisTech

TA3a-1 The ADMM Algorithm for Distributed Averaging: Convergence Rates and Optimal Parameter Selection
Euhanna Ghadimi, André Teixeira, Royal Institute of Technology-KTH, Sweden; Michael Rabbat, McGill University, Canada; Mikael Johansson, Royal Institute of Technology-KTH, Sweden
8:15 AM

TA3a-2 Performance Analysis of Multitask Diffusion Adaptation Over Asynchronous Networks
Roula Nassif, Cédric Richard, André Ferrari, Université de Nice Sophia-Antipolis, France; Ali H. Sayed, University of California, Los Angeles, France
8:40 AM

TA3a-3 On the Convergence of an Alternating Direction Penalty Method for Nonconvex Problems
Sindri Magnússon, P. Chathuranga Weeraddana, KTH Royal Institute of Technology, Sweden; Michael Rabbat, McGill University, Canada; Carlo Fischione, KTH Royal Institute of Technology, Sweden
9:05 AM

TA3a-4 Decentralized Regression with Asynchronous Sub-Nyquist Sampling
Hoi To Wai, Anna Scaglione, University of California, Davis, United States
9:30 AM

Session TA3b  Latest Coding Advances
Chair: Hamid Jafarkhani, University of California, Irvine

TA3b-1 Joint Space-Time Code Designs for Multiple Access Channels
Tianyi Xu, InterDigital Communications, Inc., United States; Xiang-Gen Xia, University of Delaware, United States
10:15 AM

TA3b-2 Quantized Distributed Reception Techniques for MIMO Wireless Systems
Junil Choi, David Love, Purdue University, United States
10:40 AM

TA3b-3 Generalized Spatial Modulation for Large-Scale MIMO Systems: Analysis and Detection
Theagarajan Lakshmi Narasimhan, Patchava Raviteja, Ananthanarayanan Chockalingam, Indian Institute of Science, India
11:05 AM

TA3b-4 Bandwidth Analysis of Low-Complexity Decoupling Networks for Multiple Coupled Antennas
Ding Nie, Bertrand Hochwald, University of Notre Dame, United States
11:30 AM

Session TA4a  Enhanced MIMO for LTE-A and 5G Systems
Chair: Amitava Gosh, Nokia Siemens Networks

TA4a-1 3D Channel Models for Elevation Beamforming and FD-MIMO in LTE-A and 5G
Jianzhong (Charlie) Zhang, Yang Li, Young-Han Nam, Samsung, United States
8:15 AM

TA4a-2 Advanced Antenna Solutions for 5G Wireless Access
Erik Dahlman, Stefan Parkvall, David Astley, Hugo Tullberg, Ericsson, Sweden
8:40 AM

TA4a-3 Multi-Layer Precoding for Full-Dimensional MIMO Systems
Ahmed Alkhateeb, University of Texas at Austin, United States; Geert Leus, Delft University of Technology, Netherlands; Robert W. Heath Jr., University of Texas at Austin, United States
9:05 AM

TA4a-4 Massive MIMO for mmWave systems
Frederick Vook, Timothy Thomas, Nokia Solutions and Networks, United States
9:30 AM

Session TA4b  Cognitive Radio I
Chair: Paul de Kerret, Eurecom

TA4b-1 Statistically Coordinated Precoding for the MISO Cognitive Radio Channel
Paul de Kerret, Miltiades Filippou, David Gesbert, Eurecom, France
10:15 AM

TA4b-2 Simultaneous Detection and Estimation based Spectrum Sharing in Cognitive Radio Networks
Jyoti Mansukhani, Priyadip Ray, Indian Institute of Technology Kharagpur, India; Pramod Varshney, Syracuse University, United States
10:40 AM

TA4b-3 Interference-Temperature Limit for Cognitive Radio Networks with MIMO Primary Users
Cristian Lameiro, University of Cantabria, Spain; Wolfgang Utschick, Technische Universität München, Germany; Ignacio Santamaria, University of Cantabria, Spain
11:05 AM

TA4b-4 Competitive Dynamic Pricing under Demand Uncertainty
Yixuan Zhai, Qing Zhao, University of California, Davis, United States
11:30 AM

Session TA5a  Recent Advances in Speech Coding
Chair: Tokunbo Ogunfunmi, Santa Clara University

TA5a-1 The Shannon Backward Channel and Voice Codec Design
Jerry Gibson, University of California, Santa Barbara, United States
8:15 AM
Session TA5b  Historic Photographic Paper Identification via Textural Similarity Assessment

Co-Chairs: Andrew G. Klein, Worcester Polytechnic Institute and Patrice Abry, Ecole Superieure de Lyon (CNRS)

TA5b-1  Automated Surface Texture Classification of Photographic Print Media
Paul Messier, Paul Messier LLC, United States; Richard Johnson, Cornell University, United States

TA5b-2  Eigentextures: An SVD Approach to Automated Paper Classification
William Sethares, Atul Ingle, Tomas Krc, University of Wisconsin, United States; Sally Wood, Santa Clara University, United States

TA5b-3  Texture Classification via Area-Scale Analysis of Raking Light Images
Andrew G. Klein, Western Washington University, United States; Anh Do, Christopher Brown, Worcester Polytechnic Institute, United States; Philip Klausmeyer, WAM, United States

TA5b-4  Hyperbolic Wavelet Transform for Historic Photographic Paper Classification Challenge
Stephane Roux, Patrice Abry, ENS Lyon, France; Herwig Wendt, ENSHEEIT-IRIT, France; Stephane Jaffard, Paris Est University, France

Session TA6a  Compressive Methods in Radar

Chair: Athina Petropulu, Rutgers University

TA6a-1  Sparse Arrays, MIMO, and Compressive Sensing for GMTI Radar
Haley Kim, Alexander Haimovich, New Jersey Institute of Technology, United States

Session TA6b  Statistical Inference in Smart Grids

Co-Chairs: H. Vincent Poor, Princeton University and Yue Zhao, Stanford University

TA6b-1  Revisiting Cyclo-Stationary Random Signal Analysis for Modeling Renewable Power
Masood Parvania, University of California, Davis, United States; Francesco Verde, Universita’ Federico II di Napoli, Italy; Anna Scaglione, University of California, Davis, United States; Donatella Darsena, Giacinto Gelli, Universita’ Federico II di Napoli, Italy

TA6b-2  Integrating PMU-data-driven and Physics-based Analytics for Power Systems Operations
Yang Chen, Le Xie, P. R. Kumar, Texas A&M University, United States

Pedro Rocha, University of Porto, Portugal; Sergio Peguio, Carnegie Mellon University, United States; Pedro Aguiar, Paula Rocha, University of Porto, Portugal; Soumya Kar, Carnegie Mellon University, United States

TA6b-4  Dynamic Joint Outage Identification and State Estimation in Power Systems
Yue Zhao, Stanford University, United States; Jianshu Chen, University of California, Los Angeles, United States; Andrea Goldsmith, Stanford University, United States; H. Vincent Poor, Princeton University, United States

Session TA7a  Computer Arithmetic I

Chair: Neil Burgess, ARM Inc.

