Thirty-Second Asilomar Conference on Signals, Systems, and Computers

November 1- 4, 1998
Asilomar Hotel
Conference Grounds

In cooperation with the Signal Processing Society of the Institute of Electrical and Electronics Engineering, Inc.

THIRTY-SECOND ASILOMAR CONFERENCE ON SIGNALS, SYSTEMS, AND COMPUTERS

ORGANIZED IN COOPERATION WITH

NAVAL POSTGRADUATE SCHOOL
MONTEREY, CALIFORNIA

MONTEREY BAY AQUARIUM RESEARCH INSTITUTE
MOSS LANDING, CALIFORNIA

AND

IEEE SIGNAL PROCESSING SOCIETY

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Welcome from the General Chair

This year the conference's annual Keynote Address will be permanently renamed the "Sydney Parker Memorial Lecture" to commemorate the pioneering efforts of Professor Sydney Park in establishing and perpetuating the annual Asilomar Conference. Dr. Stanley White, a long time friend of Sydney Parker, and a frequent attendee at Asilomar during the entire history of the conference, will lead us in establishing this newly named lecture series.

It is not possible in this short welcoming message to properly acknowledge all of the people who have given so generously of their time to make this year's conference a truly outstanding event. However, I would like to take this opportunity to extend special thanks to Dr. Andrew Viterbi for his willingness to address the conference on an important topic of high centrality to the conference. I would also like extend my special thanks to Prof. Georgios Giannakis for his superb development of the technical program, and to both the faculty and staff of the Naval Postgraduate School who have given generously of their time to once again help assure the success of the 1998 conference.

On behalf of the Conference Committee, I invite you to attend the Thirty-Second Annual Asilomar Conference on Signals, Systems, and Computers, to participate in the exciting technical program, and to enjoy the accompanying social events. I look forward to seeing you at Asilomar!

W. Kenneth Jenkins
General Chairman

Conference Steering Committee

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1998 Asilomar Conference
SESSION SCHEDULE

Sunday Afternoon, November 1

3:30-6:00 pm	Registration
7:30-9:00 pm	Welcoming Reception at Asilomar

Monday Morning, November 2

8:00 - 6:00 pm	Registration
7:30 - 9:00 am	Breakfast is available
8:15 - 9:45 am	Conference Opening and Plenary Session - in the Chapel
9:45 - 10:15 am	Coffee Social - in front of the Chapel

10:15-12:00 noon:

MA1b	Synthetic Aperture Radar	Sergio Barbarossa
MA2b	Signal Processing for Communications I	James LeBlanc
MA3b	Multicarrier Communications	Jeffrey Strait
MA4b	Signal Processing for Networking	L. Tong
MA5b	Signal Processing for Interactive Multimedia I	Lina Karam
MA6b	Dual-Use Applications for Nonlinear and Adaptive Systems	R. T. Rickard & G. Dillard
MA7b	Still Image Compression I	Nasir Memon
MA8b	Computer Arithmetic (Interactive Lecture)	Fred Taylor

12:00-1:00 Lunch

Monday Afternoon, November 2

1:30-5:10 pm: 1 Break - 3:10-3:30

MP1a	Signal Processing for Interactive Multimedia II	Lina Karam
MP1b	Internet Imaging	Ping Wah Wong
MP2	Advances in Spectrum Analysis	Petar Djuric & S.J. Godsill
MP3	Biomedical Signal Processing	John Mosher
MP4	Speech Coding	W. B. Kleijn & V. Cuperman
MP5	Adaptive Filtering for Communications I	Markus Rupp
MP6	Radar and Sonar	Curtis Schleher
MP7	Complexity Issues in Image/Video Coding	Antonio Ortega
MP8a	Algorithms and Structures for Adaptive Signal Processing (Interactive Lecture)	Victor DeBrunner
MP8b	Distributed Detection and Data Fusion (Interactive Lecture)	Rick Blum

Session SCHEDULE/continued...

