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| <i>Chunming Zhao, Robert J. Baxley, Georgia Institute of Technology, United States</i> | |
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| <i>Todor Cooklev, San Francisco State University; Pierre Siohan, France Telecom, France</i> | |

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| <i>Heng Li, Radhe Mohan, X. Ronald Zhu, University of Texas M.D. Anderson Cancer Center, United States</i> | |
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| <i>Cranos Williams, Winser Alexander, William Edmonson, North Carolina State University, United States</i> | |
| A Reconfigurable FPGA-based 16-Channel Front-end for MRI..... | 1860 |
| <i>Ishaan Dalal, Fred L. Fontaine, The Cooper Union for the Advancement of Science and Art, United States</i> | |
| Design of Multiple Bandpass Filters with Integer Coefficients for a Microcontroller Environment with an Emphasis on Applications in Wearable Tremor Analysis | 1865 |
| <i>Harry Powell, John Lach, University of Virginia, United States</i> | |
| Assessing Joint Time-Frequency Methods in the Detection of Dysfunctional Movement | 1870 |
| <i>Mark A. Hanson, John Lach, University of Virginia, United States</i> | |
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| <i>Ahmad Rushdi, Jamal Tuqan, University of California, Davis, United States</i> | |
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| <i>Carlos Zacarias Almarcha, Technical University of Catalonia; Dana H. Brooks, Northeastern University; W. Scott Hoge, Brigham and Women's Hospital, United States</i> | |

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Session Chair: Jim Fowler - Mississippi State University

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| <i>Justin Rucker, James Fowler, Mississippi State University, United States</i> | |
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| <i>Ngai-Man Cheung, Antonio Ortega, University of Southern California, United States</i> | |
| Three-dimensional SPIHT Coding of Hyperspectral Images with Random Access and Resolution Scalability | 1897 |
| <i>Emmanuel Christophe, CNES / Alcatel Alenia Space / Onera; William A. Pearlman, Rensselaer Polytechnic Institute, United States</i> | |
| Quality assessment for hyperspectral imagery: comparison between lossy and near-lossless compression | 1902 |
| <i>Barbara Penna, Tammam Tillo, Enrico Magli, Gabriella Olmo, Politecnico di Torino, Italy</i> | |

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Session Chairs: Peyman Milanfar - University of California - Santa Cruz and Sina Farsiu - University of California - Santa Cruz

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| <i>Sally Wood, Hsueh-Ban Lan, Santa Clara University; Dinesh Rajan, Marc Christensen, Southern Methodist University, United States</i> | |

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| <i>Hiroyuki Takeda, Sina Farsiu, Peyman Milanfar, University of California, Santa Cruz, United States</i> | |
| Filter-Bank Based Super-Resolution for Rotated and Blurry Undersampled Images | 1919 |
| <i>Dung Vo, Ryan Prendergast, Truong Nguyen, University of California, San Diego, United States</i> | |

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Session Chair: Hesham El-Gamal

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| <i>Suhas Mathur, Lalitha Sankaranarayanan, Narayan Mandayam, WINLAB, Rutgers University, United States</i> | |
| Leveraging Downlink for Optimal Uplink Rate Allocation: An Incentive Compatible Approach..... | 1932 |
| <i>Jennifer Price, Tara Javidi, University of California, San Diego, United States</i> | |
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| <i>Changhee Joo, Ness Shroff, Purdue University, United States</i> | |
| Distributed resource allocation and scheduling in OFDMA wireless networks..... | 1942 |
| <i>Xiangping Qin, Samsung Information Systems America; Randall Berry, Northwestern University, United States</i> | |

Session: WA2b - Emerging Applications of Communication Theory

Session Chair: Olgica Milenkovic - University of Colorado - Boulder

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| A Mixed Filter Algorithm for State Estimation from Simultaneously Recorded | 1949 |
| Continuous-Valued, Point Process and Binary Observations | |
| <i>Todd Coleman, University of Illinois at Urbana-Champaign; Marianna Yanike, Wendy Suzuki, New York University; Emery Brown, MIT; Mass. General Hospital; Harvard Medical School, United States</i> | |
| Enumeration of RNA secondary structures: a constrained coding approach | 1954 |
| <i>Olgica Milenkovic, University of Colorado at Boulder; Emina Soljanin, Bell Laboratories, Lucent Technologies, United States</i> | |

Session: WA3a - Clinical and Pharmaceutical Imaging

Session Chair: Jasjit Suri - Idaho State Univ. and Biomedical Technologies Inc.