TA7a-1  Ultra-Light Weight Hardware Accelerator Circuits for Data Encryption in Wearable Systems
Sanu Mathew, Sudhir Satpathy, Vikram Suresh, Ram Krishnamurthy, Intel Corporation, United States
Session TA7a  Arithmetic Operations in the Heterogeneous System Architecture
Michael Schulte, AMD Research, United States

TA7a-2 Low Latency is Low Energy
David Lutz, Neil Burgess, ARM, United States

TA7a-4 Optimizing DSP Circuits by a New Family of Arithmetic Operators
Javier Hormigo, Julio Villalba, Universidad de Malaga, Spain

Session TA7b  MIMO Sensing
Chair: Jian Li, University of Florida

TA7b-1 Bi-Static MIMO Radar Operations for Range-Folded Clutter Mitigation
Yuri Abramovich, WR Systems Ltd., United States; Gordon Frazer, DSTO, Australia; Geoffrey San Antonio, Naval Research Laboratory, United States; Ben Johnson, Colorado School of Mines, United States

TA7b-2 Large Phased Array Antenna Calibration Using Radar Clutter and MIMO
Matthew Brown, Mitch Mirkin, Dan Rabideau, MIT Lincoln Laboratory, United States

TA7b-3 High Resolution Imaging for MIMO Forward Looking Ground Penetrating Radar
Jian Li, Ode Ojowu, Luzhou Xu, University of Florida, United States; John Anderson, Howard University, United States; Lam Nguyen, Army Research Laboratory, United States

TA7b-4 Structure Health Monitoring Exploiting Mimo Ultrasonic Sensing and Group Sparse Bayesian Learning
Qisong Wu, Yimin Zhang, Moeness Amin, Andrew Golato, Sridhar Santhanam, Fauzia Ahmad, Villanova University, United States

Session TA8a  Channel Estimation and MIMO Feedback
Chair: Ananthanarayanan Chockalingam, Indian Institute of Science

TA8a-1 Channel Estimation in Millimeter Wave MIMO Systems with One-Bit Quantization
Jianhua Mo, University of Texas at Austin, United States; Philip Schniter, Ohio State University, United States; Robert W. Heath Jr., University of Texas at Austin, United States

TA8a-2 Maximum-Likelihood Joint Channel Estimation and Data Detection for Space Time Block Coded MIMO Systems
Haider Alshamary, Weiyu Xu, University of Iowa, United States

Session TA8b  Image Processing I
Chair: Kenneth Jenkins, Pennsylvania State University

TA8b-1 Second Order Model Deviations of Local Gabor Features for Texture Classification
David Picard, Inbar Fijalkow, ETIS - UMR 8051 / ENSEA, Université Cergy-Pontoise, CNRS, France

TA8b-2 Weighted Boundary Matching Error Concealment for HEVC Using Block Partition Decisions
Yan-Tsung Peng, Pamela Cosman, University of California, San Diego, United States

TA8b-3 Reducing the Latency and Improving the Resolution of Vector Quantization with Anamorphic Stretch Transform
Haochen Yuan, Mohammad H. Asghari, Bahram Jalali, University of California, Los Angeles, United States

TA8b-4 Supervised Facial Recognition based on Multiresolution Analysis with Radon Transform
Ahmed Aldhahab, George Atia, Wasfy Mikhael, University of Central Florida, United States

TA8b-5 On Compensating Unknown Pixel Behaviors for Image Sensors with Embedded Processing
William Guicquero, Michele Benetti, Arnaud Pezerat, Antoine Dupret, Commissariat à l’énergie atomique et aux énergies alternatives, France; Pierre Vanderghynst, École Polytechnique Fédérale de Lausanne, Switzerland
Session TA8a3  Signal Processing for Communications

Chair: Bhavya Kailkhura, Syracuse University

8:15 AM–9:55 AM

TA8a3-1  Energy-Efficient Secure Communications in MISO-SE Systems
Alessio Zappone, Pin-Hsun Lin, Eduard A. Jorswieck, TU Dresden, Germany

TA8a3-2  Distinguishing BFSK from QAM and PSK by Sampling Once per Symbol
Mohammad Bari, Milos Doroslovacki, George Washington University, United States

TA8a3-3  Quadratic Program Solution of Communication Links Under Jamming
Koorosh Firouzabakht, Guevara Noubir, Masoud Salehi, Northeastern University, United States

TA8a3-4  An Iterative Soft Decision Based Adaptive K-best Decoder Without SNR Estimation
Mehnaz Rahman, Ehsan Rohani, Gwan Choi, Texas A&M University, United States

TA8a3-5  MMSE Scaling Enhances Performance in Practical Lattice Codes
Nuwan Ferdinand, University of Oulu, Finland; Matthew Nokleby, Duke University, United States; Brian Kurkoski, Japan Advanced Institute of Science and Technology, Japan; Behnaam Aazhang, Rice University, United States

TA8a3-6  RLS-Based Frequency-domain DFE for Uplink SC-FDMA
Naveed Iqbal, Azzedine Zerguine, King Fahd University of Petroleum and Minerals, Saudi Arabia; Naoqal Al-Dhahir, University of Texas at Dallas, United States

Session TA8a4  Adaptive Filtering

Chair: Milos Doroslovacki, George Washington University

8:15 AM–9:55 AM

TA8a4-1  On Component-Wise Conditionally Unbiased Linear Bayesian Estimation
Mario Huemer, Oliver Lang, Johannes Kepler University Linz, Austria

TA8a4-2  Performance of Proportionate-type NLMS Algorithm with Gain Allocation Proportional to the Mean Square Weight Deviation
Kevin Wagner, Naval Research Laboratory, United States; Milos Doroslovacki, George Washington University, United States

TA8a4-3  Predictive Sensor Selection for Navigation in Constrained Environments
Markus Fröhle, Ali A. Zaidi, Erik Ström, Henk Wymeersch, Chalmers University of Technology, Sweden

TA8a4-4  An Efficient Least Mean Squares Algorithm based on q-Gradient
Ubaid Al-Saggaf, Mohammad Moinuddin, King Abdulaziz University, Saudi Arabia; Azzedine Zerguine, King Fahd University of Petroleum and Minerals, Saudi Arabia

TA8a4-5  Optimal Step Size Control for Acoustic Echo Cancellation
Khosrow Lashkari, Seth Suppappola, Cirrus Logic, United States

TA8a4-6  Stochastic Gradient Algorithm Based on an Improved Higher Order Exponentiated Error Cost Function
Umair bin Mansoor, Syed Asad, Azzedine Zerguine, King Fahd University of Petroleum and Minerals, Saudi Arabia

TA8a4-7  Spectral Multiscale Coverage with the Feature Aided CPHD Tracker
Ramona Georgescu, Shuo Zhang, Amit Surana, Alberto Speranzon, Ozgur Erdinc, United Technologies Research Center, United States

TA8a4-8  Adaptive Sampling with Sensor Selection for Target Tracking in Wireless Sensor Networks
Abdulkadir Kose, Engin Masazade, Yeditepe University, Turkey

Session TA8b1  Multiuser and Cellular Systems

Chair: Rafael F. Schaefer, Princeton University

10:15 AM–11:55 AM

TA8b1-1  Average Sum MSE Minimization in the Multi-User Downlink With Multiple Power Constraints
Andreas Gründinger, Michael Joham, Technische Universität München, Germany; Jose Pablo Gonzalez Coma, Luis Castedo, University of A Coruna, Spain; Wolfgang Utschick, Technische Universität München, Germany
Session TA8b1  Hierarchical Precoding for Ultra-Dense Heterogeneous Networks
Lars Thiele, Martin Kurras, Fraunhofer Institute for Telecommunications Heinrich Hertz Institute, Germany

Detection using Block QR Decomposition for MIMO HetNets
Robin Thomas, Raymond Knopp, Eurecom, France; Sunil (B.T) Maharaj, University of Pretoria, South Africa

On Performance Prediction for Multiuser Detection Enabled Systems in Packet Based Asynchronous Gaussian Multiple Access Channels
Prabahan Basu, MIT Lincoln Laboratory, United States