Tuesday Morning, November 3

7:30-9:00 am Breakfast
8:00-4:00 pm Registration

8:30-12:10 pm: 1 Break - 10:10-10:25

TA1	Multiuser Communications I	Upamanyu Madhow & M. Honig
TA2	Adaptive Filters for Nonlinear Signal Processing	Neil Bershad
TA3	Multiscale Statistical Analysis and Applications	Hamid Krim
TA4	Smart Antennas in Wireless Communications	Guanghan Xu
TA5	Time-frequency Representation	Moeness Amin
TA6	Video Processing	Alex Drukarev
TA7	Digital Image/Video Libraries	B.S. Manjunath
TA8a	Blind Image Restoration and Image Processing Applications (Interactive Lecture)	Brian Jeffs
TA8b	Implementation of Analog and Digital Systems (Interactive Lecture)	Vijay Madisetti

12:00-1:00 Lunch

Tuesday Afternoon, November 3

1:30-5:10 pm: 1 Break - 3:10-3:30

TP1	Space-Time Adaptive Signal Processing For Wireless Communications	Michael Zoltowski
TP2	Blind Channel Estimation and Equalization	Z. Ding
TP3	Analysis and Performance of Adaptive Filters	Scott C.Douglas
TP4	Applications-specific Architectures	A. Swami & Brian Sadler
TP5	Still Image Compression II	K. Konstantinidis
TP6	Hyperspectral Imaging and Remote Sensing	S. Sandor-Leahy
TP7	Applications of Statistical Array Processing	Mats Viberg
TP8a	Wavelets and Digital SignalProcessing Applications (Interactive Lecture)	R. Hippenstiel & M. Fargues
TP8b	Estimation and Detection (Interactive Lecture)	J. Li

Session SCHEDULE/continued...

Wednesday Morning, November 4

8:00-12:00 noon	Registration — Papers must be turned in before the registration closes at 12:00 noon
7:30-9:00 am	Breakfast

8:30-12:10pm: 1 Break - 10:10-10:25

WA1	Adaptive Filtering for Communications II	Howard Fan
WA2	Space-Time Adaptive Processing	A. Lee Swindlehurst
WA3	Source Separation and Channel Estimation	Michail Tsatsanis
WA4	Multimedia Signal Processing	K.J. Ray Liu
WA5	Wavelets/Time-Scale Representations	Nurgun Erdol
WA6	Models in Imaging and Tomography	Charles Boumann
WA7	System Level Design Tools, Methods, and Case Studies	Brian Evans
WA8a	Signal Processing for Communications II (Interactive Lecture)	Naofal Al-Dhahir
WA8b	Multiuser Communications II	Hui Liu

12:00-1:00 Lunch

1998 ASILOMAR CONFERENCE SESSION SCHEDULE

Coffee breaks will be at 10:10 am and 3:10 pm.
(Except Monday morning when refreshments will be served outside the Chapel from (9:45-10:15.)

Monday, November 2

CONFERENCE OPENING AND PLENARY SESSION **8:15- 9:45**

1. Welcome from the General Chairperson:

W. KENNETH JENKINS
Director, Coordinated Science Laboratory
University of Illinois at Urbana-Champaign

2. Session MA1a : Distinguished Lecture for the 1998 Asilomar Conference:

DR. ANDREW VITERBI
Vice-Chairman
QUALCOMM INCORPORATED

WIRELESS COMMUNICATIONS FOR THE TWENTY-FIRST CENTURY

Over the past decade, the marketplace has been filled with a new generation of consumer products which implement highly advanced digital concepts. Until a decade ago, these concepts were primarily in the domain of research papers and graduate school textbooks, with application only to military and space programs at costs well beyond the level supportable by a consumer market.
Consider three examples of telecommunication products which have become commonplace:

- wireline data modems capable of transmitting and receiving up to 56K bits/sec on dialed public-switched lines;
- digital television satellite receivers, which incorporate sophisticated video compression and modems receiving 30M bits/sec;
- digital cellular telephones incorporating advanced voice compression and highly efficient mobile communication modems.

Each of these contains on the order of a million transistors and yet, for only a few hundred dollars, has been sold to millions, and even tens of millions, of consumers. It is well known that their very existence, not to mention their low cost, is a consequence of rapidly accelerating integration of electronic circuitry, which was so accurately predicted a generation ago by Moore's Law.

