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Forty-Fifth Asilomar Conference on Signals, Systems and Computers

November 6–9, 2011
Asilomar Hotel and
Conference Grounds

Technical Co-sponsor

IEEE
Signal Processing Society ®

FORTY-FIFTH ASILOMAR CONFERENCE ON SIGNALS, SYSTEMS & COMPUTERS

Organized in cooperation with

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Welcome from the General Chairman

Dr. Jim Schroeder, Harris Corporation, Melbourne, Florida

I am very pleased to welcome you to the 45th Asilomar Conference on Signals, Systems and Computers. I personally attended my first Asilomar Conference in 1988, October 31st to November 2nd; the Asilomar State Park's beautiful and relaxing venue, complemented by the intellectual stimulation provided by the conference attendees, has kept me returning year after year.

A continuing strength of Asilomar is the wide cross section of researchers who come from traditional academic institutions, including esteemed faculty and their graduate students, Federal R&D Laboratories and Corporate Research centers, enables an unmatched synergy unique to Asilomar.

This year's Sydney Parker Memorial Lecture will be presented by Prof. Jose Principe, University of Florida, Gainesville, titled, "Machine Learning in Signal Processing." Jose Principe is a Distinguished Professor of Electrical and Computer Engineering and Biomedical Engineering at the University of Florida where he teaches advanced signal processing, machine learning and artificial neural networks (ANNs) modeling. He is the BellSouth Professor and the Founder and Director of the University of Florida Computational NeuroEngineering Laboratory (CNEL) www.cnel.ufl.edu . His primary area of interest is the processing of time varying signals with adaptive neural models. The CNEL Lab has been studying signal and pattern recognition principles based on information theoretic criteria (entropy and mutual information).

The popular and successful student paper contest will be chaired this year by Dr. Oscar Gustafsson, Linkoping University, Sweden. The student finalists have been selected to present their papers to the panel judges Sunday afternoon. The top three paper winners will receive their awards at the beginning of the conference plenary session.

It is a privilege and honor to serve as this year's General Chair. I personally invite you to enjoy Asilomar to its fullest from the Plenary Talk, Student Poster Sessions, oral and poster sessions and colorful sunsets on the beach.

Jim Schroeder, Harris Corporation, May 2011

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2011 Asilomar Conference Session Schedule

Sunday Afternoon, November 6, 2011

2:00 - 7:00 PM Registration — Main Lodge
4:00 - 6:30 PM Student Paper Contest — Merrill Hall
7:00 - 9:00 PM Welcoming Dessert Reception — Merrill Hall

Monday Morning, November 7, 2011

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
9:45 - 10:15 AM Coffee Social

10:15 AM - 12:00 PM MORNING SESSIONS
MA1b Energy Efficient MIMO Communication
MA2b Delay Sensitive Communication
MA3b Graphical Models in Signal Processing I
MA4b In-network Computation
MA5b Medical Imaging
MA6b Collaborative Beamforming
MA7b Multivariate and Multimodal Analysis of Brain Signals
MA8b1 Computer Arithmetic I (Poster)
MA8b2 Physical Layer Security I (Poster)
MA8b3 Physical Layer Security II (Poster)
MA8b4 Image, Video Coding and Analysis (Poster)
MA8b5 Adaptive Systems and Spectral Estimation (Poster)

12:00 - 1:00 PM Lunch – Crocker Dining Hall

Monday Afternoon, November 7, 2011

1:30 - 5:10 PM AFTERNOON SESSIONS
MP1a Interference-Alignment Techniques for Multi-Antenna Systems
MP1b Interference Alignment for the MIMO Interference Channel
MP2a Energy-Harvesting Wireless Networks
MP2b Coding and Decoding
MP3a Graphical Models in Signal Processing II
MP3b Signal Processing and Learning in Complex Systems
MP4a Compressive Sensing Applications in Networking
MP4b Resource Allocation in Wireless Networks
MP5a Advances in Bioimaging and Analysis
MP5b Image/Video Restoration, Enhancement and Evaluation
MP6a Tensor-based Array Signal Processing
MP6b Compressive Sensing for Array Processing
MP7a Processing of Physiological Signals
MP7b Model-based Design Optimization
MP8a1 Adaptive Filtering (Poster)
MP8a2 Speech Processing, Recognition and Coding (Poster)
MP8a3 Parameter Estimation (Poster)
MP8a4 DSP Algorithms and Architectures (Poster)
MP8a5 Novel DSP Architectures (Poster)

Monday Evening, November 7, 2011

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 or their guests.

2011 Asilomar Conference Session Schedule
(continued)

Tuesday Morning, November 8, 2011

7:30 - 9:00 AM Breakfast — Crocker Dining Hall
8:00 AM - 5:00 PM Registration

8:15 - 12:00 PM MORNING SESSIONS
TA1a Random Matrices in Signal Processing and MIMO Communications
TA1b Biosignal Estimation and Classification
TA2a Network Coding
TA2b Relaying through Frequency Selective Channels
TA3a Advances in Compressive Sensing
TA3b Sparse Reconstruction
TA4a Next Generation Network Science
TA4b Bio-inspired Models and Algorithms for Information Processing in Complex Networks
TA5a Image and Video Retrieval
TA5b Sparse Representations with Applications to Images and Video
TA6a Waveform Design and MIMO Radar
TA6b Network Beamforming and Relaying via Multiple Antennas
TA7 Architectures for Wireless Communications
TA8a1 Signal Processing Methods for Representation, Analysis, and Control of Biological Systems (Poster)
TA8a2 Receiver Design and Optimization (Poster)
TA8a3 Communications System Design (Poster)
TA8a4 Applications of Array Processing (Poster)
TA8b1 Multiple Antennas in Multi-User Systems and Networks (Poster)
TA8b2 Cooperative and Cognitive Transmission in Multi-Antenna Systems (Poster)
TA8b3 Adaptive Sensing (Poster)

12:00 - 1:00 PM Lunch – Crocker Dining Hall

Tuesday Afternoon, November 8, 2011

1:30 - 5:10 PM AFTERNOON SESSIONS
TP1a Resource Allocation in Multi-Antenna Systems
TP1b Interference Management
TP2a Cognitive Radio I
TP2b Cognitive Radio II
TP3a Multi-dimensional Compressive Inference
TP3b Advances in Adaptive and Distributed Filtering
TP4a Communication Management in Robot Networks
TP4b Distributed Storage Systems
TP5 Compressive Sensing for Radar
TP6a Source Localization
TP6b Array Processing for Satellite Communications
TP7a Adaptive and Evolvable Architectures
TP7b Computer Arithmetic II
TP8a1 Techniques for Space-Time Signal Processing (Poster)
TP8a2 Statistical and Array Signal Processing for Biomedical Applications (Poster)
TP8a3 Sensor Networks (Poster)
TP8a4 Wireless Networks (Poster)
TP8b1 Machine-Learning-Based Statistical Signal Processing (Poster)
TP8b2 Network Information Theory (Poster)

Tuesday Evening Open Evening — Enjoy the Monterey Peninsula

2011 Asilomar Conference Session Schedule
(continued)

Wednesday Morning, November 9, 2011

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 - 12:00 PM MORNING SESSIONS

WA1a	Channel Estimation for Multi-Antenna Systems
WA1b	MIMO Radar and SAR
WA2a	OFDM
WA2b	Beamforming
WA3a	Information Theoretic Signal Processing
WA3b	Compressive Imaging and Detection
WA4a	Cooperation & Relays
WA4b	Multiuser Information Theory
WA5a	Signal Theory and Image Representation
WA5b	Biometrics
WA6a	Computational Aspects in Array Processing
WA6b	Source Separation
WA7a	Multi-core/GPU Implementation
WA7b	Reconfigurable Architectures, Algorithms and Applications

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

Merrill Hall - Sunday, November 6, 2011, 4:30 - 6:30 PM

"Spectrum Leasing via Cooperative Opportunistic Routing in Distributed Ad Hoc Networks: Optimal and Heuristic Policies"
Cristiano Tapparello, Davide Chiarotto, Michele Rossi, University of Padova; Osvaldo Simeone, New Jersey Institute of Technology; Michele Zorzi, University of Padova

"Correcting Erasure Bursts with Minimum Decoding Delay"
Zhi Li, Stanford University; Ashish Khisti, University or Toronto; Bernd Girod, Stanford University

"Asymptotic Analysis of Double-Scattering Channels"
Jakob Hoydis, Romain Couillet, and Merouane Debbah, SUPELEC

"Mutual Information Distribution of Interference-Limited MIMO: A Joint Coulomb Fluid and Painleve Based Approach"
Shang Li, Hong Koong University of Science and Technology; Yang Chen, Imperial College London; Matthew McKay, Hong Kong University of Science and Technology

"MSE-Optimal Power Allocation in Wireless Sensor Networks for Field Reconstruction Based on Shift-Invariant Spaces"
Günter Reise, Vienna University of Technology; Javier Matamoros and Carles Antôn-Haro, CTTC; Gerald Matz, Vienna University of Technology

"On the Limits of Sequential Testing in High Dimensions"
Matthew Malloy and Robert Nowak, University of Wisconsin

"Non-Uniform Linear Arrays for Improved Identifability in Cumulant Based DOA Estimation"
Piya Pal and P.P. Vaidyanathan, California Institute of Technology

"Maximum Likelihood Time Delay Estimation for CDMA Direct Spread Multipath Transmissions Using Importance Sampling"
Ahmed Masmoudi, Faouzi Bellili, and Sofiene Affes, INRS-EMT

"Haplotype Inference Based on Sparse Dictionary Selection"
G.H. Jajamovich and X. Wang, Columbia University

"A High-Performance Area-Efficient AES Encipher on a Many-core Platform"
Bin Liu and Bevan Baas, University of California, Davis

"Learning Dictionaries for Local Sparse Coding in Image Classification"
Jayaraman J. Thiagarajan and Andreas Spanias, Arizona State University

2011 Asilomar Conference Session Schedule

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 7, 2011

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

1. Welcome from the General Chairperson

Dr. James Schroeder
Harris Government Communication Systems

2. Session MA1a Distinguished Lecture for the 2011 Asilomar Conference

Machine Learning in Signal Processing

Prof. Jose C. Principe
Distinguished Professor of Electrical Engineering
University of Florida

Abstract
This talk describes our efforts to go beyond the second order moment assumption still prevalent in optimal signal processing. We show how the second norm of the PDF can be estimated directly from data avoiding an explicit PDF estimation step. The link between PDF moments, information theory and Reproducing Kernel Hilbert spaces will be established. Applications to adaptive systems with entropic cost functions will be demonstrated. A generalized correlation function called correntopy will be defined and its applications in signal processing will be outlined. Correntopy leads to new measures of similarity, to a new definition of dependence subspaces and to new tests for causality.

Biography
Jose C. Principe (M'83-SM'90-F'00) is a Distinguished Professor of Electrical and Computer Engineering and Biomedical Engineering at the University of Florida where he teaches advanced signal processing, machine learning and artificial neural networks (ANNs) modeling. He is BellSouth Professor and the Founder and Director of the University of Florida Computational NeuroEngineering Laboratory (CNEL) www.cnel.ufl.edu. His primary area of interest is processing of time varying signals with adaptive neural models. The CNEL Lab has been studying signal and pattern recognition principles based on information theoretic criteria (entropy and mutual information).

Dr. Principe is an IEEE Fellow. He was the past Chair of the Technical Committee on Neural Networks of the IEEE Signal Processing Society, Past-President of the International Neural Network Society, and Past-Editor in Chief of the IEEE Transactions on Biomedical Engineering. He is a member of the Advisory Board of the University of Florida Brain Institute. Dr. Principe has more than 500 publications. He directed 62 Ph.D. dissertations and 65 Master theses. He wrote in 2000 an interactive electronic book entitled "Neural and Adaptive Systems" published by John Wiley and Sons and more recently co-authored several books on "Brain Machine Interface Engineering" Morgan and Claypool, "Information Theoretic Learning", Springer, and "Kernel Adaptive Filtering", Wiley.

Program of the
2011 Asilomar Conference on
Signals, Systems, and Computers

Technical Program Chairman
Prof. Robert W. Heath, Jr.
The University of Texas at Austin

Session MA1b Energy Efficient MIMO Communication

Chair: *Chan-Byoung Chae, Yonsei University, S. Korea*

MA1b-1 Optimal Transmission Policies over Vector Gaussian Channels with Energy Harvesting Transmitters — 10:15 AM
Omur Ozel, University of Maryland; Jing Yang, Sennur Ulukus, University of Wisconsin-Madison

MA1b-2 Throughput and Energy Consumption of a Random Network with Energy Harvesters — 10:40 AM
Kaibin Huang, Yonsei University

MA1b-3 Large-Scale Antenna Systems for Wireless Energy Efficiency — 11:05 AM
Thomas Marzetta, Bell Laboratories, Alcatel-Lucent

MA1b-4 Energy-Efficient Training for Antenna Selection in Time-Varying Channels — 11:30 AM
Vinod Kristem, Broadcom Corporation; Neelesh B. Mehta, Indian Institute of Science; Andreas Molisch, University of Southern California

Session MA2b Delay Sensitive Communication

Chair: *Ashish Khisti, University of Toronto*

MA2b-1 Speeding Multicast by Acknowledgment Reduction Technique (SMART) — 10:15 AM
Arman Rezaee, Linda Zeger, Muriel Medard, Massachusetts Institute of Technology

MA2b-2 Controlling End-to-End Application Latency for Real-Time Data — 10:40 AM
Sanjeev Mehrotra, Cheng Huang, Jin Li, Microsoft Research

MA2b-3 Correcting Erasure Bursts with Minimum Decoding Delay — 11:05 AM
Zhi Li, Stanford University; Ashish Khisti, University of Toronto; Bernd Girod, Stanford University

MA2b-4 Code Length and Rate Selection for Delay Sensitive Bursty Traffic — 11:30 AM
Tara Javidi, University of California, San Diego

Session MA3b Graphical Models in Signal Processing I

Chair: *Andrea Montanari, Stanford University*

MA3b-1 Stochastic Belief Propagation: A Low-Complexity Message-Passing Algorithm with Guarantees — 10:15 AM
Nima Noorshams, Martin Wainwright, University of California, Berkeley

MA3b-2 Reweighted Linear Programming for Inference and Decoding — 10:40 AM
Amin Khajehnejad, Alexandros Dimakis, Babak Hassibi, University of Southern California

MA3b-3 Message-Passing on Dense Graphs and Applications in Statistical Learning — 11:05 AM
Mohsen Bayati, Andrea Montanari, Stanford University

MA3b-4 Robust Belief Propagation — 11:30 AM
Morteza Ibrahimi, Adel Javanmard, Yashodhan Kanoria, Andrea Montanari, Stanford University