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| A robust strategy for breast lesion classification in ultrasound image volumes | |
| <i>Paulo Sérgio Rodrigues, Gilson Antônio Giraldo, Ruey-Feng Chang, Jasjit Suri, National Laboratory for Scientific Computing, Brazil</i> | |
| Spatiotemporal independent component analysis for retinal images..... | 1961 |
| <i>Eduardo Barriga, Marios S. Pattichis, University of New Mexico; Michael Abramoff, University of Iowa; Daniel Ts'o, State University of New York; Randy Kardon, Young Kwon, University of Iowa; Peter Soliz, Vision quest Biomedical, United States</i> | |
| 3D Ultrasound System for Analysis of Carotid Plaque Progression and Regression..... | 1966 |
| <i>Aaron Fenster, Bernard Chiu, Anthony Landry, David Spence, Grace Parraga, Robarts Research Institute, Canada</i> | |
| 3-D Optimized Statistical Shape and Intensity Model for Prostate Segmentation in Transrectal Ultrasound (TRUS) Volumetric Data Sets | |
| <i>Fuxing Yang, Diagnostic Ultrasound; Jasjit S. Suri, Biomedical Technologies Inc.; Aaron Fenster, Robarts Research Institute, Canada</i> | |

Session: WA3b - Biomedical Signal and Image Processing

Session Chair: Khan M. Iftikharuddin

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| 5D Image Reconstruction for Tomographic Image Sequences | 1973 |
| <i>Mingwu Jin, Miles Wernick, Yongyi Yang, Jovan G. Brankov, Erwan Gravier, Illinois Institute of Technology; Bing Feng, Michael A. King, University of Massachusetts Medical Center, United States</i> | |
| Robust Segmentation and Volumetric Registration in a Multi-view 3D Freehand Ultrasound | 1978 |
| Reconstruction System | |
| <i>Honggang Yu, Marios S. Pattichis, M. Beth Goens, University of New Mexico, United States</i> | |
| Brain Tumor Detection in MRI: Technique and Statistical Validation | 1983 |
| <i>Khan Iftikharuddin, Jing Zheng, Atiqul Islam, University of Memphis; Robert Ogg, Fred Lanningham, St. Jude Children's Hospital, United States</i> | |

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| Speckle Reducing Anisotropic Diffusion for Echocardiography | 1988 |
| <i>Alla Aksel, Andrew D. Gilliam, John A. Hossack, Scott T. Acton, University of Virginia, United States</i> | |

Session: WA4 - Nonlinear Filtering and Target Tracking

Session Chair: Keh-Ping Dunn - MIT Lincoln Lab

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| Bearings-only tracking based on multiple sensor measurements and generalized particle filtering | 1995 |
| <i>Petar M. Djuric, Ting Lu, Mónica F. Bugallo, Stony Brook University, United States</i> | |
| Distributed Target Tracking in a Wireless Sensor Network | 1999 |
| <i>Clement Kam, William Hodgkiss, University of California, San Diego, United States</i> | |
| The Jump Tracker: Nonlinear Bayesian Tracking with Adaptive Meshes and a Markov Jump Process Model | 2004 |
| <i>Steven Smith, Massachusetts Institute of Technology, United States</i> | |
| Nonparametric Bayesian Methods for Large Scale Multi-Target Tracking | 2009 |
| <i>Emily Fox, Massachusetts Institute of Technology; David Choi, MIT Lincoln Laboratory; Alan Willsky, Massachusetts Institute of Technology, United States</i> | |
| A Split-Step Solution of the Fokker–Planck Equation for the Conditional Density | 2014 |
| <i>Hendrick Lambert, Massachusetts Institute of Technology Lincoln Laboratory; Fred Daum, Raytheon; John Weatherwax, Massachusetts Institute of Technology Lincoln Laboratory, United States</i> | |
| Monte Carlo Methods for Multi-Modal Distributions | 2019 |
| <i>Daniel Rudoy, Patrick Wolfe, Harvard University, United States</i> | |
| Tracking Separating Targets with Possibly Merged Measurements Using Generalized Janossy Measure Concept | 2024 |
| <i>Shozo Mori, Chee-Yee Chong, BAE Systems, United States</i> | |
| Studies in Tracking and launch Point Determination for Ballistic Missile Defens | |
| <i>Robert Hutchins, Naval Postgraduate School, United States</i> | |