Decentralized Target Rate Optimization for MU-MIMO Leakage Based Precoding
Tim Ruegg, Marc Kuhn, Armin Wittneben, ETH Zurich, Switzerland

Leveraging Interference for Increasing Throughput and Reliability of Commercial Wireless Small Cells
Rachel Learned, Michael Pitaro, Matthew Ho, Massachusetts Institute of Technology, United States

Throughput Analysis of LTE and WiFi in Unlicensed Band
Abhijeet Bhorkar, Christian Ibars Casas, Pingping Zong, Intel Corporation, United States

Multi-User Detection for xDSL with Partial Cooperation Among Multiple Operators
Syed Hassan Raza Naqvi, Umberto Spagnolini, Politecnico di Milano, Italy

Session TA8b2  Computer Arithmetic II
Chair: Sardar Muhammad Sulaman, Lund University
10:15 AM–11:55 AM

Improved Non-restoring Square Root Algorithm with Dual Path Calculation
Kihwan Jun, Earl Swartzlander, University of Texas at Austin, Republic of Korea

Merged Residue Number System Generation
Michael Sullivan, Earl Swartzlander, University of Texas at Austin, United States

Partial Product Generation and Addition for Multiplication in FPGAs With 6-Input LUTs
George Walters, Penn State Erie, The Behrend College, United States

Low-Power Radix-4 Quotient Generator
Milos Ercegovac, University of California, Los Angeles, United States

Memristor Based Adders
Divya Mahajan, Matheen Musaddiq, Earl Swartzlander, University of Texas at Austin, United States

Canonic Real-Valued FFT Structures
Megha Parhi, Yingjie Lao, Keshab K. Parhi, University of Minnesota, Twin Cities, United States

Session TA8b3  Array Processing Methods
Chair: Piya Pal, University of Maryland
10:15 AM–11:55 AM

Array Self Calibration with Large Initial Errors
Benjamin Friedlander, University of California, Santa Cruz, United States

Maximum Likelihood Estimation for Geolocation in the Presence of Multipath
Benjamin Friedlander, University of California, Santa Cruz, United States

Enhanced Location Detection Algorithms Based on Time of Arrival Trilateration
Sajina Pradhan, Jae-young Pyun, Goo-Rak Kwon, Seokjoo Shin, Suk-seung Hwang, Chosun University, Republic of Korea

Designing Radio Interferometric Positioning Systems for Indoor Localizations in Millimeter Wave Bands
Marie Shinotsuka, Georgia Institute of Technology, United States; Yiyin Wang, Shanghai Jiao Tong University, China; Xiaoli Ma, G. Tong Zhou, Georgia Institute of Technology, United States

Indoor Sound Source Localization and Number Estimation Using Infinite Gaussian Mixture Model
Longji Sun, Qi Cheng, Oklahoma State University, United States

On the Structural Nature of Cooperation in Distributed Network Localization
Alireza Ghods, Stefano Severi, Giuseppe Abreu, Jacobs University Bremen, Germany; Samuel Van de Velde, Ghent University, Belgium

Enabling Distributed Detection with Dependent Sensors
Brian Proulx, Junshan Zhang, Douglas Cochran, Arizona State University, United States

Active Sonar Transmission Strategies in the Presence of Strong Direct Blast
Luzhou Xu, Jian Li, Akshay Jain, University of Florida, United States
**Session TA8b4  Compressed Sensing III**

Chair: *Victor DeBrunner, Florida State University*

10:15 AM–11:55 AM

**TA8b4-1** Super-resolution Line Spectrum Estimation with Block Priors  
*Kumar Vijay Mishra, Myung Cho, Anton Kruger, Weiyu Xu, University of Iowa, United States*

**TA8b4-2** Robust Line Spectral Estimation  
*Gongguo Tang, Colorado School of Mines, United States; Parikshit Shah, Badri Bhaskar, University of Wisconsin-Madison, United States; Benjamin Recht, University of California, Berkeley, United States*

**TA8b4-3** Complexity Reduction in Compressive Sensing using Hirschman Uncertainty Structured Random Matrices  
*Peng Xi, Victor DeBrunner, Florida State University, United States*

**TA8b4-4** A Sparse Approach for Estimation of Amplitude Modulated Sinusoids  
*Stefan Ingi Adalbjörnsson, Johan Swärd, Andreas Jakobsson, Ted Kronvall, Lund University, Sweden*

**TA8b4-5** Sparsity Order Estimation for Single Snapshot Compressed Sensing  
*Florian Roemer, Anastasia Lavrenko, Giovanni Del Galdo, Thomas Hotz, Technische Universitaet Ilmenau, Germany; Orhan Arik, Bilkent University, Turkey; Reiner Thomae, Technische Universitaet Ilmenau, Germany*

**TA8b4-6** Streaming Signal Recovery Using Sparse Bayesian Learning  
*Uditha Wijewardhana, Marian Codreanu, Centre for Wireless Communications, Finland*

**TA8b4-7** Compressed Change Detection for Structural Health Monitoring  
*Omid Sarayanibafghi, George Atia, Masoud Malekzadeh, Necati Catbas, University of Central Florida, United States*

**TA8b4-8** A Sparse Semi-Parametric Chirp Estimator  
*Johan Swärd, Johan Brynolfsson, Andreas Jakobsson, Maria Hansson-Sandsten, Lund University, Sweden*

**Session TP1a  Covariance Mining**

Chair: *Pradeep Ravikumar, University of Texas at Austin*

1:30 PM–2:45 PM

**TP1a-1** Abstract Algebraic-Geometric Subspace Clustering  
*Manolis Tsakiris, Rene Vidal, Johns Hopkins University, United States*

**TP1a-2** Minimum Variance Portfolio Optimization with Robust Shrinkage Covariance Estimation  
*Liusha Yang, Hong Kong University of Science and Technology, Hong Kong SAR of China; Romain Couillet, Supelec, France; Matthew McKay, Hong Kong University of Science and Technology, Hong Kong SAR of China*

**TP1a-3** Greedy Algorithms in Convex Optimization on Banach Spaces  
*Vladimir Temlyakov, University of South Carolina, United States*

**TP1a-4** Greedy Algorithms for Learning Graphical Models  
*Ali Jalali, Christopher Johnson, Pradeep Ravikumar, University of Texas at Austin, United States*

**Session TP1b  Large-Scale Learning and Optimization**

Chair: *Alejandro Ribeiro, University of Pennsylvania*

3:30 PM–4:45 PM

**TP1b-1** Distributed Adaptive Sparsity-Imposing Canonical Correlations  
*Jia Chen, Ioannis Schizas, University of Texas at Arlington, United States*

**TP1b-2** Game-Theoretic Learning In A Distributed-Information Setting: Distributed Convergence To Mean-Centric Equilibria  
*Brian Swenson, Soummya Kar, Carnegie Mellon University, United States; Joao Xavier, Instituto Superior Tecnico, Portugal*

**TP1b-3** Network Newton  
*Aryan Mokhtari, Alejandro Ribeiro, University of Pennsylvania, United States*

**TP1b-4** Communication-Computation Tradeoffs in Decentralized Stochastic Optimization  
*Konstantinos Tsianos, Michael Rabbat, McGill University, Canada*

**Session TP2a  Bioinformatics and DNA Computing**

Co-Chairs: *Olgica Milenkovic, University of Illinois at Urbana-Champaign and Farzad Farnoud, California Institute of Technology*