Session MA4b In-network Computation

Chair: *Osvaldo Simeone, New Jersey Institute of Technology*

MA4b-1 Network Optimization with Heuristic Rational Agents — 10:15 AM
Ceyhun Eksin, Alejandro Ribeiro, University of Pennsylvania

MA4b-2 A Coordination-Free Distributed Algorithm for Simple Assignment Problems Using Randomized Actions — 10:40 AM
Usman A. Khan, Tufts University; Soummya Kar, Carnegie Mellon University

MA4b-3 Distributed Estimation of the Maximum Value over a Wireless Sensor Network — 11:05 AM
Franck Iutzeler, Jérémie Jakubowicz, Institut Telecom, Telecom ParisTech, CNRS LTCI; Walid Hachem, CNRS-Telecom ParisTech; Philippe Ciblat, Institut Telecom, Telecom ParisTech, CNRS LTCI

MA4b-4 Collaborative Sequential-Based Detection in Wireless Sensor Networks — 11:30 AM
Sabina Zejnilovic, Carnegie Mellon University; Joao Pedro Gomes, Instituto Superior Tecnico; Bruno Sinopoli, Carnegie Mellon University

Session MA5b Medical Imaging

Chair: *Ge Yang, Carnegie Melon University*

MA5b-1 Calibrationless Parallel MRI Using ORACLE (Overlapping Low-Rank Approximations for Coil Image Estimation) — 10:15 AM
Joshua Trzasko, Armando Manduca, Mayo Clinic

MA5b-2 Signal Modeling and the Cramér-Rao Bound for Absolute Magnetic Resonance Thermometry: Feasibility in Fat Tissue — 10:40 AM
Marcus Björk, Johan Berglund, Joel Kullberg, Petre Stoica, Uppsala University

MA5b-3 Level Estimation for Sparse Reconstruction in Discrete Tomography — 11:05 AM
Yenting Lin, Antonio Ortega, Alexandros G. Dimakis, University of Southern California

MA5b-4 Multimodal Image Registration by Consistency of Saliency Map — 11:30 AM
Hiroyuki Takeda, University of Michigan

Session MA6b Collaborative Beamforming

Chair: *Sofiène Affes, INRS-EMT, Université du Québec*

MA6b-1 DSP-Centric Algorithms for Distributed Transmit Beamforming — 10:15 AM
Upamanyu Madhow, University of California, Santa Barbara; Raghu Mudumbai, University of Iowa; D. R. Brown, Worcester Polytechnic Institute; Patrick Bidigare, Raytheon BBN Technologies

MA6b-2 Power Control for Collaborative Beamforming in Wireless Sensor Networks — 10:40 AM
Mohammed Ahmed, Sergiy Vorobyov, University of Alberta

MA6b-3 Testing Zero-Feedback Distributed Beamforming with a Low-Cost SDR Testbed — 11:05 AM
George Sklivanitis, Aggelos Bletsas, Technical University of Crete

MA6b-4 Distributed Cooperative Jamming for Improving Physical Layer Security — 11:30 AM
Yupeng Liu, Athina Petropulu, Rutgers University; H. Vincent Poor, Princeton University

Session MA7b Multivariate and Multimodal Analysis of Brain Signals

Co-Chairs: *Justin Dauwels, Nanyang Technological University and Deniz Erdogmus, Northeastern University*

MA7b-1 Sparse Common Spatial Patterns with Recursive Weight Elimination — 10:15 AM
Fikri Goksu, Nuri F. Ince, University of Minnesota

MA7b-2 Identifying Multivariate EEG Synchronization Networks through Multiple Subject Community Detection — 10:40 AM
Marcos Bolanos, Ali Yener Mutlu, Michigan State University; Edward Bernat, Florida State University; Selin Aviyente, Michigan State University

MA7b-3 Frequency Constrained ShifCP Modeling of Neuroimaging Data — 11:05 AM
Morten Mørup, Technical University of Denmark

MA7b-4 Context Information Significantly Improves Brain Computer Interface Performance - A Case Study on Text Entry Using a Language Model Assisted BCI — 11:30 AM
Umut Orhan, Northeastern University; Kenneth E. Hild II, Oregon Health and Science University; Deniz Erdogmus, Northeastern University; Brian Roark, Barry Oken, Melanie Fried-Oken, Oregon Health and Science University

Session MA8b1 Computer Arithmetic I

10:15 AM - 12:00 PM

MA8b1-1 Efficient Decimal Leading Zero Anticipator Designs
Mohamed H. Amin, Ahmed M. ElTantawy, Hossam A. H. Fahmy, Cairo University

MA8b1-2 Hybrid Residue Generators for Increased Efficiency
Michael Sullivan, Earl Swartzlander, University of Texas at Austin

MA8b1-3 Nested Quadratic Arithmetic for Efficient Convolution of Complex Sequences with Quadratic Modified Fermat Number Transforms
Chandrashekar Radhakrishnan, University of Illinois; Kenneth Jenkins, Pennsylvania State university

MA8b1-4 On Building General Modular Adders from Standard Binary Arithmetic Components
Ghassem Jaberipur, Shahid Beheshti University; Behrooz Parhami, University of California, Santa Barbara; Saeed Nejati, Shahid Beheshti University

MA8b1-5 A Novel Adaptive Filter Implementation Scheme Using Distributed Arithmetic
Rui Guo, Linda S. DeBrunner, Florida State University

MA8b1-6 A Mixed-Precision Fused Multiply and Add
Nicolas Brunie, Kalray; Florent de Dinechin, École Normale Supérieure de Lyon; Benoit de Dinechin, Kalray

MA8b1-7 Implementation of 32-bit Ling and Jackson Adders
Matthew Keeter, David Harris, Andrew Macrae, Rebecca Glick, Madeleine Ong, Harvey Mudd College; Justin Schauer, Oracle

MA8b1-8 Truncated-Matrix Multipliers with Coefficient Shifting
E. George Walters III, Penn State Erie, The Behrend College; Michael J. Schulte, Advanced Micro Devices

Session MA8b2 Physical Layer Security I

Chair: *Wing-Kin (Ken) Ma, Chinese University of Hong Kong*

10:15 AM - 12:00 PM

MA8b2-1 Faster than Nyquist Interference Assisted Secret Communication for OFDM Systems
Arsenia Chorti, H. Vincent Poor, Princeton University

MA8b2-2 QoS-Constrained Robust Beamforming in MISO Wiretap Channels with a Helper
Jing Huang, A. Lee Swindlehurst, University of California, Irvine

MA8b2-3 Secrecy Outage in MISO Systems with Partial Channel Information
Sabrina Gerbracht, Eduard Jorswieck, Dresden University of Technology

MA8b2-4 Secrecy Rate for Gaussian MISO Wiretap Channels with Spherical Uncertainty
Jiangyuan Li, Athina Petropulu, Rutgers University

MA8b2-5 Two-Way Discriminatory Channel Estimation for Non-Reciprocal Wireless MIMO Channels
Chao-Wei Huang, Tsung-Hui Chang, National Tsing Hua University; Xiangyun Zhou, University of Oslo; Y.-W. Peter Hong, National Tsing Hua University

MA8b2-6 Safe Convex Approximation to Outage-Based MISO Secrecy Rate Optimization under Imperfect CSI and with Artificial Noise
Qiang Li, Wing-Kin Ma, Anthony Man-Cho So, Chinese University of Hong Kong

MA8b2-7 Benefits of Multiple Transmit Antennas in Secure Communication: A Secrecy Outage Viewpoint
Xi Zhang, Hong Kong University of Science and Technology; Xiangyun Zhou, University of Oslo; Matthew McKay, Hong Kong University of Science and Technology

MA8b2-8 Confidential Messages in Bi-Directional Relay Networks under Channel Uncertainty
Rafael F. Wyrembelski, Holger Boche, Technische Universität München

Session MA8b3 Physical Layer Security II

Chair: *Wing-Kin (Ken) Ma, Chinese University of Hong Kong*

10:15 AM - 12:00 PM

MA8b3-1 A Full-Duplex Active Eavesdropper in MIMO Wiretap Channels: Construction and Countermeasures
Amitav Mukherjee, Lee Swindlehurst, University of California, Irvine

MA8b3-2 RF Fingerprinting of Users Who Actively Mask Their Identities with Artificial Distortion
Adam Polak, Dennis Goeckel, University of Massachusetts Amherst

MA8b3-3 Power Allocation to Noise-Generating Nodes for Cooperative Secrecy in the Wireless Environment
Kyle Morrison, Dennis Goeckel, University Massachusetts Amherst

MA8b3-4 Comparing Random Signals with Application to Wireless User Authentication
Jitendra Tugnait, Auburn University

MA8b3-5 Transmit Beamforming and Cooperative Jamming for MIMOME Wiretap Channels
Wei Shi, James Ritcey, University of Washington

MA8b3-6 Secrecy in Broadcast Channels with Receiver Side Information
Rafael Wyrembelski, Universitat Munchen; Aydin Sezgin, Ulm University; Holger Boche, Universitat Munchen

MA8b3-7 On the Ergodic Secrecy Capacity of the Wiretap Channel under Imperfect Main Channel Estimation
Zouheir Rezki, King Abdullah University of Science and Technology; Ashish Khisti, University of Toronto; Mohamed-Slim Alouini, King Abdullah University of Science and Technology

MA8b3-8 Secure Wireless Multicasting Through Nakagami-m Fading MISO Channel
Md. Zahurul I. Sarkar, Tharmalingam Ratnarajah, Queen's University Belfast

Session MA8b4 Image, Video Coding and Analysis

Chair: *Vishal Monga, Pennsylvania State University*

10:15 AM - 12:00 PM

MA8b4-1 JPEG Image Compression Using Quantization Table Optimization Based on Perceptual Image Quality Assessment
Yuebing Jiang, Marios Pattichis, University of New Mexico

MA8b4-2 Efficient Coders for Large Tree-Structured Dictionaries of Tilings
Kai-Lung Hua, National Taiwan University of Science and Technology; Rong Zhang, Qualcomm Incorporated; Mary Comer, Ilya Pollak, Purdue University

MA8b4-3 Variable Block Size-Based MCFI with Fixed Block Size Motion Estimation
Masaru Hoshi, Akihiro Yoshinari, Yuichi Tanaka, Madoka Hasegawa, Shigeo Kato, Utsunomiya University

MA8b4-4 A Structural Similarity Assessment for Generating Hybrid Images
Keita Takahashi, Madoka Hasegawa, Yuichi Tanaka, Shigeo Kato, Utsunomiya University

MA8b4-5 A Compact Saliency Model for Video-Rate Implementation
Tien Ho-Phuoc, Laurent Alacoque, Antoine Dupret, CEA; Anne Guérin-Dugué, GIPSA-Lab; Arnaud Verdant, CEA

MA8b4-6 Dithered Soft Decision Quantization for Baseline JPEG Encoding and its Joint Optimization with Huffman Coding and Quantization Table Selection
En-hui Yang, Chang Sun, University of Waterloo

MA8b4-7 Compressive Sensing Based Imaging via Beleif Propagation
Preethi Ramchandara, Mina Sartipi, University of Tennessee Chattanooga

Session MA8b5 Adaptive Systems and Spectral Estimation

Chair: *Vitor Nascimento, University of Sao Paulo*

10:15 AM - 12:00 PM

MA8b5-1 A Modified System-Based Adaptive Algorithm for a Sparse Reconfigurable Photonic Filter
Suk-seung Hwang, Hong Chang, Chosun University; John J. Shynk, University of California, Santa Barbara

MA8b5-2 A New Variable Step-Size Strategy For Adaptive Networks
Muhammad Bin Saeed, Azzedine Zerguine, King Fahd University of Petroleum & Minerals

MA8b5-3 A Comparison of Methods for Estimating Broadband Noise in the Frequency Domain
Don Hush, Norma Pawley, Kary Myers, Robert Nemzek, Los Alamos National Laboratory

MA8b5-4 An Information Filter for Voice Prompt Suppression
John McDonough, Carnegie Mellon University; Kenichi Kumatani, Disney Research; Bhiksha Raj, Carnegie Mellon University; Jill Lehman, Disney Research

MA8b5-5 Embedded Track Validation for Tree Search-Based Tracking of Maneuvering Targets
Hossein Roufarshbaf, Jill Nelson, George Mason University

MA8b5-6 Urban Terrain Multiple Target Tracking Using Probability Hypothesis Density Particle Filtering
Meng Zhou, Bhavana Chakraborty, Jun Jason Zhang, Arizona State University

MA8b5-7 High-Resolution Non-Parametric Spectral Estimation Using the Hirschman Optimal Transform
Guifeng Liu, Victor DeBrunner, Florida State University

MA8b5-8 Co-Prime Sampling for System Stabilization with FIR Multi-Rate Controllers
P. P. Vaidyanathan, Piya Pal, California Institute of Technology

Session MP1a Interference-Alignment Techniques for Multi-Antenna Systems

Chair: *Vincent Lau, Hong Kong University of Science and Technology*

MP1a-1 Interference Alignment for Peer-to-Peer Underlay MIMO Cognitive Radio Network 1:30 PM
Huiqin Du, Tharm Ratnarajah, Haichuan Zhou, Queen's University Belfast; Ying Chang Liang, Institute for Infocomm Research

MP1a-2 Sum Rate Enhancement by Maximizing SGINR in an Opportunistic Interference Alignment Scheme 1:55 PM
Seong-Ho (Paul) Hur, University of California, San Diego; Bang-Chul Jung, Gyeongsang National University; Bhaskar D. Rao, University of California, San Diego

MP1a-3 Interference Alignment for Partially Connected Quasi-static MIMO Interference Channel 2:20 PM
Liangzhong Ruan, Vincent K.N. Lau, Hong Kong University of Science and Technology

MP1a-4 Opportunistic MU-MIMO based on Semi-Blind Interference Alignment 2:45 PM
Haralabos Papadopoulos, Sayan Mukherjee, Sean Ramprashad, DoCoMo USA Labs

Session MP1b Interference Alignment for the MIMO Interference Channel

Chair: *Geert Leus, Technical University of Delft*

MP1b-1 Linear Interference Alignment and its Maximum Achievable Degrees of Freedom 3:30 PM
Meisam Razaviyayn, Gennady Lyubeznik, Zhi-Quan Luo, University of Minnesota

MP1b-2 MIMO Interference Alignment in Random Access Networks 3:55 PM
Behrang Nosrat-Makouei, Radha Krishna Ganti, Jeffrey G. Andrews, Robert W. Heath, Jr., University of Texas at Austin

MP1b-3 The Noisy MIMO Interference Channel with Distributed CSI Acquisition and Filter Computation 4:20 PM
Francesco Negro, Eurecom; Umer Salim, Irfan Ghauri, Intel Corporation; Dirk Slock, Eurecom

MP1b-4 Secure Space-Time Block Coding via Artificial Noise Alignment 4:45 PM
S. Ali A. Fakoorian, A. Lee Swindlehurst, University of California, Irvine