Session: WA5a - Reconfigurable Computing

Session Chair: Chris Dick - Xilinx

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| PetaOp/second FPGA Signal Processing for SETI and Radio Astronomy | 2031 |
| <i>Aaron Parsons, Donald Backer, Chen Chang, Daniel Chapman, Henry Chen, Patrick Crescini, Christina de Jesus, University of California, Berkeley; Chris Dick, Xilinx Corporation; Pierre Droz, David MacMahon, Kirsten Meder, Jeff Mock, Vinayak Nagpal, Borivoje Nikolic, Arash Parsa, Brian Richards, Andrew Siemion, John Wawrzyniek, Dan Werthimer, Melvyn Wright, University of California, Berkeley, United States</i> | |
| The Design of an FPGA-Based MIMO Receiver: Algorithmic and Architectural Interactions..... | 2036 |
| <i>Brent Nelson, Joseph Palmer, Michael Rice, Brigham Young University, United States</i> | |
| Cognitive Radio Experiments using Reconfigurable BEE2 | 2041 |
| <i>Artem Tkachenko, Danijela Cabric, Robert Brodersen, Berkeley Wireless Research Center, United States</i> | |
| A Flexible Framework for Wireless Medium Access Protocols | 2046 |
| <i>Chris Hunter, Joseph Camp, Patrick Murphy, Ashutosh Sabharwal, Rice University; Chris Dick, Xilinx Inc., United States</i> | |

Session: WA5b - Low Power Techniques

Session Chair: Braden Phillips - The University of Adelaide

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| Automatic Generation of Low-Power Circuits for the Evaluation of Polynomials..... | 2053 |
| <i>Arnaud Tisserand, LIRMM, CNRS-Univ. Montpellier 2, France</i> | |
| Confronting Security and Privacy Threats in Modern RFID Systems | 2058 |
| <i>Damith Ranasinghe, Peter Cole, The University of Adelaide, Australia</i> | |
| A Multi-Mode Low-Energy Binary Adder | 2065 |
| <i>Johannes Grad, Illinois Institute of Technology; James E. Stine, Oklahoma State University, United States</i> | |

Session: WA6 - MIMO Equalization**Session Chair: Christoph Mecklenbrauker - Telecommunications Research Center Vienna**

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| Soft-Output Sphere Decoding: Performance and Implementation Aspects | 2071 |
| <i>Christoph Studer, Markus Wenk, Andreas Burg, Helmut Bölcskei, ETH-Zurich, Switzerland</i> | |
| On the Diversity-Complexity Tradeoff in MIMO Spatial Multiplexing Systems | 2077 |
| <i>Johannes Maurer, Gerald Matz, Dominik Seethaler, Vienna University of Technology, Austria</i> | |
| High Diversity Detection Using Semidefinite Relaxation | 2082 |
| <i>Joakim Jaldén, KTH, Royal Institute of Technology; Björn Ottersten, Royal Institute of Technology (KTH), Sweden</i> | |
| High Rate Golden Space-Time Trellis Coded Modulation | 2087 |
| <i>Yi Hong, University of South Australia; Emanuele Viterbo, Politecnico di Torino; Jean-Claude Belfiore, ENST, Paris, France</i> | |
| Near Maximum Sum-Rate Non-Zero-Forcing Linear Precoding with Successive User Selection | 2092 |
| <i>David Schmidt, Michael Joham, Raphael Hunger, Wolfgang Utschick, Munich University of Technology (TUM), Germany</i> | |
| Diversity Aspects of Linear and Decision-Feedback Equalizers for Frequency-Selective | 2097 |
| Multi-Antenna Channels <i>Dirk T. M. Slock, Institut Eurecom, France</i> | |
| Low Complexity Iterative Equalization For Severe Time Dispersive MIMO Channels | 2102 |
| <i>Sajid Ahmed, Tharm Ratnarajah, Queen's University Belfast; Mathini Sellathurai, Cardiff University; Colin Cowan, Queen's University Belfast, United Kingdom</i> | |
| Iterative Extended Soft-RLS Algorithm for Joint Channel and Frequency Offset Estimation for | 2107 |
| Coded MIMO-OFDM Systems <i>Kyeong Jin Kim, Nokia Inc.; Tejas Bhatt, Nokia Networks; Ronald A. Iltis, University of California, Santa Barbara, United States</i> | |