1:30 PM–2:45 PM

**TP2a-1** On the Capacity of String-Duplication Systems and Genomic Duplication  
*Farzad Farnoud, California Institute of Technology, United States; Moshe Schwartz, Ben-Gurion University of the Negev, Israel; Jehoshua Bruck, California Institute of Technology, United States*

**TP2a-2** Intrinsic Universality and the Computational Power of Self-Assembly  
*Damien Woods, California Institute of Technology, United States*

**TP2a-3** Hybrid Rank Aggregation for Gene Prioritization  
*Minji Kim, Farzad Farnoud, Olgica Milenkovic, University of Illinois at Urbana-Champaign, United States*

**TP2a-4** Rate-Independent Computation in Chemical Reaction Networks  
*David Doty, California Institute of Technology, United States*
Session TP2b  Echo Cancellation
Chair: Steven Grant, Missouri University of Science and Technology

TP2b-1  Echo Cancellation for Bone Conduction  3:30 PM
Mohammad Behgam, Steven L. Grant, Missouri University of Science and Technology, United States

TP2b-2  Uncertainty Modeling in Acoustic Echo  3:55 PM
Gerald Enzner, Rainer Martin, Ruhr-University Bochum, Germany; Peter Vary, RWTH Aachen University, Germany

TP2b-3  A Kalman Filter for Stereophonic Acoustic Echo Cancellation  4:20 PM
Constantin Paleologu, University Politehnica of Bucharest, Romania; Jacob Benesty, University of Quebec, Canada; Steven L. Grant, Missouri University of Science and Technology, United States; Silviu Ciochina, University Politehnica of Bucharest, Romania

TP2b-4  Study and Design of Differential Microphone Array Beamforming  4:45 PM
Jingdong Chen, Northwestern Polytechnical University, China; Jacob Benesty, INRS-EMT, University of Quebec, Canada

Session TP3a  Machine Learning
Chair: Vassilis Kekatos, University of Minnesota

TP3a-1  Consensus Inference with Multilayer Graphs for Multi-modal Data  1:30 PM
Karthikeyan Natesan Ramamurthy, IBM T. J. Watson Research Center, United States; Jayaraman J. Thiagarajan, Lawrence Livermore National Laboratory, United States; Rahul Sridhar, Premnishanth Kothandaraman, Ramanathan Nachiappan, SSN College of Engineering, India

TP3a-2  Energy Price Matrix Factorization  1:55 PM
Vassilis Kekatos, University of Minnesota, United States

TP3a-3  A New Reduction Scheme for Gaussian Sum Filters  2:20 PM
Leila Pishdad, Fabrice Labeau, McGill University, Canada

TP3a-4  Exploring Upper Bounds on the Number of Distinguishable Classes  2:45 PM
Catherine Keller, MIT Lincoln Laboratory, United States; Gary Whipple, Laboratory for Telecommunication Sciences, United States

Session TP3b  Sparse Signal Recovery
Co-Chairs: Daniel Palomar, Hong Kong University of Science and Technology and Gonzalo Mateos, University of Rochester

TP3b-1  Compression Schemes for Time-Varying Sparse Signals  3:30 PM
Sundeep Prabhakar Chepuri, Geert Leus, Delft University of Technology, Netherlands

TP3b-2  A Fast Algorithm for Sparse Generalized Eigenvalue Problem  3:55 PM
Junxiao Song, Prabhu Babu, Daniel Palomar, Hong Kong University of Science and Technology, Hong Kong SAR of China

TP3b-3  Bootstrapped Sparse Bayesian Learning for Sparse Signal Recovery  4:20 PM
Ritwik Giri, Bhaskar Rao, University of California, San Diego, United States

TP3b-4  A Fast Proximal Gradient Algorithm for Reconstructing Nonnegative Signals with Sparse Transform Coefficients  4:45 PM
Renliang Gu, Aleksandar Dogandžic, Iowa State University, United States

Session TP4a  Optical Communications
Chair: Philippe Ciblat, TELECOM ParisTech

TP4a-1  Fifth-Order Volterra Series Based Nonlinear Equalizer for Long-Haul High Data Rate Optical Fiber Communications  1:30 PM
Abdelkerim Amari, Philippe Ciblat, Yves Jaouen, Telecom ParisTech, France

TP4a-2  Improving the Ultraviolet Scattering Channel Via Beam Reshaping  1:55 PM
Difan Zou, Shang-Bin Li, Zhengyuan Xu, School of Information Science and Technology, and Optical Wireless Communication and Network Center, China

TP4a-3  Correlation Study on the SIMO Channel Output of NLOS Optical Wireless Communications  2:20 PM
Boyang Huang, Chen Gong, Zhengyuan Xu, University of Science and Technology of China, China

TP4a-4  An Improved Performance Decoding Technique for Asymmetrically and Symmetrically Clipped Optical (ASCO)-OFDM  2:45 PM
Nan Wu, Yeheskel Bar-Ness, New Jersey Institute of Technology, United States

Session TP4b  Energy Harvesting Wireless Communications
Chair: Sennur Ulukus, University of Maryland

TP4b-1  On the Capacity of the Energy Harvesting Channel with Energy Transfer  3:30 PM
Aylin Yener, Pennsylvania State University, United States

TP4b-2  Renewables Powered Mobile Cloud Offloading  3:55 PM
Kaibin Huang, University of Hong Kong, Hong Kong SAR of China

TP4b-3  Sum-rate Analysis for Systems with Wireless Energy Transfer  4:20 PM
Rania Morsi, Derrick Wing Kiwan Ng, Robert Schober, Friedrich-Alexander University of Erlangen-Nuremberg, Germany
Session TP5a  Speech Enhancement
Chair: Wei-Ping Zhu, Concordia University

TP5a-1  Noise Power Spectral Density Matrix Estimation Based on Improved IMCRA
Qipeng Gong, Benoit Champagne, Peter Kabal, McGill University, Canada

TP5a-2  BI-CosampSE: Block Identification based Compressive Sampling Matching Pursuit for Speech Enhancement
Dalei Wu, Nanjing University of Posts and Telecommunications, China; Wei-Ping Zhu, M.N.S. Swamy, Concordia university, Canada

TP5a-3  Pitch Estimation for Non-Stationary Speech
Mads Græsbøll Christensen, Jesper Rindom Jensen, Aalborg University, Denmark

TP5a-4  Estimating the Noncircularity of Latent Components within Complex-Valued Subband Mixtures with Applications to Speech Processing
Greg Okopal, Scott Wisdom, Les Atlas, University of Washington, United States

Session TP5b  Full Duplex MIMO Radio
Chair: Yingbo Hua, University of California, Riverside

TP5b-1  Non-Linear Distortion Cancellation in Full Digital Domain for Full Duplex Radios
Yang-Seok Choi, Feng Xue, Roya Doostnejad, Shilpa Talwar, Intel Corporation, United States

TP5b-2  Blind Digital Tuning for Interference Cancellation in Full-Duplex Radio
Yingbo Hua, University of California, Riverside, United States

TP5b-3  On In-Band Full-Duplex MIMO Radios with Transmit and Receive Antenna Reuse
Daniel Bliss, Yu Rong, Arizona State University, United States

TP5b-4  MIMO Broadcast Channel with Continuous Feedback using Full-duplex Radios
Xu Du, Rice University, United States; Christopher Dick, Xilinx Incorporated, United States; Ashutosh Sabharwal, Rice University, United States

Session TP6a  Passive and Multistatic Radars
Chair: Muralidhar Rangaswamy, Air Force Research Labs

TP6a-1  Passive Multistatic Radar Based on Long-term Evolution Signals
Sanjeev Gogineni, Wright State Research Institute, United States; Muralidhar Rangaswamy, Wright Patterson Air Force Base - AFRL, United States; Arye Nehorai, Washington University in St. Louis, United States