Session MP2a Energy-Harvesting Wireless Networks

Chair: *Osvaldo Simeone, NJIT*

MP2a-1 AWGN Channel under Time-Varying Amplitude Constraints with Causal Information at the Transmitter 1:30 PM
Omur Ozel, Sennur Ulukus, University of Maryland

MP2a-2 Optimal Power Control for Energy Harvesting Transmitters in an Interference Channel 1:55 PM
Kaya Tutuncuoglu, Aylin Yener, Penn State University

MP2a-3 Queuing Theoretic and Information Theoretic Capacity of Energy Harvesting Sensor Nodes 2:20 PM
Vinod Sharma, Indian Institute of Science; Ramachandran Rajesh, Centre for Airborne Systems

MP2a-4 Queue and Power Control for Rechargeable Sensor Networks under the SINR Interference Model 2:45 PM
Zhoujia Mao, Can Emre Koksal, Ness B. Shroff, Ohio State University

Session MP2b Coding and Decoding

Chair: *Aydin Sezgin, University of Ulm*

MP2b-1 Complexity Analysis of Interior Point Methods for LP Decoding 3:30 PM
Yifan Sun, Lara Dolecek, University of California, Los Angeles

MP2b-2 Rate Adaptive Non-Binary LDPC Codes with Low Encoding Complexity 3:55 PM
Nicholas Chang, MIT Lincoln Laboratory

MP2b-3 Achieving Flexibility in LDPC Code Design by Absorbing Set Elimination 4:20 PM
Jiajun Zhang, Jiadong Wang, University of California, Los Angeles; Shayan Garani Srinivasa, Western Digital Corporation; Lara Dolecek, University of California, Los Angeles

MP2b-4 Decoding by Detection: Soft-Input/Soft-Output Error Correction Decoders for Arbitrary Binary Linear Codes 4:45 PM
Todd Moon, Jacob (Jake) Gunther, Utah State University

Session MP3a Graphical Models in Signal Processing II

Chair: *Alex Ihler, University of California, Irvine*

MP3a-1 Concept Graphs for a Personalized Learning System 1:30 PM
Andrew Waters, Richard Baraniuk, Rice University

MP3a-2 Inference and Learning for Continuous-Time Stochastic Systems 1:55 PM
Christian Shelton, E. Busra Celikkaya, University of California, Riverside

MP3a-3 Approximate Bayesian Inference for Robust Speech Processing 2:20 PM
Ciira Maina, John Walsh, Drexel University

MP3a-4 Out-of-Sequence Measurements and Incremental Inference in Graphical Models 2:45 PM
Ozgur Sumer, University of Chicago; Ramgopal Mettu, University Massachusetts Amherst; Umut Acar, MPI-SWS; Alexander Ihler, University of California, Irvine

Session MP3b Signal Processing and Learning in Complex Systems

Chair: *Andrew Singer, University of Illinois at Urbana-Champaign*

MP3b-1 Diffusion Adaptation over Networks of Particles Subject to Brownian Fluctuations 3:30 PM
Ali Sayed, Faten Sayed, University of California, Los Angeles

MP3b-2 Trust, Opinion Diffusion and Radicalization in Social Networks 3:55 PM
Lin Li, Anna Scaglione, University of California, Davis; Ananthram Swami, Army Research Laboratory; Qing Zhao, University of California, Davis

MP3b-3 Disentangling Mixed Preference Systems and Hidden Variables 4:20 PM
Constantine Caramanis, University of Texas at Austin

MP3b-4 Unity Versus Diversity in a Population of Interacting Adaptive Agents: the Value of Extrinsic Gossip 4:45 PM
Andrew Bean, Andrew Singer, University of Illinois at Urbana Champaign

Session MP4a Compressive Sensing Applications in Networking

Co-Chairs: *Jarvis Haupt, University of Minnesota and Michael Rabbat, McGill University*

MP4a-1 Sparse Recovery of Temporally Changing Networks: Longitudinal Modeling of Brain Networks in Children 1:30 PM
Moo Chung, Jamie Hanson, Seth Pollak, University of Wisconsin

MP4a-2 Unveiling Anomalies in Large-Scale Networks via Sparsity and Low Rank 1:55 PM
Morteza Mardani, Gonzalo Mateos, Georgios B. Giannakis, University of Minnesota

MP4a-3 Random Access Compressed Sensing: An Integrated Architecture for Energy-Efficient Networking 2:20 PM
Fatemeh Fazel, Northeastern University; Maryam Fazel, University of Washington; Milica Stojanovic, Northeastern University

MP4a-4 Recent Results on Sparse Recovery over Graphs 2:45 PM
Weiyu Xu, Meng Wang, Enrique Mallada, Ao Kevin Tang, Cornell University

Session MP4b Resource Allocation in Wireless Networks

Chair: *Rahul Urgaonkar, University of Southern California*

MP4b-1 MSE-Optimal Power Allocation in Wireless Sensor Networks for Field Reconstruction Based on Shift-Invariant Spaces 3:30 PM
Günter Reise, Vienna University of Technology; Javier Matamoros, Carles Antón-Haro, Centre Tecnològic de Telecomunicacions de Catalunya (CTTC); Gerald Matz, Vienna University of Technology

MP4b-2 Spatial Interference Mitigation for Multiple-Input Multiple-Output Ad Hoc Networks 3:55 PM
Salam Akoum, University of Texas at Austin; Marios Kountouris, Merouane Debbah, Supélec; Robert W. Heath, Jr., University of Texas at Austin

MP4b-3 A Greedy Link Scheduler for Wireless Networks with Fading Channels 4:20 PM
A. Sridharan, Emre Koksal, Ohio State University

MP4b-4 Radio Resource Management in Heterogeneous Deployments: a System Level Perspective 4:45 PM
Thomas Wirth, Fraunhofer Heinrich Hertz Institute

Session MP5a Advances in Bioimaging and Analysis

Chair: *Jean-Christophe Olivo-Marin, Institut Pasteur*

MP5a-1 Quantitative Synaptic Vesicle Imaging for Evaluating Neuron Activities in Neurodegenerative Diseases — 1:30 PM
Jing Fan, Xiaofeng Xia, Stephen Wong, Methodist Hospital Research Institute

MP5a-2 Flexible and Efficient Multi-Region Segmentation Using Active Contours — 1:55 PM
Grégory Paul, Janick Cardinale, Ivo F. Sbalzarini, ETH Zurich

MP5a-3 Nanometer Resolution Imaging and Tracking of Axonal Cargo Transport in Normal and Degenerative Neurons — 2:20 PM
Ge Yang, Carnegie Mellon University

MP5a-4 Statistical Colocalization of Molecular Species in Biological Imaging — 2:45 PM
Vannary Meas-Yedid, Cyril Basquin, Nathalie Sauvonnet, Jean-Christophe Olivo-Marin, Institut Pasteur

Session MP5b Image/Video Restoration, Enhancement and Evaluation

Chair: *Mary Comer, Purdue University*

MP5b-1 Tikhonov's Regularization Functional for Image Restoration by Means of q-Discrepancy — 3:30 PM
Vania V. Estrela, Universidade Federal Fluminense; Aggelos K. Katsaggelos, Northwestern University

MP5b-2 Equivalence of Plenoptic Cameras — 3:55 PM
Todor Georgiev, Adobe; Sergio Goma, Qualcomm Incorporated; Andrew Lumsdaine, Adobe

MP5b-3 Referenceless Image Spatial Quality Evaluator — 4:20 PM
Anish Mittal, Anush Moorthy, Alan Bovik, Wireless Networking and Communications Group

MP5b-4 Noise Model Discrimination for Digital Images based on Variance-Stabilizing Transforms and on Local Statistics: Preliminary Results — 4:45 PM
Paul Rodriguez, Pontificia Universidad Catolica del Peru

Session MP6a Tensor-based Array Signal Processing

Chair: *Martin Haardt, Ilmenau University of Technology*

MP6a-1 Modeling Latency and Shape Changes in Trial Based Neuroimaging Data — 1:30 PM
Morten Mørup, Technical University of Denmark; Kristoffer Hougaard Madsen, Hvidovre Hospital; Lars Kai Hansen, Technical University of Denmark

MP6a-2 Canonical Decomposition of Non-Negative arrays — 1:55 PM
Julie Coloigner, Laurent Albera, Lotfi Senhadji, Amar Kachenoura, University of RENNES 1, LTSI and INSERM, UMR 642

MP6a-3 Tensor-Based Semi-Blind Channel Estimation for MIMO OSTBC-Coded Systems — 2:20 PM
Florian Roemer, Ilmenau University of Technology; Nima Sarmadi, Technische Universität Darmstadt; Bin Song, Martin Haardt, Ilmenau University of Technology; Marius Pesavento, Alex Gershman, Technische Universität Darmstadt

MP6a-4 Tensor Decompositions with Block-Toeplitz Structure and Applications in Signal Processing — 2:45 PM
Mikael Sorensen, Lieven De Lathauwer, K.U. Leuven

Session MP6b Compressive Sensing for Array Processing

Chair: *Benjamin Friedlander, University of California, Santa Cruz*

MP6b-1 The MUSIC Algorithm for Compressive Imaging: Noise Stability and Performance Guarantee — 3:30 PM
Albert Fannjiang, University of California, Davis

MP6b-2 Some Theoretical Results for Compressive Radar — 3:55 PM
Thomas Strohmer, University of California, Davis; Benjamin Friedlander, University of California, Santa Cruz

MP6b-3 Sensitivity Considerations in Compressed Sensing — 4:20 PM
Louis Scharf, Ali Pezeshki, Colorado State University; Yuejie Chi, Princeton University

MP6b-4 Coherence, Compressive Sensing and Random Sensor Arrays — 4:45 PM
Lawrence Carin, Duke University

Session MP7a Processing of Physiological Signals

Co-Chairs: *Nuri Firat Ince, University of Minnesota and Morten Morup, Technical University of Denmark*

MP7a-1 Does the Morphology of High-Frequency (100-500 Hz) Brain Oscillations Change During Epileptic Seizures? — 1:30 PM
Allison Pearce, Drausin Wulsin, Brian Litt, Justin Blanco, University of Pennsylvania

MP7a-2 Early Investigations into Subjective Audio Quality Assessment Using Brainwave Responses — 1:55 PM
Charles Creusere, Srikant Siddenki, New Mexico State University; Joe Hardin, Colorado State University; Jim Kroger, New Mexico State University

MP7a-3 Electrocardiogram Signal Modeling and Estimation Using the Interacting Multiple Model Particle Filtering 2:20 PM
Shwetha Edla, Narayan Kovvali, Antonia Papandreou-Suppappola, Arizona State University

MP7a-4 A Novel Approach for Simulation, Measurement and Representation of Surface EMG (sEMG) Signals 2:45 PM
Anvith Mahabalagiri, Khadeer Ahmed, Fred Schlereth, Syracuse University

Session MP7b Model-based Design Optimization

Chair: *Sankalita Saha, NASA, USA*

MP7b-1 Distributed Energy and Environment Sensing for Smart Building Management 3:30 PM
Chen Xia, Hao Liu, Xiangrong Zhou, University of Hawaii

MP7b-2 FPGA-Accelerator System for Computing Biologically-Inspired Feature Extraction Models 3:55 PM
Michael DeBole, Pennsylvania State University; Chi-li Yu, Arizona State University; Ahmed Al Maashri, Matthew Cotter, Pennsylvania State University; Chaitali Chakrabarti, Arizona State University; Vijaykrishnan Narayanan, Pennsylvania State University

MP7b-3 A Machine Model for Dataflow Actors and its Applications 4:20 PM
Jorn W. Janneck, Lund University

MP7b-4 Operation Set Customization in Retargetable Compilers 4:45 PM
Heikki Kultala, Pekka Jääskeläinen, Mikael Lepistö, Jarmo Takala, Tampere University of Technology

Session MP8a1 Adaptive Filtering

Chair: *Ricardo Merched, Universidade Federal do Rio de Janeiro*

1:30 PM - 3:10 PM

MP8a1-1 Simplified Complex LMS Algorithm for the Cancellation of Second-Order TX Intermodulation Distortions in Homodyne Receivers
Christian Lederer, Mario Huemer, Alpen-Adria-Universitaet Klagenfurt

MP8a1-2 A Steady-State Analysis of the E-Normalized Sign-Error Least Mean Square (NSLMS) Adaptive Algorithm
Mohammed Faiz, Azzedine Zerguine, King Fahd University of Petroleum & Minerals

MP8a1-3 A Modified Non-Negative LMS Algorithm and its Stochastic Behavior Analysis
Jie Chen, Cédric Richard, Université de Nice Sophia-Antipolis; Jose Bermudez, Federal University of Santa Catarina; Paul Honeine, Université de Technologie de Troyes

MP8a1-4 A Robust LMS Adaptive Algorithm over Distributed Networks
Muhammad Bin Saeed, Azzedine Zerguine, Salam Zummo, King Fahd University of Petroleum & Minerals

MP8a1-5 Error-Based "Gear-Shifting" for a Generalized LMS Algorithm
John J. Shynk, University of California, Santa Barbara

MP8a1-6 A Variable Step-Size GMDF and its Performance Analysis
Hsu-Chang Huang, Junghsi Lee, Yuan-Ze University

MP8a1-7 Acoustic Feedback and Echo Cancellation Strategies for Multiple-Microphone and Single-Loudspeaker Systems
Meng Guo, Thomas Bo Elmedyb, Oticon A/S; Søren Holdt Jensen, Aalborg University; Jesper Jensen, Oticon A/S

MP8a1-8 Comparison of Two Techniques for Linear-Phase Adaptive Band-Stop Filters
Michael Soderstrand, University of California (Retired)

Session MP8a2 Speech Processing, Recognition and Coding

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

1:30 PM - 3:10 PM

MP8a2-1 Automatic Phoneme Recognition with Segmental Hidden Markov Models
Areg Baghdasaryan, A. A. (Louis) Beex, Virginia Polytechnic Institute and State University

MP8a2-2 A Perceptually Re-Weighted Mixed-Norm Method for Sparse Approximation of Audio Signals
Mads Christensen, Bob Sturm, Aalborg University

MP8a2-3 Scalable Multimode Tree Coder with Perceptual Pre-Weighting and Post-Weighting for Wideband Speech Coding
Ying-Yi Li, Jerry Gibson, University of California, Santa Barbara

MP8a2-4 Isolated Word Endpoint Detection Using Time-Frequency Variance Kernels
Alexandros Kyriakides, Costas Pitris, University of Cyprus; Andreas Spanias, Arizona State University

MP8a2-5 Performance Enhanced Multi-Rate iLBC
Koji Seto, Tokunbo Ogunfunmi, Santa Clara University