Session: WA7a - Audio Coding and Processing**Session Chair: Susanto Rahardja - Nanyang Technological University**

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| A study on the best wavelet for audio compression | 2115 |
| <i>R. Capabianco Guido, Universidade de Sao Paulo; Carlos Maciel, SEL/EESC/USP; Mauricio Monteiro, Everthon Fonseca, Sankaran Panchapagesan, Jose Pereira, Lucimar Vieira, Sylvio Barbon, Fabricio Sanchez, Marcio Guilherme, Kim Sergio, Thais Scarpa, Paulo Fantinato, Emerson Moura, USP, Brazil</i> | |
| Efficient bit-allocation for MPEG-4 advanced audio coding | 2119 |
| <i>C-H Yang, H-M Hang, National Chiao Tung University, Taiwan</i> | |
| Perceptually layered scalable codec | 2125 |
| <i>Jin Li, Microsoft Research; James D. (JJ) Johnston, Microsoft, United States</i> | |
| Performance-complexity tradeoffs of the MPEG-4 ALS lossless coding standard | 2130 |
| <i>Takehiro Moriya, Noboru Harada, Yutaka Kamamoto, NTT Corporation, Japan</i> | |

Session: WA7b - Wireless Networks**Session Chair: Kostas Psounis - University of Southern California**

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| <i>Vishal Doshi, Devavrat Shah, Muriel Médard, Sidharth Jaggi, Massachusetts Institute of Technology, United States</i> | |
| Optimizing multi-copy routing schemes for resource-constrained intermittently connected mobile | 2142 |
| networks. <i>Apoorva Jindal, Konstantinos Psounis, University of Southern California, United States</i> | |
| IPAC - IP Based Adaptive Packet Concatenation for Multihop Wireless Networks | 2147 |
| <i>Ramya Raghavendra, Amit P. Jardosh, Elizabeth M. Belding-Royer, Haitao Zheng, University of California, Santa Barbara, United States</i> | |
| Resource Sharing and Delay Improvements in Networks | |
| <i>Tara Javidi, University of California, San Diego, United States</i> | |