TP6a-2  A Correlation-Based Signal Detection Algorithm in Passive Radar with DVB-T2 Emitter
Guolong Cui, Hongbin Li, Stevens Institute of Technology, United States; Braham Himed, Air Force Research Laboratory, United States

TP6a-3  Improving Multistatic MIMO Radar Performance in Data-Limited Scenarios
Tariq Qureshi, Muralidhar Rangaswamy, Air Force Research Laboratory, United States; Kristine Bell, Metron Inc., United States

TP6a-4  Market based Sensor Mobility Management for Target Localization
Nianxia Cao, Swastik Brahma, Pramod Varshney, Syracuse University, United States

Session TP6b  Many-Core Platforms
Chair: Mats Brorsson, KTH

TP6b-1  Towards Modeling and Analyzing Performance of LTE Base Station Software
Konstantin Popov, SICS, Sweden; Mats Brorsson, KTH Royal Institute of Technology, Sweden

TP6b-2  REPLICA T7-16-128 - A 2048-threaded 16-core 7-FU Chained VLIW Chip Multiprocessor
Martti Forsell, Jussi Roivainen, VTT, Finland

TP6b-3  Improving Image Quality by SSIM Based Increase of Run-Length Zeros in GPGPU JPEG Encoding
Stefan Petersson, Håkan Grahn, Blekinge Institute of Technology, Sweden

TP6b-4  Kickstarting High-Performing Energy-Efficient Manycore Architectures with Epiphany
Tomas Nordström, Zain ul-Abdin, Halmstad University, Sweden; Andreas Olofsson, Adapteva, United States

Session TP7a  Design Methodologies for Signal Processing
Chair: Chris Lee, NCKU

TP7a-1  Finding Fast Action Selectors for Dataflow Actors
Gustav Cedersjö, Jörn W. Janneck, Jonas Skeppstedt, Lund University, Sweden

TP7a-2  Automatic Generation of Application Specific FPGA Multicore Accelerators
Pascal Schleuniger, Andreas Hindborg, Nicklas Bo Jensen, Maxwell Walter, Laust Broek-Nannestad, Lars Bonnichsen, Christian W. Probst, Sven Karlsson, Technical University of Denmark, Denmark

TP7a-3  Dataflow Toolset for Soft-Core Processors on FPGA for Image Processing Applications
Burak Bardak, Fahad Manzoor Siddiqui, Roger Woods, Queen’s University Belfast, United Kingdom
TP7a-4 An Enhanced and Embedded GNU Radio Flow
Ryan Marlow, Peter Athanas, Virginia Polytechnic Institute and State University, United States

Session TP7b Optical Wireless Communications
Chair: Zhengyuan (Daniel) Xu, University of Science and Technology of China
TP7b-1 Multiuser MISO Indoor Visible Light Communications
Jie Lian, Mohammad Noshad, Maite Brandt-Pearce, University of Virginia, United States
TP7b-2 Optical Spatial Modulation OFDM using Micro LEDs
Muhammad Ijaz, Dobroslav Tsonev, Abdelhamid Younis, University of Edinburgh, United Kingdom; Jonathan J. D. McKendry, Erdan Gu, Martin Dawson, University of Strathclyde, United Kingdom; Harald Haas, University of Edinburgh, United Kingdom
TP7b-3 Adaptation of OFDM under Visible Light Communications and Illumination Constraints
Thomas Little, Hany Elgala, Boston University, United States
TP7b-4 Hybrid Dimmable Visible Light -with Infra-Red Optical Wireless Communications
Andrew Burton, Z Ghassemlooy, Edward Bently, Hoa LeMinh, Northumbria University, United Kingdom; S K Laiw, National Taiwan University of Science and Technology, Taiwan; Chung Ghiu Lee, Chosun University, Republic of Korea

Session TP8a1 Cognitive Radio II
Chair: Priyadip Ray, IIT Kharagpur
TP8a1-1 Characterization of Outage Performance for Cognitive Relay Networks with Mixed Fading
Efthymios Stathakis, Lars K. Rasmussen, Mikael Skoglund, Royal Institute of Technology (KTH), Sweden
TP8a1-2 Restless Multi-Armed Bandits under Time-Varying Activation Constraints
Kobi Cohen, Qing Zhao, Anna Scaglione, University of California, Davis, United States
TP8a1-3 On the Optimal Relay Design for Multi-Antenna Cognitive Two-Way AF Relay Networks
Maksym Girnyk, KTH Royal Institute of Technology, Sweden; Mikko Vehkaperä, Sergiy Vorobyov, Aalto University, Finland
TP8a1-4 Network Aware Spectrum Efficiency Metric for Heterogeneous and Dynamic Radio Environments
Aditya Padaki, Ravi Tandon, Jeffrey Reed, Virginia Polytechnic Institute and State University, United States
TP8a1-5 A Unified Framework for Robust Cooperative Spectrum Sensing
Qi Cheng, Eric Chan-Tin, Oklahoma State University, United States
TP8a1-6 Receiver Configuration and Testbed Development for Underwater Cognitive Channelization
George Sklivanitis, Emrecan Demirors, Stella N. Batalama, Tommaso Melodia, Dimitris A. Pados, State University of New York at Buffalo, United States
TP8a1-7 Estimation of Subspace Occupancy
Kaitlyn Beaudet, Douglas Cochran, Arizona State University, United States
TP8a1-8 Performance Analysis: DF Cognitive Network with Transceiver Imperfections
Dang Khoa Nguyen, Kyushu Institute of Technology, Japan; Tu Thanh Lam, Post and Telecommunications Institute of Technology, Viet Nam; Hiroshi Ochi, Kyushu Institute of Technology, Japan

Session TP8a2 Signal Processing Methods
Chair: Azadeh Vosoughi, University of Central Florida
TP8a2-1 Blind Equalization Based On Blind Separation with Toeplitz Constraint
Zhengwei Wu, Saleem Kassam, University of Pennsylvania, United States
TP8a2-2 Piecewise-Constant Recovery via Spike-and-Slab Approximate Message-Passing using a Scalarwise Denoiser
Jaewook Kang, Heung-No Lee, Kiseon Kim, Gwangju Institute of Science and Technology (GIST), Republic of Korea
TP8a2-3 Resource Allocation Optimization for Distributed Vector Estimation with Digital Transmission
Alireza Sani, Azadeh Vosoughi, University of Central Florida, United States
TP8a2-4 Exploiting the Cramér-Rao Bound for Optimised Sampling and Quantisation of FRI Signals
Andre Angierski, Volker Kuehn, University of Rostock, Germany
TP8a2-5 Adaptive Waveform for Integrated Detection and Identification of Moving Extended Target
Jo-Yen Nieh, Ric Romero, Naval Postgraduate School, United States
TP8a2-6 Channel Gain Cartography Via Low Rank and Sparsity
Donghoon Lee, Seung-Jun Kim, University of Minnesota, United States
TP8a2-7 Bayesian Cramér-Rao Bound for Distributed Estimation of Correlated Data with Non-linear Observation Model
Mojtaba Shirazi, Azadeh Vosoughi, University of Central Florida, United States
TP8a2-8 Multirate Processing Using Nested Sampling
Peter Vouras, Naval Research Laboratory, United States
**Session TP8a3  Image Processing II**

Chair: *Jerry D. Gibson, University of California, Santa Barbara*  

1:30 PM–3:10 PM

**TP8a3-1** Smoothed Rank Approximation Algorithms for Matrix Completion  
*Mohammed Al-Qizwini, Hayder Radha, Michigan State University, United States*