MP8a2-6 Enabling Improved Speaker Recognition by Voice Quality Estimation
Anthony Bartos, Welkin Associates, Ltd.; Douglas Nelson, U.S. Department of Defense

Session MP8a3 Parameter Estimation

Chair: *P.P. Vaidyanathan, California Institute of Technology*

1:30 PM - 3:10 PM

MP8a3-1 On Spatial Smoothing of High Resolution Direction Finding of Real-Valued Sinusoidal Signals
H. Howard Fan, University of Cincinnati; Stewart DeVilbiss, Air Force Research Laboratory

MP8a3-2 Non-Uniform Linear Arrays for Improved Identifiability in Cumulant Based DOA Estimation
Piya Pal, P. P. Vaidyanathan, California Institute of Technology

MP8a3-3 Knowledge-Aided Direction Finding Based on Unitary ESPRIT
Jens Steinwandt, Ilmenau University of Technology; Rodrigo C. de Lamare, University of York; Martin Haardt, Ilmenau University of Technology

MP8a3-4 Maximum Likelihood Time Delay Estimation for CDMA Direct-Spread Multipath Transmissions Using Importance Sampling
Ahmed Masmoudi, Faouzi Bellili, Sofiene Affes, INRS-EMT

MP8a3-5 Particle Filter Based DOA Estimation for Multiple Source Tracking (MUST)
Thomas Wiese, Technical University Munich; Heiko Claussen, Justinian Rosca, Siemens Corporation, Corporate Research

MP8a3-6 Direction-of-Arrival Estimation Using Distributed Body Area Networks: Error & Refraction Analysis
Kaveh Ghaboosi, Pranay Pratap Swar, Kaveh Pahlavan, Worcester Polytechnic Institute

MP8a3-7 Bayesian Estimation of a Subspace
Olivier Besson, University of Toulouse-ISAE; Nicolas Dobigeon, Jean-Yves Tourneret, University of Toulouse-IRIT/ENSEIHT

MP8a3-8 Model Order Selection in Sensor Array Response Modeling
Mário Costa, Andreas Richter, Visa Koivunen, Aalto University

Session MP8a4 DSP Algorithms and Architectures

Chair: *Michael Schulte, AMD, USA*

1:30 PM - 3:10 PM

MP8a4-1 High Dynamic Range Adaptive Delta-Sigma Based Focal Plane Array Architecture
Shun Yao, Marvel Semiconductors; Sam Kavusi, Khaled N Salama, King Abdullah University of Science and Technology

MP8a4-2 Block Circular and Hyperbolic Transformations for the Block Fast Array RLS Algorithm
Roger West, Todd Moon, Jacob (Jake) Gunther, Utah State University

MP8a4-3 The Polyphase Random Demodulator for Wideband Compressive Sensing
J.P. Slavinsky, Jason Laska, Richard Baraniuk, Rice University

MP8a4-4 A Floating-Point Fused FFT Butterfly Arithmetic Unit with Merged Multiple-Constant Multipliers
Jae Hong Min, Seong-Wan Kim, Earl Swartzlander, University of Texas at Austin

MP8a4-5 Exploiting Cross-Channel Quantizer Error Correlation in Time-Interleaved Analog-to-Digital Converters
Joseph G. McMichael, Shay Maymon, Alan V. Oppenheim, Massachusetts Institute of Technology

Session MP8a5 Novel DSP Architectures

Chair: *David Thomas, Imperial College London, UK*

1:30 PM - 3:10 PM

MP8a5-1 In-Service Reconfiguration of Signal Processing Components
Gordon Brebner, Christopher Neely, Shay Seng, Xilinx, Inc.

MP8a5-2 Rethinking Computation Using FPGA Based Accelerators for Large Applications
Dennis Allison, Michael J Flynn, Oskar Mencer, Maxeler Technologies

MP8a5-3 Versatile FPGA DSP Blocks with Carry-Save Arithmetic Support
Hadi Parandeh Afshar, Paolo Ienne, École Polytechnique Fédérale de Lausanne (EPFL)

MP8a5-4 Scalable Acceleration of High-Performance, Fourier-Domain Optical Coherence Tomography
Lesley Shannon, Simon Fraser University

MP8a5-5 Fine-Grain Reconfigurable Functional Unit for Embedded Processors
Gian Carlo Cardarilli, Luca Di Nunzio, Rocco Fazzolari, Marco Re, University of Rome Tor Vergata

MP8a5-6 Increasing Productivity of Reconfigurable Computing for Signal Processing
Wayne Luk, Imperial College London

MP8a5-7 Synchronous and Asynchronous Computations with Molecular Reactions
Hua Jiang, Marc D. Riedel, Keshab K. Parh Parhi, University of Minnesota

MP8a5-8 Design and Implementation of a Flexible Queue Manager for Next Generation Networks
Qi Zhang, Roger Woods, Alan Marshall, Queen's University Belfast

Session TA1a Random Matrices in Signal Processing and MIMO Communications

Chair: *Matthew McKay, Hong Kong University of Science and Technology*

TA1a-1 Beyond Eckart-Young-Mirsky: Exploiting Random Matrix Theory to Improve Subspace Approximation 8:15 AM
Raj Rao Nadakuditi, University of Michigan

TA1a-2 Beyond IID Gaussian Matrices in Compressed Sensing 8:40 AM
Antonia Tulino, Bell Laboratories, Alcatel-Lucent; Giuseppe Caire, University of Southern California; Shlomo Shamai, Technion-Israel Institute of Technology; Sergio Verdú, Princeton University

TA1a-3 Mutual Information Distribution of Interference-Limited MIMO: A Joint Coulomb Fluid and Painlevel Based Approach 9:05 AM
Shang Li, Hong Kong University of Science and Technology; Yang Chen, Imperial College London; Matthew McKay, Hong Kong University of Science and Technology

TA1a-4 Outage Capacity for MIMO-OFDM Systems in Block Fading Channels 9:30 AM
Marco Chiani, University of Bologna; Andrea Conti, University of Ferrara; Matteo Mazzotti, Enrico Paolini, University of Bologna; Alberto Zanella, WiLab/IEIIT-BO CNR

Session TA1b Biosignal Estimation and Classification

Co-Chairs: *Ulisses Braga-Neto, Texas A&M University and Antonia Papandreou-Suppappola, Arizona State University*

TA1b-1 A Real-Time Reconstruction Algorithm for the Integrate and Fire Sampler 10:15 AM
Alexander Singh Alvarado, Jose Principe, University of Florida

TA1b-2 Using Physiological Signals to Predict Apnea in Preterm Infants 10:40 AM
James Williamson, Daniel Bliss, David Browne, MIT Lincoln Laboratory; Elisabeth Salisbury, Premananda Indic, David Paydarfar, University of Massachusetts Medical School

TA1b-3 Assessing Dysarthria Severity Using Global Statistics and Boosting 11:05 AM
Alicia DeMino, General Dynamics; Robert Kubichek, University of Wyoming; Kevin Caves, Duke University

TA1b-4 Characterization of Human Use of Ethanol Based on Video Games with Ethanol Rewards: Model, System Identification and Statistical Performance 11:30 AM
Ipek Ozil, Cornell University; Martin H. Plawecki, Indiana University School of Medicine; Peter C. Doerschuk, Cornell University; Sean J. O'Connor, Indiana University School of Medicine

Session TA2a Network Coding

Chair: *Athina Markopoulou, University of California, Irvine*

TA2a-1 Network Alignment 8:15 AM
Syed Jafar, University of California, Irvine

TA2a-2 Network Coding for Data Replication over Wireless Networks 8:40 AM
Lorenzo Keller, Christina Fragouli, École Polytechnique Fédérale de Lausanne (EPFL)

TA2a-3 A Fundamental Approach to Securing Data in the Cloud from Adversarial Attacks 9:05 AM
Salim El Rouayheb, Sameer Pawar, Kannan Ramchandran, University of California, Berkeley

TA2a-4 Network Coding for Security and Privacy 9:30 AM
Tracey Ho, California Institute of Technology

Session TA2b Relaying through Frequency Selective Channels

Chair: *Andy Klein, Worcester Polytechnic Institute*

TA2b-1 Distributed Single Carrier Frequency-Domain Equalization for Multi-Relay Cooperative Networks over Frequency Selective Rician Channels 10:15 AM
Homa Eghbali, Sami Muhaidat, Simon Fraser University; Ibrahim Abualhaol, Khalifa University of Science, Technology and Research

TA2b-2 Cooperative BICM-OFDM Systems for Frequency-Selective Relay Channels 10:40 AM
Reza Heidarpour, Murat Uysal, University of Waterloo

TA2b-3 On Relay Selection in Frequency Selective Channels 11:05 AM
Qingxiong Deng, Andrew Klein, Worcester Polytechnic Institute

TA2b-4 Superposition Coding for Cooperative BICM-OFDM Systems 11:30 AM
Toufiqul Islam, Robert Schober, University of British Columbia; Ranjan K Mallik, Indian Institute of Technology, Delhi; Vijay K Bhargava, University of British Columbia

Session TA3a Advances in Compressive Sensing

Chair: *Christoph Studer, Rice University*

TA3a-1 An Empirical-Bayes Approach to Compressive Sensing via Approximate Message Passing 8:15 AM
Jeremy Vila, Philip Schniter, Ohio State University

TA3a-2 Compressive Sensing under Multiplicative Uncertainties: An Approximate Message Passing Approach 8:40 AM
Jason Parker, Air Force Research Laboratory; Volkan Cevher, École Polytechnique Fédérale de Lausanne (EPFL); Philip Schniter, Ohio State University

TA3a-3 Compressive Sensing: to Compress or not to Compress 9:05 AM
Davis Kirachaiwanich, Qilian Liang, University of Texas at Arlington

TA3a-4 Spread Representations 9:30 AM
Jean Jacques Fuchs, Université de Rennes 1

Session TA3b Sparse Reconstruction

Chair: *Geert Leus, Technical University of Delft*

TA3b-1 New Bounds for Restricted Isometry Constants in Orthogonal Multi Matching Pursuit 10:15 AM
Jian Wang, Byonghyo Shim, Korea University

TA3b-2 Cyclic Greedy Algorithms for Recovering Compressively Sampled Sparse Signals 10:40 AM
Bob Sturm, Mads Christensen, Aalborg University; Rémi Gribonval, INRIA

TA3b-3 Greedy Sparsity-Constrained Optimization 11:05 AM
Sohail Bahmani, Carnegie Mellon University; Petros Boufounos, Mitsubishi Electric Research Labs; Bhiksha Raj, Carnegie Mellon University

TA3b-4 Power-Iterative Strategy for lp-l2 Optimization for Compressive Sensing: Towards Global Solution 11:30 AM
Jie Yan, Wu-Sheng Lu, University of Victoria

Session TA4a Next Generation Network Science

Co-Chairs: *Victor Preciado, University of Pennsylvania and Ali Jadbabaie, University of Pennsylvania*

TA4a-1 Network Synthesis for Dynamical System Stabilization 8:15 AM
Miroslav Pajic, University of Pennsylvania; Shreyas Sundaram, University of Waterloo; George Pappas, Rahul Mangharam, University of Pennsylvania

TA4a-2 A Contrasting Look at Network Formation Models and Their Application to the Minimum Spanning Tree 8:40 AM
David Alderson, Gerald Brown, Naval Postgraduate School; D.B. McPherson, U.S. Navy

TA4a-3 The Role of Local Structural Information in Viral Information Spreading 9:05 AM
Victor Preciado, Ali Jadbabaie, University of Pennsylvania

TA4a-4 Learning, Memory and the Role of Neural Network Architecture 9:30 AM
Ann Hermundstad, Kevin Brown, Danielle Bassett, Jean Carlson, University of California, Santa Barbara

Session TA4b Bio-inspired Models and Algorithms for Information Processing in Complex Networks

Chair: *Usman Khan, Tufts University*

TA4b-1 On Scheduling Without a Master Clock: Coupled Oscillator Time Division Multiplexing 10:15 AM
Andrea Rueetschi, Anna Scaglione, University of California, Davis

TA4b-2 On the Effects of Topology and Node Distribution on Learning over Complex Adaptive Networks 10:40 AM
Sheng-Yuan Tu, Ali H. Sayed, University of California, Los Angeles

TA4b-3 Discrete-Time Opinion Dynamics 11:05 AM
Seyed Rasoul Etesami, Angelia Nedic, University of Illinois at Urbana-Champaign

TA4b-4 Gossiping Information Dissemination Through Distributed Femtocell Caching 11:30 AM
Alexandros Dimakis, University of Southern California

Session TA5a Image and Video Retrieval

Chair: *Ramakrishna Vedantham, Nokia Research*

TA5a-1 Mobile Visual Search Using Image and Text Features 8:15 AM
Sam Tsai, Huizhong Chen, David Chen, Stanford University; Ramakrishna Vedantham, Radek Grzeszczuk, Nokia; Bernd Girod, Stanford University

TA5a-2 A Compact Index for Large-Scale Mobile Visual Search 8:40 AM
David Chen, Sam Tsai, Vijay Chandrasekhar, Gabriel Takacs, Huizhong Chen, Stanford University; Ramakrishna Vedantham, Radek Grzeszczuk, Nokia Research Center; Bernd Girod, Stanford University

TA5a-3 Multiple-Channel Compact Visual Descriptor with Adaptive Channel Learning 9:05 AM
Rongrong Ji, Harbin Institute of Technology; Ling-Yu Duan, Jie Chen, Peking University; Hongxun Yao, Harbin Institute of Technology; Tiejun Huang, Wen Gao, Peking University

TA5a-4 Efficient Re-Ranking in Vocabulary Tree-Based Image Retrieval 9:30 AM
Xiaoyu Wang, University of Missouri; Ming Yang, Kai Yu, NEC Laboratories America, Inc.