Session: WA8a1 - Coding, Decoding, and Receiver Design

Session Chair: Shuangqing Wei

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| <i>Crépin Nsiala Nzéza, Roland Gautier, Gilles Burel, Université de Bretagne Occidentale, France</i> | |
| Blind Multiuser Identification in Multirate CDMA Transmissions: A New Approach | 2162 |
| <i>Crépin Nsiala Nzéza, Roland Gautier, Gilles Burel, Université de Bretagne Occidentale, France</i> | |
| Receiver Architectures and Design Tradeoffs for CDMA Interference Cancellation | 2167 |
| <i>John Smee, Jilei Hou, Joseph Soriaga, QUALCOMM Inc., United States</i> | |
| Channel Capacity and Dirty Paper Coding for Gaussian Channels with Additive and Multiplicative Interferences | 2172 |
| <i>George Amariuca, Shuangqing Wei, Louisiana State University, United States</i> | |
| Carrier and Timing Synchronization of BPSK via LDPC Code Feedback | 2177 |
| <i>Esteban Valles, University of California, Los Angeles; Christopher Jones, Jet Propulsion Laboratory - NASA; Richard Wesel, John Villasenor, University of California, Los Angeles, United States</i> | |
| MAP Decoding Algorithm for Extended Turbo Product Codes over Flat Fading Channel | 2182 |
| <i>Changlong Xu, Ying-Chang Liang, Wing Seng Leon, Institute for Infocomm Research, Singapore</i> | |
| A Unification of ML-Optimal Tree-Search Decoders | 2185 |
| <i>Christoph Studer, Andreas Burg, Wolfgang Fichtner, ETH-Zurich, Switzerland</i> | |
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| <i>Qingwei Li, Zhongfeng Wang, Oregon State University, United States</i> | |
| A Soft-Output Stack Algorithm | 2195 |
| <i>Nisha P. Champaneria, Todd K. Moon, Jacob H. Gunther, Utah State University, United States</i> | |
| Low Complexity Radius Reduction Method for List Sphere Decoders | 2200 |
| <i>Yuping Zhang, Jun Tang, Keshab K. Parhi, University of Minnesota, United States</i> | |
| Hard Decision Error Correcting Schemes Based on LDPC Codes over Impulse Noise Channels | 2204 |
| <i>Milos Ivkovic, Shuguang Cui, University of Arizona, United States</i> | |
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| <i>Shahrokh Nayeb Nazar, Ioannis Psaromiligkos, McGill University, Canada</i> | |
| Walsh-like Nonlinear Phase Orthogonal Transforms for CDMA Communications | 2214 |
| <i>Radha Poluri, Ali N. Akansu, New Jersey Institute of Technology, United States</i> | |
| Iterative EM Estimation Based LDPC CDMA Receiver | 2219 |
| <i>Don Torrieri, Army Research Laboratory; Avinash Mathur, Amitav Mukherjee, Hyuck Kwon, Wichita State University, United States</i> | |
| Iterative Receiver with EM Channel Estimation and CDMA Turbo Coding | |
| <i>Don Torrieri, Army Research Laboratory; Eser Ustunel, Hyuck Kwon, Wichita State University; Seunghyun Min, Dong-Hee Kang, Samsung Electronics, Republic of Korea</i> | |

Session: WA8a2 - Array Signal Processing

Session Chair: Aleksandar Dogandzic

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| A Novel Beamformer Robust to Steering Vector Mismatch | 2227 |
| <i>Chun-yang Chen, P. P. Vaidyanathan, California Institute of Technology, United States</i> | |
| Complex Signal Amplitude Estimation and Adaptive Detection in Unknown Low-rank Interference | 2232 |
| <i>Aleksandar Dogandzic, Benhong Zhang, Iowa State University, United States</i> | |
| Adaptive Antenna Algorithms Using Successively Re-encoded Data for GSM | 2237 |
| <i>Myung-Hoon Yeon, John Shynk, University of California, Santa Barbara; Richard Gooch, Applied Signal Technology, Inc., United States</i> | |
| Calibrating an array with scan dependent errors using a sparse grid | 2242 |
| <i>Maria Lanne, Astrid Lundgren, Mats Viberg, Chalmers University of Technology, Sweden</i> | |
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| <i>Jacob Griesbach, NAVSYS Corp., United States</i> | |
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| <i>Yuri Abramovich, DSTO; Nicholas Spencer, ARI Pty Ltd; Ben Johnson, RLM Management Pty Ltd & University of South Australia, Australia</i> | |
| MUSIC and Model-Order Selection for Spherically Invariant Random Vectors | 2257 |
| <i>Sebastien Bausson, Philippe Forster, GEA, IUT de Ville d'Avray, France</i> | |

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| Space-Time-Frequency Adaptive Processor Design for Ultra-Sparse Apertures | 2262 |
| <i>Gary Hatke, Keith Forsythe, Andrew McKellips, Tri Phuong, Massachusetts Institute of Technology Lincoln Laboratory, United States</i> | |
| Array Signal Processing with Robust Rejection Constraints via Second-Order Cone Programming | 2267 |
| <i>Almir Mutapcic, Seung-Jean Kim, Stephen Boyd, Stanford University, United States</i> | |
| Endfire Supergain with a Uniform Line Array of Pressure and Velocity Sensors | 2271 |
| <i>Henry Cox, Hung Lai, Lockheed Martin IS&S, United States</i> | |
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| <i>Patrick Vincent, Murali Tummala, John McEachen, Naval Postgraduate School, United States</i> | |
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| <i>David R. Keller, Todd K. Moon, Jacob H. Gunther, Utah State University, United States</i> | |
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| <i>Hedayat Alghassi, Shahram Tafazoli, Peter Lawrence, University of British Columbia, Canada</i> | |
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