**TP8a3-2** Visibility Prediction of Flicker Distortions on Naturalistic Videos  
*Lark Kwon Choi, Lawrence Cormack, Alan Bovik, University of Texas at Austin, United States*

**TP8a3-3** Image Compression via Wavelets and Row Compression  
*Mary HudachekBuswell, Michael Stewart, Saied Belkasim, Georgia State University, United States*

**TP8a3-4** Low Complexity Dimensionality Reduction for Hyperspectral Images  
*Seda Senay, Hector Erives, New Mexico Institute of Mining and Technology, United States*

**TP8a3-5** Improving Image Clustering using Sparse Text and the Wisdom of the Crowds  
*Anna Ma, Claremont Graduate University, United States; Arjuna Flenner, Naval Air Warfare Center, United States; Deanna Needell, Claremont McKenna College, United States; Allon Percus, Claremont Graduate University, United States*

**TP8a3-6** Color Image Watermarking Using Quaternion Wavelets  
*Lahouari Ghouti, King Fahd University of Petroleum and Mines, Saudi Arabia*

**TP8a3-7** Immersion Ultrasonic Array Imaging Using a New Array Spatial Signature in Different Imaging Algorithms  
*Nasim Moallemi, Shahram Shahbazpanahi, University of Ontario Institute of Technology, Canada*

**TP8a3-8** A Proof on the Invariance of the Hirschman Uncertainty to the Rényi Entropy Parameter and an Observation on its Relevance in the Image Texture Classification Problem  
*Kirandeep Ghuman, Victor DeBrunner, Florida State University, United States*

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**Session TP8a4  Sensor and Wireless Networks**

Chair: *Usman Khan, Tufts University*  

1:30 PM–3:10 PM

**TP8a4-1** Design of Orthogonal Golomb Rulers with Applications in Wireless Localization  
*Omotayo Oshiga, Giuseppe Abreu, Jacobs University Bremen, Germany*

**TP8a4-2** Secrecy Outage Analysis of Cognitive Wireless Sensor Networks  
*Satyanarayana Vuppala, Jacobs University Bremen, Germany; Weigang Liu, Tharmalingam Ratnarajah, University of Edinburgh, United Kingdom; Giuseppe Abreu, Jacobs University Bremen, Germany*

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**Session TP8b1  Topics in Communication Systems**

Chair: *Alexios Balatsoukas-Stimming, EPFL*  

3:30 PM–5:10 PM

**TP8b1-1** Performance Analysis of a MMSE Turbo Equalizer with LDPC in a FTN Channel with Application to Digital Video Broadcast  
*Ghassan Maalouli, Brian A. Banister, Comtech EF Data, United States*

**TP8b1-2** Characteristics of Optical Scattering and Turbulence Communication Channels  
*Weihao Liu, Zhengyuan Xu, University of Science and Technology of China, China*

**TP8b1-3** Comparison of SNR and Peak-SNR (PSNR) Performance Measures and Signals for Peak-limited Two-Dimensional (2D) Pixelated Optical Wireless Communication  
*Eyal Katz, Yeheskel Bar-Ness, New Jersey Institute of Technology, United States*

**TP8b1-4** I.I.D. Stochastic Analysis of PWM Signals  
*Noyan Sevuktekin, Andrew Singer, University of Illinois at Urbana-Champaign, United States*

**TP8b1-5** Statistical Data Correction for Unreliable Memories  
*Christoph Roth, ETH-Zurich, Switzerland; Christoph Struder, Cornell University, United States; Georgios Karakonstantis, Andreas Burg, École Polytechnique Fédérale de Lausanne, Switzerland*
Session TP8b2  Relays, Cognitive, Cooperative, and Heterogeneous Networks
Chair: Andrew G. Klein, Worcester Polytechnic Institute
3:30 PM–5:10 PM

TP8b2-1  A Distributed Algorithm for Energy Saving in Nomadic Relaying Networks
Zhe Ren, BMW Group Research and Technology, Germany; Mahdy Shabeeb, Munich University of Technology, Germany; Slawomir Stanczak, Fraunhofer Institute for Telecommunications Heinrich Hertz Institute, Germany; Peter Fertl, BMW Group Research and Technology, Germany

TP8b2-2  Instantaneous Relaying for the 3-Way Relay Channel with Circular Message Exchanges
Bho Matthiesen, Eduard A. Jorswieck, Technische Universität Dresden, Germany

TP8b2-3  On the Performance of Hybrid Satellite-Terrestrial Cooperative Networks with Interferences
Min Lin, PLA University of Science and Technology, China; Jian Ouyang, Nanjing University of Posts and Telecommunications, China; Zhu Wei-Ping, Concordia University, Canada

TP8b2-4  An Online Parallel Algorithm for Spectrum Sensing in Cognitive Radio Networks
Yang Yang, Technische Universität Darmstadt, Germany; Mengyi Zhang, Chinese University of Hong Kong, Hong Kong SAR of China; Marius Pesavento, Technische Universität Darmstadt, Germany; Daniel Palomar, Hong Kong University of Science and Technology, Hong Kong SAR of China

TP8b2-5  On the Spatial Spectral Efficiency of ITLinQ
Ratheesh Mungara, Universitat Pompeu Fabra, Spain; Xinchen Zhang, University of Texas at Austin, United States; Angel Lozano, Universitat Pompeu Fabra, Spain; Robert W. Heath Jr., University of Texas at Austin, United States

TP8b2-6  Time and Frequency Self-Synchronization in Dense Cooperative Networks
Maria Antonieta Alvarez, Bahar Azari, Umberto Spagnolini, Politecnico di Milano, Italy

TP8b2-7  Effect of Cluster Rotation Speed in Coordinated Heterogeneous MIMO Cellular Networks with Proportionally Fair User Scheduling
Hakimeh Purmehdi, Robert Elliott, Witold Krzymien, University of Alberta, Canada; Jordan Melzer, TELUS Communications, Canada

TP8b2-8  Relay Selection for AF Wireless Relay Networks in Adverse Communication Environments
Kanghee Lee, Republic of Korea Air Force, Republic of Korea; Visvakumar Aravindhan, Sungmoon Moon, Wichita State University, United States; Jongbum Ryu, Changki Moon, Inha Hyun, Republic of Korea Air Force, Republic of Korea; Sun Jo, Defense Acquisition Program Administration of ROK, Republic of Korea

Session TP8b3  Signal Processing Architectures
Chair: Zain Ul-Abdin, Halmstad University
3:30 PM–5:10 PM

TP8b3-1  Hybrid Floating-Point Modules with Low Area Overhead on a Fine-Grained Processing Core
Jon Pimentel, Bevan Baas, University of California, Davis, United States

TP8b3-2  Scalable Hardware-Based Power Management for Many-Core Systems
Bin Liu, Brent Bohnenstiehl, Bevan Baas, University of California, Davis, United States

TP8b3-3  Optimized FPGA Based Implementation of Discrete Wavelet Transform
Amin Jarrah, Mohsin M. Jamali, University of Toledo, United States

TP8b3-4  Mapping and Scheduling of Dataflow Graphs - A Systematic Map
Usman Mazhar Mirza, Mehmet Ali Arslan, Gustav Cedersjö, Sardar Muhammad Sulaman, Jörn W. Janneck, Lund University, Sweden

TP8b3-5  Dataflow Machines
Jörn W. Janneck, Gustav Cedersjö, Lund University, Sweden; Endri Bezati, Simone Casale Brunet, École Polytechnique Fédérale de Lausanne, Switzerland