Session TA5b Sparse Representations with Applications to Images and Video

Chair: *Trac Tran Tran, Johns Hopkins University*

TA5b-1 Robust Multi-Dimensional Scaling via Outlier Sparsity Control 10:15 AM
Pedro Forero, Georgios Giannakis, University of Minnesota

TA5b-2 Architectures for Compressive Sampling of Correlated Signals 10:40 AM
Ali Ahmed, Justin Romberg, Georgia Institute of Technology

TA5b-3 Compressed-Sensing Recovery of Images and Video Using Multi-Hypothesis Predictions 11:05 AM
Chen Chen, Eric Tramel, James Fowler, Mississippi State University

TA5b-4 Sparsity-Based Human Activity Recognition for Mobile Computing Devices 11:30 AM
Victor Shia, Allen Yang, Ruzena Bajcsy, University of California, Berkeley

TA5b-5 Sparsity-Based Face Recognition Using Discriminative Graphical Models 11:55 AM
Umamahesh Srinivas, Vishal Monga, Pennsylvania State University; Yi Chen, Trac D. Tran, The Johns Hopkins University

Session TA6a Waveform Design and MIMO Radar

Chair: *Visa Koivunen, Aalto University*

TA6a-1 Cluster Allocation Schemes for Target Tracking in Multiple Radar Architectures 8:15 AM
Hana Godrich, Princeton University; Athina Petropulu, Rutgers University; H. Vince Poor, Princeton University

TA6a-2 Synergistic MIMO SAR and GMTI 8:40 AM
Duc Vu, Luzhou Xu, Jian Li, University of Florida

TA6a-3 Resource Allocation in Widely Distributed MIMO Radars in Non-Ideal Conditions 9:05 AM
Tuomas Aittomaki, Aalto University; Hana Godrich, Rutgers University; Visa Koivunen, Aalto University; H. Vincent Poor, Princeton University

TA6a-4 Centralized and Distributed Tests for Moving Target Detection with MIMO Radars in Clutter of Non-Homogeneous Power 9:30 AM
Pu Wang, Hongbin Li, Stevens Institute of Technology; Braham Himed, Air Force Research Laboratory

Session TA6b Network Beamforming and Relaying via Multiple Antennas

Chair: *Sergiy Vorobyov, University of Alberta*

TA6b-1 Collaborative Beamforming in Wireless Sensor Networks 10:15 AM
Serkan Sayilir, Yung-Hsiang Lu, Dimitrios Peroulis, Y. Charlie Hu, Byunghoo Jung, Purdue University

TA6b-2 Joint Power Control and Relay Design in Underlay Cognitive Networks with Multiple Transmitter-Receiver Pairs 10:40 AM
Keyvan Zarifi, Sofiene Affes, INRS-EMT; Ali Ghrayeb, Concordia University

TA6b-3 Beamforming in MIMO Broadcast Relay Networks with Multiple Antenna Users 11:05 AM
Godfrey Okeke, Yindi Jing, Witold Krzymien, University of Alberta

TA6b-4 A Relay Selection Approach to Bi-Directional Collaborative Communications with Imperfect CSI 11:30 AM
Fadhel Al-Humaidi, Shahram ShahbazPanahi, University of Ontario Institute of Technology

Session TA7 Architectures for Wireless Communications

Chair: *Joe Cavallero, Rice University*

TA7-1 An Efficient Architecture for Iterative Soft Reliability-Based Majority-Logic Non-Binary LDPC Decoding 8:15 AM
Xinmiao Zhang, Fang Cai, Case Western Reserve University

TA7-2 Architecture Exploration, Development and Teaching Platform for Orthogonal Frequency Division Multiplexing (OFDM) Systems 8:40 AM
Antonio Mondragon-Torres, Mahesh Kommi, Tamoghna Bhattacharya, Rochester Institute of Technology

TA7-3 Improved Iterative Soft-Reliability-Based Majority-Logic Decoding Algorithm for Non-Binary Low-Density Parity-Check Codes 9:05 AM
Chenrong Xiong, Zhiyuan Yan, Lehigh University

TA7-4 LTE Layer 1 Software Design on Multi-Core DSP Architectures 9:30 AM
Arokia Irudayaraj, Michael Brogioli, Nitin Jain, Umang Garg, Freescale Semiconductor, Inc.

BREAK 9:55 AM

TA7-5 Efficient FPGA Implementation of a High Throughput Systolic Array QR-Decomposition Algorithm 10:15 AM
Matthias Abels, Till Wiegand, Steffen Paul, University of Bremen

TA7-6 Comparison of Performance and Implementation Complexity of Soft-Output Sphere Detectors for MIMO-OFDM Systems 10:40 AM
Markus Myllyla, Renesas Mobile Europe Ltd

TA7-7 Time and Power Optimization in FPGA Based Architectures for Polyphase Channelizers 11:05 AM
Mehmood Awan, Peter Koch, Aalborg University; fred harris, San Diego State University

TA7-8 Hardware Implementation of Kuiper-Based Modulation Level Classification 11:30 AM
Paulo Urriza, Eric Rebeiz, Danijela Cabric, University of California, Los Angeles

Session TA8a1 Signal Processing Methods for Representation, Analysis, and Control of Biological Systems

Co-Chairs: *Byung-Jun Yoon, Texas A&M and Xiaoning Qian, University of South Florida*

8:15 AM - 9:55 AM

TA8a1-1 Exact MSE Performance of the Bayesian MMSE Estimator for Classification Error
Lori A. Dalton, Edward R. Dougherty, Texas A&M University

TA8a1-2 Misaligned Principal Component Analysis (Mis-PCA) for Gene Expression Time Series Analysis
Arnau Tibau-Puig, Alfred Hero, University of Michigan

TA8a1-3 Optimal Intervention Strategies for Cyclic Therapeutic Methods with Fixed-Length Duration of Effect
Mohammadmahdi R. Yousefi, Aniruddha Datta, Edward R. Dougherty, Texas A&M University

TA8a1-4 Maximum Likelihood Estimation of the Binary Coefficient of Determination
Ting Chen, Ulisses Braga-Neto, Texas A&M University

TA8a1-5 An MCMC Algorithm for Base Calling in Sequencing-by-Synthesis
Ting Wu, Haris Vikalo, University of Texas at Austin

TA8a1-6 Relationships Between Genetic Regulatory Network Models
Mehmet Umut Caglar, Ranadip Pal, Texas Tech University

TA8a1-7 Bayesian Networks Modeling of Cellular Regulatory Pathways
Chen Zhao, Ivan Ivanov, Texas A&M University; Michael Bittner, Translational Genomics Research Institute; Edward Dougherty, Texas A&M University

TA8a1-8 Haplotype Inference Based on Sparse Dictionary Selection
Guido Hugo Jajamovich, Xiaodong Wang, Columbia University

TA8a1-9 Surface-Constrained 3D Reconstruction in Cryo-EM
Andrew C. Barthel, Hemant Tagare, Fred J. Sigworth, Yale University

TA8a1-10 Phenotypically Constrained Stationary Control Policies for Gene Regulatory Network Intervention
Xiaoning Qian, University of South Florida; Edward Dougherty, Texas A&M University

TA8a1-11 Prediction of Cancer Subtypes Using Bayesian Factor Network Model
Jia Meng, University of Texas at San Antonio; Manuel Sánchez Castillo, University of Granada; Jianqiu Zhang, University of Texas at San Antonio; Isabel María Tienda Luna, University of Granada; Yufei Huang, University of Texas at San Antonio

TA8a1-12 Dynamical Processes on Networks: A Unified View
Garrett Jenkinson, John Goutsias, The Johns Hopkins University

TA8a1-13 A Brief Review of Signal Processing Issues in Mass Spectrometry-Based Proteomics Studies
Chao Yang, Weichuan Yu, Hong Kong University of Science and Technology

TA8a1-14 Fault Detection and Intervention in Biological Feedback Networks
Ritwik Layek, Aniruddha Datta, Texas A&M University

TA8a1-15 Fast Global Sequence Alignment Algorithm
Talal Bonny, Khaled Nabil Salama, King Abdullah University of Science and Technology

TA8a1-16 Optimal State Estimation for Boolean Dynamical Systems
Ulisses Braga-Neto, Texas A&M University

Session TA8a2 Receiver Design and Optimization

Chair: *Lara Dolecek, UCLA*

8:15 AM - 9:55 AM

TA8a2-1 Incorporating Prior Information into Semi-Definite Relaxation of Quadratic Optimization Problems
Jacob (Jake) Gunther, Todd Moon, Utah State University

TA8a2-2 Diversity of the MMSE Receiver in Flat Fading and Frequency Selective MIMO Channels at Fixed Rate
Florian Dupuy, Thales Communication / Université Paris Est; Philippe Loubaton, Université Paris Est

TA8a2-3 Predicting the Pruning Potential on the Sphere Decoding for Multiple-Input Multiple-Output Detection
Hwanchol Jang, Gwangju Institute of Science and Technology; Saeid Nooshabadi, Michigan Technological University; Heung-No Lee, Gwangju Institute of Science and Technology

TA8a2-4 Computationally Efficient Design of the MAE Equalizer for Binary Signaling
Weiwei Zhou, Jill Nelson, George Mason University; Ananya Sen Gupta, Woods Hole Oceanographic Institution

TA8a2-5 Broadband Doppler Compensation: Principles and New Results
Thomas Riedl, Andrew Singer, University of Illinois at Urbana-Champaign

TA8a2-6 Optimal Pilot Symbol Power Allocation in Multi-Cell Scenario in LTE
Michal Simko, Markus Rupp, Vienna University of Technology

TA8a2-7 Coherent Demodulation of AIS-GMSK Signals in Co-Channel Interference
Douglas Nelson, Joseph Hopkins, U.S. Department of Defense; Anthony Bartos, Welkin Associates, Ltd.

TA8a2-8 On the Stability of DSP Based PI Phase-Locked Loops Containing Matched Filter Delays
fredric harris, San Diego State University; Behrouz Farhang-Boroujeny, University of Utah

Session TA8a3 Communications System Design

Chair: *Marco Chiani, University Bologna*

8:15 AM - 9:55 AM

TA8a3-1 Spatially-Aware Adaptive Error Correcting Codes for Flash Memory
Ryan Gabrys, Lara Dolecek, University of California, Los Angeles

TA8a3-2 An SDR Architecture for OFDM Transmission over USRP2 Boards
Gilberto Berardinelli, Aalborg University; Per Zetterberg, KTH Royal Institute of Technology; Oscar Tonelli, Andrea F. Cattoni, Troels B. Sørensen, Preben Mogensen, Aalborg University

TA8a3-3 Environmental-Aware Heterogeneous Partial Feedback Design in a Multi-User OFDMA System
Yichao Huang, Bhaskar D. Rao, University of California, San Diego

TA8a3-4 Adaptive OFDM for Underwater Acoustic Channels with Limited Feedback
Andreja Radosevic, University of California, San Diego; Tolga Duman, Arizona State University; John Proakis, University of California, San Diego; Milica Stojanovic, Northeastern University

TA8a3-5 A 512-Point 8-Parallel Pipelined Feedforward FFT for WPAN
Tanvir Ahmed, Mario Garrido, Oscar Gustafsson, Linköping University

TA8a3-6 On the Convergence of Joint Channel and Mismatch Estimation for Time-Interleaved Data Converters
Sandeep Ponnuru, Upamanyu Madhow, University of California, Santa Barbara

TA8a3-7 Comparison of Energy- and Spectral-Efficient Design for LTE Downlink Systems
Liying Li, University of Electronic Science and Technology of China; Jiancun Fan, Xi'an Jiaotong University; Gang Wu, Hongbing Xu, University of Electronic Science and Technology of China; Geoffrey Ye Li, Georgia Institute of Technology

TA8a3-8 An Efficient Cascade of Half-Band Filters for Software Defined Radio Transmitters
fred harris, Xiaofei Chen, Elettra Venosa, San Diego State University

Session TA8a4 Applications of Array Processing

Chair: *Giuseppe Abreu, Oulu University, Finland*

8:15 AM - 9:55 AM

TA8a4-1 An SVD Approach for Data Compression in Emitter Location Systems
Mohammad Pourhomayoun, Mark Fowler, Binghamton University

TA8a4-2 Detection Properties of Some Sparse Representation Approaches
Jean Jacques Fuchs, Université de Rennes 1

TA8a4-3 Estimating Bridge Displacement from Acceleration Using Modal Analysis and the Minimum Description Length Principle
Viswanadh Kandula, Linda DeBrunner, Victor DeBrunner, Michelle Rambo-Rodenberry, Florida State University

TA8a4-4 Non-Uniform Sparse Array Design for Active Sensing
Ching-Chih Weng, P. P. Vaidyanathan, California Institute of Technology

TA8a4-5 MIMO Radar Target Measurements
Kyle Stewart, Mark Frankford, Joel Johnson, Emre Ertin, Ohio State University

TA8a4-6 Efficient Removal of Noise and Interference in Multichannel Quadrupole Resonance
Naveed Razzaq Butt, Andreas Jakobsson, Lund University

TA8a4-7 Time Reversal Bayesian Ultrasonic Array Imaging for Non-Destructive Testing
Foroohar Foroozan, Nasim Moallemi, Shahram ShahbazPanahi, University of Ontario Institute of Technology

TA8a4-8 Energy-Efficient MMSE Beamforming and Power Optimization in Multibeam Satellite Systems
Gan Zheng, Symeon Chatzinotas, Bjorn Ottersten, SnT, University of Luxembourg

TA8a4-9 Equidistributed Sampling Sequences for Spectral Analysis
Mustafa Al-Ani, Andrzej Tarczynski, University of Westminster

Session TA8b1 Multiple Antennas in Multi-User Systems and Networks

Chair: *Shuguang Cui, Texas A&M University*

10:15 AM - 12:00 PM

TA8b1-1 Low Complexity Spatial Multiuser Pairing in SC-FDMA Uplink
Jiancun Fan, Xi'an Jiaotong University; Geoffrey Ye Li, Georgia Institute of Technology; Qinye Yin, Xi'an Jiaotong University; Bingguang Peng, Xiaolong Zhu, Huawei Shanghai Research Institute

TA8b1-2 Maximum-Likelihood Decoding in Decode-and-Forward Based MIMO Cooperative Communication Systems
Manav Bhatnagar, Ankur Bansal, Indian Institute of Technology, Delhi; Are Hjørungnes, UNIK, University of Oslo; Zhu Han, University of Houston

TA8b1-3 Complex Interference Optimization for Power Loss Reduction in MIMO-THP Transmission
Christos Masouros, Mathini Sellathurai, Tharm Ratnarajah, Queen's University Belfast; Ying-Chang Liang, Institute for Infocomm Research

TA8b1-4 Channel Tracking for D-BLAST for Airborne Platforms
Kapil Borle, Biao Chen, Syracuse University; Michael Gans, Air Force Research Laboratory

TA8b1-5 Interference Alignment for Multiple-Antenna Amplify-and-Forward Relay Interference Channel
Kien T. Truong, Robert W. Heath, Jr., University of Texas at Austin

TA8b1-6 Null Space Interference Alignment in MIMO Cellular Networks
Taejoon Kim, David Love, Purdue University; Bruno Clerckx, Samsung Electronics

TA8b1-7 On Grouped OFDM-IDMA
Jian Dang, Southeast University; Liuqing Yang, Colorado State University; Zaichen Zhang, Southeast University

TA8b1-8 Coordinated Multi-Cell Beamforming for LTE-Advanced Systems
Qixing Wang, Guangyi Liu, China Mobile Research Institute; Shuguang Cui, Texas A&M University

TA8b1-9 Linear Transceiver Design for Interfering Broadcast Channel with QoS Constraints
Meisam Razaviyayn, Zhi-Quan Luo, University of Minnesota

TA8b1-10 Cooperative Feedback for MIMO Interference Channels
Kaibin Huang, Yonsei University; Rui Zhang, National University of Singapore

TA8b1-11 Eigen-Mode Transmission for Jointly Correlated MIMO Broadcast Channels
Xiao Li, Shi Jin, Xiqi Gao, Southeast University

TA8b1-12 How Many Degrees of Freedom Can Be Achieved for Mutually Interfering MIMO Broadcast Channels?
Hyukjin Chae, Sungyoon Cho, Kaibin Huang, Dongku Kim, Yonsei University

TA8b1-13 Distributed Beamforming Based Directional Spectrum Sharing
Juan Liu, Wei Chen, Zhigang Cao, Tsinghua University; Ying Jun Zhang, Chinese University of Hong Kong

TA8b1-14 Spatially Efficient Distributed Relay Selection for Random Relay Networks
Sungrae Cho, Wan Choi, Korea Advanced Institute of Science and Technology; Kaibin Huang, Yonsei University

TA8b1-15 Channel State Information Feedback Control for Interference Alignment
Lingyang Song, Peking University; Zhu Han, University of Houston; Shaohui Sun, Datang Mobile; Bingli Jiao, Peking University

TA8b1-16 Self-Optimized MIMO-OFDMA: A Nash-Stackelberg Game-Theoretic Approach
Jie Ren, Jianjun Hou, Beijing Jiaotong University; Kai-Kit Wong, University College London

Session TA8b2 Cooperative and Cognitive Transmission in Multi-Antenna Systems

Chair: *Daniel Bliss, MIT Lincoln Laboratory*

10:15 AM - 12:00 PM

TA8b2-1 Cooperative Rate Maximization Based on Base Station Exchange of Powers
Samer Bazzi, Guido Dietl, DoCoMo Communications Laboratories Europe GmbH

TA8b2-2 Half-Duplex Gaussian Diamond Relay Channel with Interference Known at One Relay
Kagan Bakanoglu, Elza Erkip, Polytechnic Institute of New York University; Osvaldo Simeone, New Jersey Institute of Technology

TA8b2-3 Interference Management in Femtocell Networks with Hybrid-ARQ and Interference Cancellation
Tania Villa, Eurecom; Ruben Merz, Deutsche Telekom Laboratories; Raymond Knopp, Eurecom

TA8b2-4 Achievable Degrees of Freedom of the K-User Interference Channel with Partial Cooperation
Ahmed Naguib, Khaled Elsayed, Cairo University; Mohammed Nafie, Nile University

TA8b2-5 Multicell Downlink Weighted Sum-Rate Maximization: A Distributed Approach
Pradeep Chathuranga Weeraddana, Marian Codreanu, Matti Latva-aho, Centre for Wireless Communications

TA8b2-6 Decentralized Multi-Cell Beamforming Coordination for Multiuser MISO Systems
Harri Pennanen, Antti Tölli, Matti Latva-aho, University of Oulu

TA8b2-7 Feedback Reduction by Thresholding in Multi-User Broadcast Channels: Design and Limits
Matthew Pugh, Bhaskar D. Rao, University of California, San Diego

TA8b2-8 Full-Duplex Bidirectional MIMO: Achievable Rates under Limited Dynamic Range
Brian Day, Ohio State University; Daniel Bliss, Adam Margetts, MIT Lincoln Laboratory; Philip Schniter, Ohio State University

Session TA8b3 Adaptive Sensing

Chair: *Jarvis Haupt, University of Minnesota*

10:15 AM - 12:00 PM

TA8b3-1 Adaptive Search for Sparse Moving Targets under Resource Constraints
Gregory Newstadt, Eran Bashan, Alfred O. Hero, University of Michigan

TA8b3-2 Adaptive Signal Recovery in Noisy Environments
Mark Iwen, Duke University; Ahmed Tewfik, University of Texas at Austin

TA8b3-3 On the Limits of Sequential Testing in High Dimensions
Matthew Malloy, Robert Nowak, University of Wisconsin

TA8b3-4 Active Learning for Adaptive Life-Long Learning
Lawrence Carin, Duke University; Hui Li, Signal Innovations Group

TA8b3-5 Efficient Adaptive Compressive Sensing Using Sparse Hierarchical Learned Dictionaries
Akshay Soni, Jarvis Haupt, University of Minnesota

TA8b3-6 Information-Optimal Adaptive Compressive Imaging
Amit Ashok, Mark Neifeld, University of Arizona

TA8b3-7 On Primary Side Information in Cognitive Radio Networks
May Moussa, Mohammed Nafie, Nile University; Hesham ElGamal, Ohio State; Ayman Naguib, Qualcomm Incorporated

TA8b3-8 Further Results on Adaptive Sequential Detection with One-Sided Stopping and Deadline
Wenyi Zhang, University of Science and Technology of China; Ahmed Sadek, Stephen Shellhammer, Cong Shen, Qualcomm Incorporated

Session TP1a Resource Allocation in Multi-Antenna Systems

Chair: *Neelesh Mehta, Indian Institute of Science*

TP1a-1 Optimal Power Allocation for Multi-User Transmit Beamforming via Regularized Channel Inversion 1:30 PM
Rusdha Muharar, Jamie Evans, University of Melbourne

TP1a-2 Capacity Density Optimization by Fractional Frequency Partitioning 1:55 PM
Martin Taranetz, Josep Colom Ikuno, Markus Rupp, Vienna University of Technology

TP1a-3 Resource Allocation in MIMO Multi-Cellular Networks via Submodular Optimization 2:20 PM
Narayan Prasad, Honghai Zhang, NEC Laboratories America, Inc.; Luca Venturino, University of Cassino; Jubin Jose, University of Texas at Austin; Sampath Rangarajan, NEC Laboratories America, Inc.

TP1a-4 Transmit Power Optimization for Multi-Antenna Decode-and-Forward Relays with Loopback Self-Interference from Full-Duplex Operation 2:45 PM
Taneli Riihonen, Stefan Werner, Risto Wichman, Aalto University

Session TP1b Interference Management

Chair: *Aydin Sezgin, University of Ulm*

TP1b-1 Degrees of Freedom of Multiple Unicasts over Multihop Wireless Networks 3:30 PM
Syed Jafar, University of California, Irvine

TP1b-2 Optimized Data Symbol Sharing in Multiple-Antenna Interference Channel 3:55 PM
Maha Odeh, Paul De Kerret, David Gesbert, Eurecom

TP1b-3 On Interference Channels with more than Two Source-Destination Pairs 4:20 PM
Daniela Tuninetti, University of Illinois, Chicago

TP1b-4 Training and Feedback Optimization For MIMO Interference Alignment in Continuous Fading Channels 4:45 PM
Omar El Ayach, Angel Lozano, Universitat Pompeu Fabra; Robert W. Heath, Jr., University of Texas at Austin

TP1b-5 Making Optimal Use of the Asymmetric Interference Channel 5:10 PM
Rachel Learned, MIT Lincoln Laboratory

Session TP2a Cognitive Radio I

Chair: *Gesualdo Scutari, University at Buffalo*

TP2a-1 Joint Link Learning and Cognitive Radio Network Sensing 1:30 PM
Seung-Jun Kim, Georgios Giannakis, University of Minnesota

TP2a-2 Spectrum Sensing via Event-Triggered Sampling 1:55 PM
Yasin Yilmaz, Xiaodong Wang, Columbia University

TP2a-3 Proactive Resource Allocation in Cognitive Networks 2:20 PM
John Tadrous, Atilla Eryilmaz, Hesham El-Gamal, Ohio State University

TP2a-4 Correlated Equilibrium Learning Algorithms for Dynamic Spectrum Access 2:45 PM
Omid Namvar Gharehshiran, Vikram Krishnamurthy, University of British Columbia

Session TP2b Cognitive Radio II

Chair: *Gesualdo Scutari, University at Buffalo*

TP2b-1 Extreme Eigenvalue Distributions of Finite Random Wishart Matrices with Application to Spectrum Sensing 3:30 PM
Giuseppe Abreu, University of Oulu; Wensheng Zhang, Mamiko Inamori, Yukitoshi Sanada, Keio University

TP2b-2 Autocorrelation-Based Multi-Antenna Spectrum Sensing in Colored Noise 3:55 PM
Jitendra Tugnait, Auburn University

TP2b-3 Decentralized Cognition via Randomized Masking 4:20 PM
Kamyar Moshksar, Amir Khandani, University of Waterloo

TP2b-4 Spectrum Leasing via Cooperative Opportunistic Routing in Distributed Ad Hoc Networks: Optimal and Heuristic Policies 4:45 PM
Cristiano Tapparello, Davide Chiarotto, Michele Rossi, University of Padova; Osvaldo Simeone, New Jersey Institute of Technology; Michele Zorzi, University of Padova

TP2b-5 A Message-Passing Algorithm for Spectrum Access in Cognitive Radio Relay Networks 5:10 PM
Sang Hyun Lee, Manohar Shamaiah, Sriram Vishwanath, Haris Vikalo, University of Texas at Austin

Session TP3a Multi-dimensional Compressive Inference

Chair: *Phil Schniter, The Ohio State University*

TP3a-1 Real-Time Principal Component Pursuit 1:30 PM
Graeme Pope, Manuel Baumann, ETH Zurich; Christoph Studer, Rice University; Giuseppe Durisi, Chalmers University of Technology

TP3a-2 Low Rank Variational Tensor Recovery for Multi-Linear Inverse Problems 1:55 PM
Hatim Alqadah, Howard Fan, University of Cincinnati

TP3a-3 Optimized Measurements for Kernel Compressive Sensing 2:20 PM
Karthikeyan Natesan Ramamurthy, Andreas Spanias, Arizona State University

TP3a-4 Efficient Message Passing-Based Inference in the Multiple Measurement Vector Problem 2:45 PM
Justin Ziniel, Philip Schniter, Ohio State University

Session TP3b Advances in Adaptive and Distributed Filtering

Chair: *Vitor Nascimento, University of Sao Paulo*

TP3b-1 Continuous-Time Distributed Estimation 3:30 PM
Vitor Nascimento, University of Sao Paulo; Ali Sayed, University of California, Los Angeles

TP3b-2 Sequential Likelihood Consensus and Application to Distributed Particle Filtering with Reduced Communications and Latency 3:55 PM
Ondrej Sluciak, Ondrej Hlinka, Markus Rupp, Franz Hlawatsch, Vienna University of Technology; Petar Djuric, Stony Brook University

TP3b-3 A Unifying Framework for the Analysis of Quaternion-Valued Adaptive Filters 4:20 PM
Clive Cheong Took, Cyrus Jahanchahi, Danilo Mandic, Imperial College London

TP3b-4 Joint Conditional and Steady-State Probability Densities of Weight Deviations for Proportionate-Type LMS Algorithms 4:45 PM
Kevin Wagner, Naval Research Laboratory; Miloš Doroslovacki, George Washington University

TP3b-5 Fast and Superfast Computations in Structured Equalization Scenarios 5:10 PM
Ricardo Merched, Universidade Federal do Rio de Janeiro

Session TP4a Communication Management in Robot Networks

Chair: *Michael Zavlanos, Stevens Institute of Technology*

TP4a-1 Co-Optimization of Communication and Motion Planning of a Robotic Operation in Fading Environments 1:30 PM
Yuan Yan, Yasamin Mostofi, University of New Mexico

TP4a-2 A Framework for Integrating Mobility and Routing in Mobile Communication Networks 1:55 PM
Michael M. Zavlanos, Stevens Institute of Technology; Alejandro Ribeiro, George J. Pappas, University of Pennsylvania

TP4a-3 Multi-Robot Path Following with Visual Connectivity 2:20 PM
Magnus Lindhé, Royal Institute of Technology; Tamas Keviczky, Delft University of Technology; Karl Henrik Johansson, Royal Institute of Technology

TP4a-4 Communication Network Challenges for Collaborative Vehicles 2:45 PM
Pedram Hovareshti, Chen Hua, John Baras, University of Maryland

Session TP4b Distributed Storage Systems

Chair: *Alex Dimakis, University of Southern California*

TP4b-1 Codes for Robust Scalable Distributed Video-on-Demand Systems 3:30 PM
Sameer Pawar, Salim El Rouayheb, Hao Zhang, University of California, Berkeley; Parimal Parag, Texas A&M University; Kannan Ramchandran, University of California, Berkeley

TP4b-2 Error Coding for Long-Term Archival Storage Systems 3:55 PM
Ethan Miller, Ian Adams, Jingpei Yang, Daniel Rosenthal, Darrell Long, University of California, Santa Cruz

TP4b-3 Theoretical Problems in Fault-Tolerant Distributed Storage 4:20 PM
James Plank, University of Tennessee

TP4b-4 Survey of Non-MDS Erasure Codes for Distributed Storage Systems 4:45 PM
Jay Wylie, Hewlett-Packard Labs

Session TP5 Compressive Sensing for Radar

Chair: *Rabinder Madan, U.S. Office of Naval Research*

TP5-1 Compressive Sensing: Snake Oil or Good Idea? 1:30 PM
Fred Daum, Raytheon

TP5-2 Compressive Sensing for Synthetic Aperture Radar in Fast-Time and Slow-Time Domains 1:55 PM
Qilian Liang, University of Texas at Arlington

TP5-3 Comparison of MMOSPA and Compressed Sensing for Radar Array Processing 2:20 PM
David Crouse, Peter Willett, University of Connecticut; Lennart Svensson, Chalmers University; Yaakov Bar-Shalom, University of Connecticut

TP5-4 Support Recovery in Compressive Sensing for Estimation of Direction-of-Arrival 2:45 PM
Zhiyuan Weng, Xin Wang, Stony Brook University

BREAK 3:10 PM

TP5-5 Explore Group Sparsity for Compressive Sensing Based MIMO Radar 3:30 PM
Yao Yu, Athina Petropulu, Junzhou Huang, Rutgers University

TP5-6 On the Role of Waveform Diversity in MIMO Radar 3:55 PM
Benjamin Friedlander, University of California, Santa Cruz

TP5-7 Non-Coherent Compressive Sensing for MIMO Radar with Widely Separated Antennas 4:20 PM
Christian Berger, Jose' Moura, Carnegie Mellon University

TP5-8 Global Methods for Compressive Sensing in MIMO Radar with Distributed Sensors 4:45 PM
Marco Rossi, Alexander M. Haimovich, New Jersey Institute of Technology; Yonina C. Eldar, Technion-Israel Institute of Technology

Session TP6a Source Localization

Chair: *Muralidhar Rangaswamy, Purdue University*

TP6a-1 Robust Time-Based Localization for Asynchronous Networks with Clock Offsets 1:30 PM
Yiyin Wang, Delft University of Technology; Xiaoli Ma, Georgia Institute of Technology; Geert Leus, Delft University of Technology

TP6a-2 Conditioned MDS with Heterogeneous Information 1:55 PM
Davide Macagnano, Giuseppe Abreu, University of Oulu