TP8b3-6  Replacement Techniques for Improving Performance in Sub-Block Caches
Oluleye Olorode, Mehrdad Nourani, University of Texas at Dallas, United States

TP8b3-7  Dynamic Reconfiguration of FPGA-based Multi-Processor Arrays
James Glenn-Anderson, Supercomputer Systems, Inc., United States

TP8b3-8  Coprime Processing for the Elba Island Sonar Data Set
Vaibhav Chavali, Kathleen Wage, George Mason University, United States; John Buck, University of Massachusetts Dartmouth, United States
Session TP8b4  Signal Processing Theory and Applications

Chair: Yue Lu, Harvard University

3:30 PM–5:10 PM

TP8b4-1 Prediction of a Bed-Exit Motion: Multi-Modal Sensing Approach and Incorporation of Biomechanical Knowledge
Jun Hao, Xiaoxiao Dai, Amy Stroder, Jun Zhang, Bradley Davidson, Mohammad Mahoor, University of Denver, United States; Neil McClure, OKT Enterprises, United States

TP8b4-2 Ultra-Wideband Radar based Human Body Landmark Detection and Tracking with Biomedical Constraints for Human Motion Measuring
Xiaoxiao Dai, Zhichong Zhou, Jun Zhang, Bradley Davidson, University of Denver, United States

TP8b4-3 Separation of Interleaved Markov Chains
Ariana Minot, Yue Lu, Harvard University, United States

TP8b4-4 Ramanujan Subspaces and Digital Signal Processing
P. P. Vaidyanathan, California Institute of Technology, United States

TP8b4-5 Asynchronous Discrete-time Signal Processing with Molecular Reactions
Sayed Ahmad Salehi, Marc Riedel, Keshab K. Parhi, University of Minnesota, United States

TP8b4-6 Sequential Prediction of Individual Sequences in the Presence of Computational Errors
Mehmet Donmez, Andrew Singer, University of Illinois at Urbana Champaign, United States

TP8b4-7 A Scalable Feature Learning and Tag Prediction Framework for Natural Environment Sounds
Prasanna Sattigeri, Arizona State University, United States; Jayaraman Thiagarajan, Lawrence Livermore National Laboratory, United States; Mohit Shah, Arizona State University, United States; Karthikeyan Ramamurthy, IBM Research, United States; Andreas Spanias, Arizona State University, United States

TP8b4-8 Extending Coherence for Optimal Detection of Nonstationary Harmonic Signals
Scott Wisdom, University of Washington, United States; James Pitton, Applied Physics Laboratory and University of Washington, United States; Les Atlas, University of Washington, United States

Session WA1a  MIMO Design for mmWave Systems

Chair: Zhouyue Pi, Samsung

WA1a-1 A Tractable Model for Rate in Noise Limited mmWave Cellular Networks
Sarabjot Singh, Mandar Kulkarni, Jeffrey Andrews, University of Texas at Austin, United States

WA1a-2 MIMO Designs for mmWave Wireless LAN Systems
Sridhar Rajagopal, Samsung Research America, United States

WA1a-3 Analysis of Millimeter Wave Cellular Networks with Overlaid Microwave Base Stations
Tianyang Bai, Robert W. Heath Jr., University of Texas at Austin, United States

WA1a-4 Increasing Coverage Beyond Microwave Frequencies Using Beamforming
Vip Desai, Philippe Sartori, Weimin Xiao, Anthony Soong, Huawei Technologies Co., Ltd., United States

Session WA1b  Massive MIMO II

Chair: David J. Love, Purdue University

WA1b-1 A Multistage Linear Receiver Approach for MMSE Detection in Massive MIMO
Ting Li, Sujee Patole, Murat Torlak, University of Texas at Dallas, United States

WA1b-2 Beamforming-Based Spatial Preocding in FDD Massive MIMO Systems
Ming-Fu Tang, Meng-Ying Lee, Borching Su, National Taiwan University, Taiwan; Chia-Pang Yen, Industrial Technology Research Institute, Taiwan

WA1b-3 Asymmetric Distributed Space Frequency Coded Cooperative Network for Large Scale MIMO
Bhagyashri Honrao, Chirag Warty, Shikha Nema, SNDT University, India

Session WA2a  5G and Energy Efficient Cellular Networks

Chair: Jinkang Zhu, University of Science and Technology of China

WA2a-1 Traffic Aware Offloading for BS Sleeping in Heterogeneous Networks
Shan Zhang, Sheng Zhou, Zhisheng Niu, Tsinghua University, China

WA2a-2 A Survey on 5G New Waveform: From Energy Efficiency Aspects
Shunqing Zhang, Xiuqiang Xu, Yiqun Wu, Lei Lu, Yan Chen, Huawei Technologies Co., Ltd., China

WA2a-3 Evolution of LTE and new Radio Access Technologies for FRA (Future Radio Access)
Hidetoshi Kayama, Huiling Jiang, DOCOMO Beijing Communications Laboratories Co. Ltd., China

WA2a-4 A Novel Cell-Interference Model and Performance Analysis of the Future Wireless Networks
Jinkang Zhu, Haibao Ren, University of Science and Technology of China, China
**Session WA2b  Mobile Health**
Chair: Mi Zhang, Cornell University

WA2b-1 On Outlier Detection in R-R Intervals from ECG Data Collected in the Natural Field Environment 10:15 AM
Rummana Bari, Santosh Kumar, University of Memphis, United States

WA2b-2 Patient-Centric On-Body Sensor Localization in Smart Health Systems 10:40 AM
Ramyar Saeedi, Hassan Ghasemzadeh, Washington State University, United States

WA2b-3 Making Sense of Personal Data in Clinical Settings 11:05 AM
Harinath Garudadri, University of California, San Diego, United States

**Session WA3a  Sparse Learning and Estimation**
Chair: Ali Pezeshki, Colorado State University

WA3a-1 Sparse Bayesian Learning Using Approximate Message Passing 8:15 AM
Maher Al-Shoukairi, Bhaskar Rao, University of California, San Diego, United States

WA3a-2 Hierarchical Bayesian Approach for Jointly-Sparse Solution of Multiple-Measurement Vectors 8:40 AM
Mohammad Shekaramiz, Todd K. Moon, Jacob H. Gunther, Information Dynamics Laboratory / Utah State University, United States

WA3a-3 Dictionary Approaches For Identifying Periodicities in Data 9:05 AM
Srikanth Venkata Tenneti, P. P Vaidyanathan, California Institute of Technology, United States

WA3a-4 An Asymptotic Maximum Likelihood Estimator for the Period of a Cyclostationary Process 9:30 AM
David Ramirez, Peter J. Schreier, University of Paderborn, Germany; Javier Via, Ignacio Santamaria, University of Cantabria, Spain; Louis L. Scharf, Colorado State University, United States

**Session WA3b  Advances in Statistical Learning**
Chair: Qing Zhao, University of California, Davis

WA3b-1 Quasicontinuous State Hidden Markov Models Incorporating State Histories 10:15 AM
Todd K. Moon, Jacob H. Gunther, Utah State University, United States

WA3b-2 A Classification Centric Quantizer for Efficient Encoding of Predictive Feature Errors 10:40 AM
Scott Deean Chen, Pierre Moulin, University of Illinois at Urbana-Champaign, United States

WA3b-3 Time-Varying Stochastic Multi-Armed Bandit 11:05 AM
Sattar Vakili, Qing Zhao, Yuan Zhou, University of California, Davis, United States