TP6a-3 Cooperative Multihop Localization with Privacy 2:20 PM
Golaleh Rahmatollahi, Leibniz University Hannover; Giuseppe Abreu, University of Oulu; Stefano Severi, University of Bologna

TP6a-4 Design and Performance of an Integrated Waveform-agile Multi-Modal Track-before-Detect Sensing System 2:45 PM
Jun Zhang, Arizona State University; Surendra Bhat, Pennsylvania State University; Quan Ding, University of Rhode Island; Antonia Papandreou-Suppappola, Arizona State University; Ram Narayanan, Pennsylvania State University; Steven Kay, University of Rhode Island; Muralidhar Rangaswamy, Air Force Research Laboratory

Session TP6b Array Processing for Satellite Communications

Chair: *Michael Joham, Technical University Munich*

TP6b-1 On the Capacity of Multi-Beam Joint Decoding over Composite Satellite Channels 3:30 PM
Dimitrios Christopoulos, Symeon Chatzinotas, University of Luxembourg; Michail Matthaiou, Chalmers University of Technology; Björn Ottersten, University of Luxembourg

TP6b-2 User Scheduling for Large Multi-Beam Satellite MIMO Systems 3:55 PM
Matteo Berioli, Vincent Boussemart, Francesco Rossetto, German Aerospace Center (DLR)

TP6b-3 Multi-User Interference Mitigation Techniques for Broadband Multi-Beam Satellite Systems 4:20 PM
Ilaria Thibault, Francesco Lombardo, Enzo A. Candreva, Alessandro Vanelli-Coralli, Giovanni E. Corazza, University of Bologna

TP6b-4 Advanced Interference Mitigation Techniques for the Forward Link of Multi-Beam Broadband Satellite Systems 4:45 PM
Bertrand Devillers, Centre Tecnològic de Telecomunicacions de Catalunya (CTTC); Ana Pérez-Neira, Universitat Politècnica de Catalunya

TP6b-5 Performance Evaluation of a Satellite Diversity System Employing Compact MIMO-Octahedron Antenna 5:10 PM
Tommy Tommy, Lund University; Abbas Mohammed, Blekinge Institute of Technology

Session TP7a Adaptive and Evolvable Architectures

Chair: *Andy Tyrrell, University of York, UK*

TP7a-1 A Programmable Analog and Digital Array for Bio-Inspired Electronic Design Optimization at Nano-Scale Silicon Technology Nodes 1:30 PM
Martin Trefzer, James Walker, Andy Tyrrell, University of York

TP7a-2 Evolved Defect Tolerant Structures for FPGA Architectures 1:55 PM
Pauline Haddow, Norwegian University of Science and Technology

TP7a-3 Improved Learning in an Evolvable Oscillator for In-Flight Controller Adaptation in a Flapping-Wing Micro Air Vehicle 2:20 PM
Gallagher John, Wright State University; Michael Oppenheimer, Air Force Research Laboratory

TP7a-4 Using Discrete Fourier Transforms to Detect Operational Environments for Autonomous Non-Linear Systems 2:45 PM
Garrison Greenwood, Portland State University

Session TP7b Computer Arithmetic II

Chair: *Neil Burgess, ARM, Inc. USA*

TP7b-1 The Fully-Serial Pipelined Multiplier 3:30 PM
Andrew Shafer, Advanced Micro Devices; Lyndsi Parker, IBM; Earl Swartzlander, University of Texas at Austin

TP7b-2 Special-Purpose Crypto Hardware Accelerators for 45nm High-Performance Microprocessors 3:55 PM
Sanu Mathew, Ram Krishnamurthy, Intel Corporation

TP7b-3 Energy-Efficient Floating-Point Arithmetic for Low-Power Digital Signal Processors 4:20 PM
Syed Z. Gilani, Nam Sung Kim, University of Wisconsin-Madison; Michael J. Schulte, Advanced Micro Devices

TP7b-4 Testing Fused Multiply Add Implementations 4:45 PM
David Lutz, Neil Burgess, Sabrina Romero, ARM

TP7b-5 Shared Implementation of Radix-10 and Radix-16 Division Algorithm with Limited Precision Primitives 5:10 PM
Milos D. Ercegovac, University of California, Los Angeles; Robert McIlhenny, California State University, Northridge

Session TP8a1 Techniques for Space-Time Signal Processing

Chair: *Kaibin Huang, Yonsei University, S. Korea*

1:30 PM - 3:10 PM

TP8a1-1 Equivalent Codes and Optimality of Orthogonal Space-Time Block Codes
Alex Geyer, Sergiy Vorobyov, Norman Beaulieu, University of Alberta

TP8a1-2 On Quasi-Orthogonal Space-Time Block Codes for Dual-Polarized MIMO Channels
Yabo Li, Zhike Huang, Zhejiang University; Xiang-Gen Xia, University of Delaware

TP8a1-3 Sparse Space-Time Equalization with L1 Norm
Laura Slivinski, Brown University; Adam Margetts, Daniel Bliss, Massachusetts Institute of Technology

TP8a1-4 Weighted Sum-Rate Maximization for MISO Downlink Cellular Networks via Branch and Bound
Satya Joshi, Pradeep Chathuranga Weeraddana, Marian Codreanu, Matti Latva-aho, Centre for Wireless Communications

TP8a1-5 Low Complexity Generalized Geometric Mean Decomposition and DFE Transceiver Design
Chih-Hao Liu, P. P. Vaidyanathan, California Institute of Technology

TP8a1-6 Worst-Case Robust Multiuser Transmit Beamforming Using Semidefinite Relaxation: Duality and Implications
Tsung-Hui Chang, National Tsing Hua University; Wing-Kin Ma, Chinese University of Hong Kong; Chong-Yung Chi, National Tsing Hua University

TP8a1-7 Transmitter Optimization for MIMO Systems with Mutual Coupling at High SNR
Peng Li, Hong Kong University of Science and Technology; Liang Sun, Alcatel-Lucent Shanghai Bell; Matthew McKay, Ross Murch, Hong Kong University of Science and Technology

TP8a1-8 Robust Joint Optimization of Non-Regenerative MIMO Relay Channels with Imperfect CSI
Ebrahim A. Gharavol, Erik G. Larsson, Linköping University

Session TP8a2 Statistical and Array Signal Processing for Biomedical Applications

Chair: *Monica Bugallo, University of Stony Brook*

1:30 PM - 3:10 PM

TP8a2-1 ECG De-Noising Using a Dynamical Model and a Marginalized Particle Filter
Chao Lin, TéSA Laboratory; Monica Bugallo, Stony Brook University; Corinne Mailhes, Jean-Yves Tourneret, University of Toulouse

TP8a2-2 Beta Dirichlet Process Mixture Model Based Clustering of DNA Methylation Array Data
Jia Meng, Yufei Huang, University of Texas at San Antonio; Lin Zhang, China University of Mining and Technology

TP8a2-3 Neonatal Seizure Detection Using Multi-Channel Blind Information Fusion
Huaying Li, Aleksandar Jeremic, McMaster Univeristy; Kenneth Tan, University of Melbourne

TP8a2-4 A Novel Approach to Automated Fetal Heart Rate Analysis
Shishir Dash, Petar Djuric, Stony Brook University

TP8a2-5 Joint Waveform and Firing Rate Spike-Sorting for Continuous Extracellular Traces
Brett Matthews, Mark Clements, Georgia Institute of Technology

TP8a2-6 Statistical Design of Position-Encoded Microsphere Arrays at Low Target Concentrations
Xiaoxiao Xu, Washington University in St. Louis; Pinaki Sarder, Washington University School of Medicine in St. Louis; Arye Nehorai, Washington University in St. Louis

TP8a2-7 Biosensor Arrays for Collaborative Detection of Analytes
Maryam Abolfath-Beygi, Vikram Krishnamurthy, University of British Columbia

TP8a2-8 Developing Movement Direction Decoders from Local Field Potentials
Vijay Aditya Tadipatri, Ahmed H. Tewfik, University of Texas at Austin; James Ashe, Guiseppe Pellizzer, VA Medical Center, Minneapolis

Session TP8a3 Sensor Networks

Chair: *Soumya Kar, Carnegie Mellon University*

1:30 PM - 3:10 PM

TP8a3-1 Dual Trust Secure Protocol for Cluster-Based Wireless Sensor Networks
Yang Li, Melody Moh, San Jose State University

TP8a3-2 User Clustering and Energy Efficient Cooperation in Cellular Networks
Jinhong Wu, George Washington University; Harry (Zhibing) Chen, Yong Liu, Liyu Cai, Alcatel-Lucent Shanghai Bell

TP8a3-3 Optimization of Exponential Error Rates for a Suboptimum Fusion Rule in Wireless Sensor Networks
John Gubner, University of Wisconsin-Madison; Louis Scharf, Edwin Chong, Colorado State University

TP8a3-4 Collaborative Estimation in Dispersive Environments: A Frequency Domain Approach
Sriram Venkateswaran, Upamanyu Madhow, University of California, Santa Barbara

TP8a3-5 Distributed Support Vector Machines in Sensor-Actuator Networks
Joseph Lee, University of California, Los Angeles

TP8a3-6 Step-Size Sequence Design for Finite-Time Distributed Average Consensus
Alain Kibangou, University Joseph Fourier/CNRS

TP8a3-7 Target Localization in Sensor Networks with Quantized Data in the Presence of Byzantine Attacks
Keshav Agrawal, Aditya Vempaty, Indian Institute of Technology, Kanpur; Hao Chen, Boise State University; Pramod Varshney, Syracuse University

TP8a3-8 Uniformly Most Powerful Distributed Detection and its Application in Cooperative Spectrum Sensing
Hao Chen, Uri Rogers, Boise State University

Session TP8a4 Wireless Networks

Chair: *Vivek Cadambe, University of California, Irvine*

1:30 PM - 3:10 PM

TP8a4-1 Dynamic Pricing under Binary Demand Uncertainty: A Multi-Armed Bandit with Correlated Arms
Yixuan Zhai, Qing Zhao, University of California, Davis

TP8a4-2 Optimal Routing with Mutual Information Accumulation in Wireless Networks
Rahul Urgaonkar, Michael Neely, University of Southern California

TP8a4-3 Optimal Scheduling of Real-Time Messages in Peer-to-Peer Wireless Networks
Juan Jose Jaramillo, Shihuan Liu, Lei Ying, Iowa State University

TP8a4-4 State-Based Single Channel Selection in Multi-Channel Wireless Networks
Brian Phillips, Murali Tummala, John McEachen, Naval Postgraduate School

TP8a4-5 Robust Joint Transceiver Beamforming for Cognitive Radio Network
Huiqin Du, Tharm Ratnarajah, Queen's University Belfast; C. B. Papadias, Athens Information Technology

TP8a4-6 Probabilistic Power Control for Heterogeneous Cellular Networks with Closed-Access Femtocells
Ralf Bendlin, Yih-Fang Huang, University of Notre Dame; Josef A. Nossek, Munich University of Technology

TP8a4-7 Pricing and Bandwidth Allocation Problems in Wireless Multi-Tier Networks
Camila Maria Gabriel Gussen, Universidade Federal do Rio de Janeiro; Elena Veronica Belmega, Mérouane Debbah, Supélec

TP8a4-8 Joint Power and Rate Control for Coded Wireless Packet Networks
Ketan Rajawat, Nikolaos Gatsis, Emiliano Dall'Anese, Georgios Giannakis, University of Minnesota

Session TP8b1 Machine-Learning-Based Statistical Signal Processing

Chair: *Phil Schniter, The Ohio State University*

3:30 PM - 5:10 PM

TP8b1-1 Shrinkage Fisher Information Embedding of High Dimensional Feature Distributions
Xu Chen, Yilun Chen, Alfred Hero, University of Michigan

TP8b1-2 Adaptive Learning of Immunosignaturing Peptide Array Features for Biothreat Detection and Classification
Jun Zhang, Bhavana Chakraborty, Anna Malin, Antonia Papandreou-Suppappola, Stephen Johnston, Phillip Stafford, Arizona State University

TP8b1-3 Sparse Classification of RF Transients Using Chirplets and Learned Dictionaries
Daniela Moody, Steven Brumby, Kary Myers, Norma Pawley, Los Alamos National Laboratory

TP8b1-4 Exploiting Random Matrix Theory to Improve Subspace-Based Classification
Nicholas Asendorf, Raj Rao Nadakuditi, University of Michigan

TP8b1-5 Non-Linear Unmixing of Hyperspectral Images with Kernels
Jie Chen, Université de Technologie de Troyes; Cédric Richard, Université de Nice Sophia-Antipolis; Paul Honeine, Université de Technologie de Troyes

TP8b1-6 Modulation Classification of MIMO-OFDM Signals by Independent Component Analysis and Support Vector Machines
Handan Agirman-Tosun, A.M. Haimovich, Osvaldo Simeone, New Jersey Institute of Technology; Wei Su, U.S. Army CERDEC Aberdeen Proving Ground; Jason Dabin, U.S. Navy SPAWAR SCP; Emmanuel Kanterakis, CACI International

TP8b1-7 A Measure of Difference between Discrete Sample Sets
Debejyo Chakraborty, General Motors Company; Narayan Kovvali, Arizona State University

TP8b1-8 On l1 Mean and Variance Filtering
Bo Wahlberg, Cristian R. Rojas, Mariette Annergren, KTH Royal Institute of Technology

Session TP8b2 Network Information Theory

Chair: *Daniela Tuninetti, University of Illinois at Chicago*

3:30 PM - 5:10 PM

TP8b2-1 Information-Theoretic Limits of Dense Underwater Networks
Won-Yong Shin, Harvard University; Daniel Lucani, Universidade do Porto; Muriel Medard, Massachusetts Institute of Technology; Milica Stojanovic, Northeastern University; Vahid Tarokh, Harvard University

TP8b2-2 A Two-Way Secrecy Scheme for the Scalar Broadcast Channel with Internal Eavesdroppers
Chee Yen Leow, Imperial College London; Dennis L. Goeckel, University of Massachusetts; Kin K. Leung, Imperial College London

TP8b2-3 Relaying for Multiple Sources in the Absence of Codebook Information
Ye Tian, Aylin Yener, Pennsylvania State University

TP8b2-4 Compound Codes for Optimal Repair in MDS Code Based Distributed Storage Systems
Viveck Cadambe, University of California, Irvine; Cheng Huang, Microsoft Research; Jin Li, Sanjeev Mehrotra, Microsoft Research Redmond

TP8b2-5 Effects of Range Expansion and Interference Coordination on Capacity and Fairness in Heterogeneous Networks
Sayandev Mukherjee, Ismail Guvenc, DoCoMo USA Labs

TP8b2-6 An Extended Etkin-Type Outer Bound on the Capacity of the Gaussian Interference Channel
Anas Chaaban, Aydin Sezgin, University of Ulm

TP8b2-7 Communication Strategies to Ensure Generic Networked Observability in Multi-Agent Systems
Mohammadreza Doostmohammadian, Usman Khan, Tufts University

TP8b2-8 Error Probability Bounds for Binary Relay Trees with Unreliable Communications
Zhenliang Zhang, Ali Pezeshki, Colorado State University; William Moran, University of Melbourne; Stephen Howard, Defence Science and Technology Organization; Edwin Chong, Colorado State University

Session WA1a Channel Estimation for Multi-Antenna Systems

Chair: *Mérouane Debbah, SUPELEC, France*

WA1a-1 Close-Range Outdoor Wireless Channel Sounding 8:15 AM
Scott E. Johnston, Paul D. Fiore, MIT Lincoln Laboratory

WA1a-2 Channel Aging Effects in CoMP Transmission: Gains from Linear Channel Prediction 8:40 AM
Lars Thiele, Bho Matthiesen, Michael Olbrich, Konstantinos Manolakis, Slawomir Stanczak, Fraunhofer Heinrich Hertz Institute

WA1a-3 A Modified Compressed Sampling Matching Pursuit Algorithm on Redundant Dictionary and Its Application to Sparse Channel Estimation on OFDM 9:05 AM
Chulong Chen, Michael Zoltowski, Purdue University

WA1a-4 Asymptotic Analysis of Double-Scattering Channels 9:30 AM
Jakob Hoydis, Romain Couillet, Merouane Debbah, Supélec

Session WA1b MIMO Radar and SAR

Chair: *Benjamin Friedlander, University of California, Santa Cruz*

WA1b-1 On Spatial Processing in MIMO Radar 10:15 AM
Benjamin Friedlander, University of California, Santa Cruz

WA1b-2 Subspace Fitting Based Autofocus for Stripmap SAR 10:40 AM
Roger West, Jacob (Jake) Gunther, Todd Moon, Utah State University

WA1b-3 Doppler Estimation and Compensation in MIMO Radar with Unitary Waveform Scheduling 11:05 AM
Tariq Qureshi, Michael Zoltowski, Purdue University; Robert Calderbank, Duke University

WA1b-4 On the Use of Fractional Autocorrelation to Correct Mismatches for Chirp Scale Focusing for Real SAR Image Formation 11:30 AM
Judith Northrop, Antonia Papandreou-Suppappola, Arizona State University

Session WA2a OFDM

Chair: *Antonia Maria Tulino, Bell-Labs*

WA2a-1 Low Complexity EM-Based Decoding for OFDM Systems with Impulsive Noise 8:15 AM
Marcel Nassar, Brian Evans, University of Texas at Austin

WA2a-2 Accurate Characterization and Compensation of Phase Noise in OFDM Receiver 8:40 AM
Pramod Mathecken, Taneli Riihonen, Stefan Werner, Risto Wichman, Aalto University

WA2a-3 Linear Programming for Tone Reservation based IM/DD Optical OFDM Communications 9:05 AM
Liang Chen, NICTA Victoria Research Laboratory; Yusheng Ji, National Institute of Informatics; Brian Krongold, Jamie Evans, NICTA Victoria Research Laboratory

WA2a-4 Analytical Link Performance Evaluation of LTE Downlink with Carrier Frequency Offset 9:30 AM
Qi Wang, Markus Rupp, Vienna University of Technology

Session WA2b Beamforming

Chair: *Michael Joham, Technical University Munich*

WA2b-1 Design of Beamforming in the Satellite Downlink with Static and Mobile Users 10:15 AM
Andreas Gründinger, Michael Joham, Wolfgang Utschick, Technische Universität München

WA2b-2 Array and Beamformer Design for Optimal Directivity 10:40 AM
Jean Jacques Fuchs, Université de Rennes 1

WA2b-3 Coordinating Complementary Waveforms for Sidelobe Suppression 11:05 AM
Wenbing Dang, Ali Pezeshki, Colorado State University; Stephen Howard, Defence Science and Technology Organisation; William Moran, University of Melbourne; Robert Calderbank, Duke University

WA2b-4 Robust Transmit Nulling in Phased Array Antennas 11:30 AM
Peter Vouras, Jean DeGraaf, Naval Research Laboratory

Session WA3a Information Theoretic Signal Processing

Chair: *John Walsh, Drexel University*

WA3a-1 Modeling Noisy Feedback in Decentralized Self-Configuring Networks 8:15 AM
Samir Medina Perlaza, Merouane Debbah, Supélec

WA3a-2 Local Failure Localization in Large Sensor Networks 8:40 AM
Romain Couillet, Supélec; Walid Hachem, CNRS-Telecom ParisTech

WA3a-3 Cooperative Radar Techniques: The Two-Step Detector 9:05 AM
Max Scharrenbroich, Michael Zatman, QinetiQ North America

WA3a-4 Studying on Performance Behavior of the Compressive Sensing Measurements for Multiple Sensor System 9:30 AM
Sangjun Park, Hwanchol Jang, Heung-No Lee, Gwangju Institute of Science and Technology

Session WA3b Compressive Imaging and Detection

Chair: *Aleksandar Dogandzic, Iowa State University*

WA3b-1 Multi-Static Radar Imaging via Bayesian Shrinkage 10:15 AM
Raghu Raj, U.S. Naval Research Laboratory; Zachary Chance, David Love, Purdue University

WA3b-2 A Mask Iterative Hard Thresholding Algorithm for Sparse Image Reconstruction with Known Object Contour 10:40 AM
Aleksandar Dogandzic, Kun Qiu, Iowa State University

WA3b-3 Sensor Calibration Errors in Compressive Distributed-Aperture Radar Sensing 11:05 AM
Peter Tuuk, Amy Sharma, Georgia Tech Research Institute

WA3b-4 Application of Compressive Sampling and Detection to Spectral Target Signatures 11:30 AM
Lawrence E. Hoff, Hoff Engineering; David Buck, Brian T. Williams, SPAWAR System Center; Edward M. Winter, Technical Research Associates; Miaoli Yu, SAIC

Session WA4a Cooperation & Relays

Chair: *Emiliano Dall'Anese, University of Minnesota*

WA4a-1 The Gaussian Two-Way Relay Channel with Wiretapper 8:15 AM
Sungsoo Kim, Samsung Electronics; Won-Yong Shin, Harvard University

WA4a-2 On-Demand Cooperation with Power Control: Protocol and Experimental Results 8:40 AM
Christopher Hunter, Myuran Kanga, Lin Zhong, Ashutosh Sabharwal, Rice University

WA4a-3 A Practical Physical-Layer Network Coding Scheme for the Uplink of the Two-Way Relay Channel 9:05 AM
Stephan Pfletschinger, Centre Tecnològic de Telecomunicacions de Catalunya (CTTC)

WA4a-4 Empowering Full-Duplex Communication by Exploiting Directional Diversity 9:30 AM
Evan Everett, Melissa Duarte, Rice University; Chris Dick, Xilinx, Inc.; Ashutosh Sabharwal, Rice University

Session WA4b Multiuser Information Theory

Chair: *Aylin Yener, Pennsylvania State University*

WA4b-1 Intrinsic Multicast Region of Broadcast Channel 10:15 AM
Mohammad (Amir) Khojastepour, NEC Laboratories America, Inc; Alireza Keshavarz-haddad, Shiraz University

WA4b-2 On the Gaussian Z-Interference Channel with Processing Energy Cost 10:40 AM
Xi Liu, Elza Erkip, Polytechnic Institute of New York University

WA4b-3 On the Sum Capacity of the Y-Channel 11:05 AM
Anas Chaaban, Aydin Sezgin, University of Ulm; Amir Salman Avestimehr, Cornell University

WA4b-4 Interference Channels with Source Cooperation in the Strong Cooperation Regime: Symmetric Capacity to within 2 bits/s/Hz with Dirty Paper Coding 11:30 AM
Shuang (Echo) Yang, Daniela Tuninetti, University of Illinois, Chicago

Session WA5a Signal Theory and Image Representation

Chair: *P. P. Vaidyanathan, California Institute of Technology*

WA5a-1 Theory and Design of Unequal Order Analysis and Synthesis Filterbanks 8:15 AM
Asha Vijayakumar, Anamitra Makur, Nanyang Technological University

WA5a-2 Learning Dictionaries for Local Sparse Coding in Image Classification 8:40 AM
Jayaraman J. Thiagarajan, Andreas Spanias, Arizona State University

WA5a-3 Designing Thin Wavelet Filters 9:05 AM
Youngmi Hur, Fang Zheng, The Johns Hopkins University

WA5a-4 Estimation of Signal Subspace-Constrained Inputs to Linear Systems 9:30 AM
Alex Fink, Andreas Spanias, Arizona State University

Session WA5b Biometrics

Chair: *Marios Savvides Savvides, Carnegie Mellon University*

WA5b-1 High Resolution Face Log from Surveillance Video 10:15 AM
Thang Ba Dinh, Jongmoo Choi, Gérard Medioni, University of Southern California

WA5b-2 Quality Driven Face Recognition System for Surveillance Cameras 10:40 AM
Saad Bedros, Yadhunandan U.S., Gurumurthy Swaminathan, Honeywell

WA5b-3 Improved Iris Segmentation Based on Local Texture Statistics 11:05 AM
Vishnu Naresh Boddeti, B.V.K. Vijaya Kumar, Krishnan Ramkumar, Carnegie Mellon University

WA5b-4 Radio Frequency Cardiopulmonary Waveform for Subject Identification 11:30 AM
Marc O Griofa, Noninvasive Medical Technologies, Incorporated; Rebecca Blue, Orlando Health; Aaron Jaech, Siying Hu, Marios Savvides, Carnegie Mellon University

Session WA6a Computational Aspects in Array Processing

Chair: *Christ Richmond, MIT*

WA6a-1 Fast Implementation of Sparse Iterative Covariance-Based Estimation for Array Processing 8:15 AM
Qilin Zhang, Habti Abeida, Ming Xue, William Rowe, Jian Li, University of Florida

WA6a-2 Performance of Sample Covariance Based Capon Bearing Only Tracker 8:40 AM
Christ Richmond, Robert Geddes, MIT Lincoln Laboratory; Ramis Movassagh, Alan Edelman, Massachusetts Institute of Technology

WA6a-3 Some Problems in the Analysis of Possibly Cyclostationary Data 9:05 AM
David J. Thomson, Queen's University

WA6a-4 Extended Summary for Sidelobe Level Distribution for Linear and Planar Random Arrays with Arbitrary Element Distributions 9:30 AM
Siddhartha Krishnamurthy, MIT Lincoln Laboratory / Harvard University; Daniel Bliss, MIT Lincoln Laboratory; Vahid Tarokh, Harvard University

Session WA6b Source Separation

Chair: *Wing-Kin Ma, Chinese University of Hong Kong*

WA6b-1 Comparison of Varieties of Kalman Filtering Algorithms Applied to Single Microphone Blind Audio Source Separation 10:15 AM
Siouar Bensaid, Dirk Slock, Eurecom

WA6b-2 Insights into the Frequency Domain ICA/IVA Approach 10:40 AM
Wenyi Zhang, UBS; Alireza Masnadi-Shirazi, Bhaskar D. Rao, University of California, San Diego

WA6b-3 Blind Identification of Mixtures of Quasi-Stationary Sources Using a Khatri-Rao Subspace Approach 11:05 AM
Ka-Kit Lee, Wing-Kin Ma, Chinese University of Hong Kong; Yi-Lin Chiou, Tsung-Han Chan, Chong-Yung Chi, National Tsing Hua University

WA6b-4 Improved Subspace Intersection Based on Signed URV Decomposition 11:30 AM
Mu Zhou, Alle-Jan van der Veen, Delft University of Technology

Session WA7a Multi-core/GPU Implementation

Chair: *Jorn Jannick, Lund University, Sweden*

WA7a-1 GPGPU Accelerated Scalable Parallel Decoding of LDPC Codes 8:15 AM
Guohui Wang, Michael Wu, Yang Sun, Joseph R. Cavallaro, Rice University

WA7a-2 A High-Performance Area-Efficient AES Encipher on a Many-Core Platform 8:40 AM
Bin Liu, Bevan Baas, University of California, Davis

WA7a-3 Parallel Implementation of the Wideband Coherent Signal-Subspace (CSS) Based DOA Algorithm on Single core, Multicore and GPU 9:05 AM
Mohammad Wadood Majid, Mohsin Jamali, University of Toledo

WA7a-4 A Fine-Grained Parallel Implementation of a H.264/AVC Encoder on a 167-Processor Computational Platform 9:30 AM
Zhibin Xiao, University of California, Davis; Stephen Le, Intel Corporation; Bevan Baas, University of California, Davis

Session WA7b Reconfigurable Architectures, Algorithms and Applications

Chair: *Kenneth Jenkins, Pennsylvania State University*

WA7b-1 Designs of Angle-Rotation in Digital Frequency Synthesizer/Mixer Using Multi-Stage Architectures — 10:15 AM
Shen-Fu Hsiao, Cheng-Han Lee, Yen-Chun Cheng, National Sun Yat-sen University; Andrew Lee, University of California, Berkeley

WA7b-2 Exploration of Sign Precomputation-Based CORDIC in Reconfigurable Systems — 10:40 AM
Scott Miller, Dian Ross, Mihai Sima, Michael McGuire, University of Victoria

WA7b-3 A Reduced Routing Network Architecture for Partial Parallel LDPC Decoders — 11:05 AM
Houshmand Shirani-Mehr, University of California, Davis; Tinoosh Mohsenin, University of Maryland, Baltimore County; Bevan Baas, University of California, Davis

WA7b-4 Automatic FFT Code Generation for FPGA with High Flexibility and Human Readability — 11:30 AM
John O'Sullivan, Institute for System Level Integration / Steepest Ascent Ltd.; Stephan Weiss, University of Strathclyde; Garrey Rice, Steepest Ascent Ltd.

Author List

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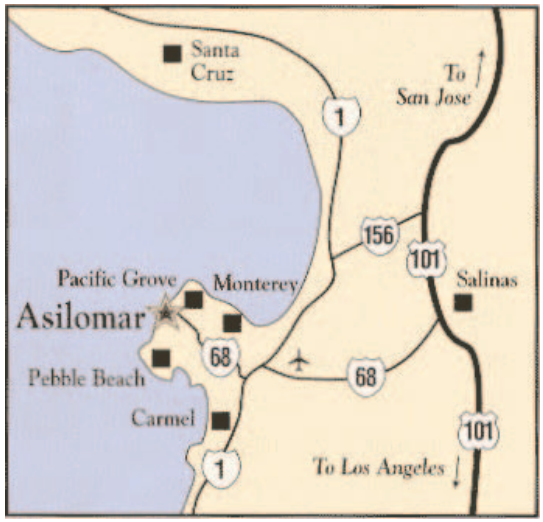
Santa Cruz
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