**Session WA4a  Physical Layer Security II**
Chair: Eduard Jorswieck, TU Dresden

WA4a-1 Investigation of Secure Wireless Regions Using Configurable Beamforming on WARP platform 8:15 AM
Yuanrui Zhang, Queen’s University Belfast, United Kingdom; Bei Yin, Rice University, United States; Roger Woods, Queen’s University Belfast, United Kingdom; Joseph R. Cavallaro, Rice University, United States; Alan Marshall, University of Liverpool, United Kingdom; Youngwook Ko, Queen’s University Belfast, United Kingdom

WA4a-2 Wiretap-Channels with Constrained Active Attacks 8:40 AM
Carsten Rudolf Janda, Christian Scheunert, Eduard A. Jorswieck, Dresden University of Technology, Germany

WA4a-3 Secrecy Rate Maximization for Information and Energy Transfer in MIMO Beamforming Networks 9:05 AM
Jens Steinwandt, Ilmenau University of Technology, Germany; Sergiy Vorobyov, Aalto University, Finland; Martin Haardt, Ilmenau University of Technology, Germany

WA4a-4 Everlasting Secrecy in Disadvantaged Wireless Environments against Sophisticated Eavesdroppers 9:30 AM
Azadeh Sheikholeslami, Dennis Goecckel, Hossein Pishro-nik, UMASS-Amherst, United States

**Session WA4b  Coding and Decoding**
Chair: James A. Ritcey, University of Washington

WA4b-1 Noisy Belief Propagation Decoder 10:15 AM
Chu-Hsiang Huang, Yao Li, Lara Dolecek, University of California, Los Angeles, United States

WA4b-2 A Low-Complexity Improved Successive Cancellation Decoder for Polar Codes 10:40 AM
Orion Afisladis, Alexios Balatsoukas-Stimming, Andreas Burg, École Polytechnique Fédérale de Lausanne, Switzerland

WA4b-3 Differential Trellis Coded Modulation with State Dependent Mappings 11:05 AM
Ruey-Yi Wei, National Central University, Taiwan; James Ritcey, University of Washington, United States
Session WA5a  Information Processing for Social and Sensor Networks
Chair: Michael Rabbat, McGill University

WA5a-1  Fourier Transform for Signals on Dynamic Graphs
Arash Golibagh Mahyari, Selin Aviyente, Michigan State University, United States
8:15 AM

WA5a-2  Anomalous Subgraph Detection in Publication Networks: Leveraging Truth
Nadya Bliss, Manfred Laubichler, Arizona State University, United States
8:40 AM

WA5a-3  Identifying Congestion in Software-Defined Networks
Thomas Parker, Jamie Johnson, Murali Tummala, John McEachern, James Scrofani, Naval Postgraduate School, United States
9:05 AM

WA5a-4  Vulnerability of CPS inference to DoS attacks
Mohammadreza Doostmohammadian, Usman A. Khan, Tufts University, United States
9:30 AM

Session WA5b  Document Processing and Synchronization
Chair: Olgica Milenkovic, University of Illinois at Urbana-Champaign

WA5b-1  Synchronizing Ordinal Data over Noisy Channels
Han Mao Kiah, Lili Su, Olgica Milenkovic, University of Illinois at Urbana-Champaign, United States
10:15 AM

WA5b-2  Efficient Synchronization of Files in Distributed Storage Systems
Salim El Rouayheb, Illinois Institute of Technology, United States; Sreechakra Goparaju, Princeton University, United States; Han Mao Kiah, Olgica Milenkovic, University of Illinois at Urbana-Champaign, United States
10:40 AM

WA5b-3  Efficient File Synchronization: Extensions and Simulations
Clayton Schoeny, Nicolas Bitouze, Frederic Sala, Lara Dolecek, University of California, Los Angeles, United States
11:05 AM

Session WA6a  Adaptive Signal Design and Analysis
Chair: Antonia Papandreou-Suppappola, Arizona State University

WA6a-1  Eigen-Basis Analysis of Expected Cumulative Modulus for Constrained Signal Design
Aaron Jones, Air Force Research Laboratory, United States; Brian Rigling, Wright State University, United States; Muralidhar Rangaswamy, Air Force Research Laboratory, United States
8:15 AM

WA6a-2  Characterization of Information in Phase of Radar Range Profiles
Linda Moore, Air Force Research Laboratory / University of Dayton, United States; Brian Rigling, Wright State University, United States; Robert Penno, University of Dayton, United States
8:40 AM

WA6a-3  Radar Tracking Waveform Design in Continuous Space and Optimization Selection Using Differential Evolution
Antonia Papandreou-Suppappola, Bryan Paul, Daniel Bliss, Arizona State University, United States
9:05 AM

WA6a-4  Reduced Rank Adaptive Filtering in Impulsive Noise Environments
Hamza Soury, King Abdullah University of Science and Technology (KAUST), Saudi Arabia; Karim Abed-Meraim, Polytech Orleans, France; Mohamed-Slim Alouini, King Abdullah University of Science and Technology (KAUST), Saudi Arabia
9:30 AM

Session WA6b  Distributed Detection and Optimization
Chair: Andrea Simonetto, Delft University of Technology

WA6b-1  Distributed Detection for Wireless Sensor Networks with Fusion Center under Correlated Noise
Alireza S. Behbahani, Ahmed M. Eltawil, Hamid Jafarkhani, University of California, Irvine, United States
10:15 AM

WA6b-2  Distributed Asynchronous Time-Varying Constrained Optimization
Andrea Simonetto, Geert Leus, Delft University of Technology, Netherlands
10:40 AM

WA6b-3  M-ary Distributed Detection in the Presence of Channel Estimation Error
Zahra Hajibabaei, Azadeh Vosoughi, University of Central Florida, United States
11:05 AM

Session WA7a  Implementation of Wireless Systems
Chair: Roger Woods, Queens University

WA7a-1  Field-Order Based Hardware Cost Analysis of Non-Binary LDPC Decoders
Yuta Toriyama, Behzad Amiri, Lara Dolecek, Dejan Markovic, University of California, Los Angeles, United States
8:15 AM

WA7a-2  Algorithm and Architecture for Hybrid Decoding of Polar Codes
Bo Yuan, Keshab K. Parhi, University of Minnesota, Twin Cities, United States
8:40 AM

WA7a-3  A Signal Processing Approach Towards Ultra-Low Power Transceiver Design
Vijay Venkateswaran, Pawel Rulikowski, Howard Huang, Bell Labs, Ireland
9:05 AM
Session WA7b  Video Coding Architecture and Design

Chair: Jorn Janneck, Lund University

WA7b-1  Development and Optimization of High Level Dataflow Programs: the HEVC Decoder Design Case
Khaled Jerbi, INSA of Rennes / IETR, France; Daniele Renzi, Damien De Saint-Jorre, École Polytechnique Fédérale de Lausanne, Switzerland; Hervé Yviquel, INSA of Rennes / IETR, France; Claudio Alberti, École Polytechnique Fédérale de Lausanne, Switzerland; Mickaël Raulet, INSA of Rennes / IETR, France; Marco Mattavelli, École Polytechnique Fédérale de Lausanne, Switzerland

WA7b-2  A Low-Power Hybrid Video Recording System with H.264/AVC and Light-Weight Compression
Hyun Kim, Seoul National University, Republic of Korea; Chae Eun Rhee, Inha University, Republic of Korea; Hyuk-Jae Lee, Seoul National University, Republic of Korea

WA7b-3  Design of View Synthesis Prediction in 3D-HEVC via Algorithmic Complexity Analysis
Gwo Giun (Chris) Lee, Bo-Syun Li, Chun-Fu Chen, National Cheng Kung University, Taiwan
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