But there is a more subtle consequence of this exponential rise in device density and speed available on a silicon chip. It is the fact that only one chip, or at most a few chips, implement virtually the entire system, with only the additional requirements for a battery or power supply, a case, and display, keyboard and/or microphone and speaker, depending on the application. Even though the product is far more complex than the transistor radio, the electric clock, or the microwave oven of previous electronic generations, the design tasks and role of the end-product manufacturer is not significantly different from what it was before. All the complexity is in the "system on a chip." Thus wireless communication devices are following the trend of what has already happened in the personal computer industry. This also enables the confluence of mobile voice communication with data access, processing and transmission, providing the nomadic consumer with all the capabilities currently available only on the fixed desktop. These multi-faceted developments will shape the future of the wireless industry well into the next century, realigning the roles of engineering, manufacturing, marketing and distribution.

DR. ANDREW VITERBI

Professional Biography

In July 1985, Dr. Andrew J. Viterbi co-founded QUALCOMM, Inc., a developer and manufacturer of mobile satellite communications and digital wireless telephony, where he currently serves as Vice Chairman. Under his leadership, QUALCOMM has received international recognition for innovative technology in the areas of digital wireless communication systems and products based on Code Division Multiple Access (CDMA) technologies.

Prior to co-founding QUALCOMM, Dr. Viterbi co-founded LINKABIT Corporation in 1968, a digital communications company, where he served he served as Executive Vice President and later as President.

From 1963 to 1973, Dr. Viterbi served as a Professor at the University of California, Los Angeles (UCLA) School of Engineering and Applied Science, where he did fundamental work in digital communication theory and wrote numerous research papers and two books, for which he has received international recognition. He continued teaching on a part-time basis at the University of California, San Diego until 1994, where he is currently Professor Emeritus.

From 1957 to 1963, Dr. Viterbi was a member of the Communications Research Section of the California Institute of Technology Jet Propulsion Laboratory. While there, he was one of the first communication engineers to recognize the potential and propose digital transmission techniques for space and satellite telecommunication systems.

Viterbi received his B.S. and M.S. degrees from the Massachusettes Institute of Technology in 1957, and a Ph.D. from the University of Southern California, 1962

Dr. Viterbi has received numerous awards and recognition for his leadership and substantial contributions to communications industry over the years. He has received honorary doctorates from universities in Canada and Italy and has been otherwise honored in Japan, Germany and Italy as well as the United States. He is a Fellow of the IEEE, a Marconi Fellow and a Member of both the U.S. National Academy of Engineering and the U.S. National Academy of Sciences.

All four international standards for digital cellular telephony utilize the Viterbi Algorithm for interference suppression, as do most digital satellite communication systems, both for business applications and for direct satellite broadcast to the home.

He is currently a member of the U.S. President's Advisory Committee on Information Technology and the Next Generation Internet.

Program of 1998
Asilomar Conference
on
Signals, Systems, and Computers

GEORGIOS GIANNAKIS
Technical Program Chairman

Session MA1b — Synthetic Aperture Radar

Chair: Sergio Barbarossa
University of Rome "La Sapienza"

MA1b-1 An Efficient Multi-Target SAR ATR Algorithm **10:15 am**
Leslie Novak, Gregory Owirka,
William Browe, MIT Lincoln Laboratory

MA1b-2 Signal Processing for Wide-Bandwidth Wide-Beamwidth Synthetic Aperture Radar Imaging Systems **10:40 am**
Soumekh, Mehrdad, State University of
New York at Buffalo

MA1b-3 Time-Varying Complex Spectral Estimation with Applications to ISAR Imaging **11:05 am**
Renbiao Wu, Zheng-She Liu, and Jian Li,
University of Florida

MA1b-4 Dynamic Reconstruction of Sea Clutter Using Regularized RBF Networks **11:30 am**
Simon Haykin, Sadasivan Puthusserypady,
and Paul Yee, McMaster University

MA1b-5 Recent Advances in SAR Interferometry **11:55 am**
Alessandro Ferretti, Andrea Monti Guarnieri,
Claudio Prati, and Fabio Rocca,
Politecnico di Milano - DEI

Session MA2b — Signal Processing for Communications I

Chair: James LeBlanc
New Mexico State University

MA2b-1 On the Improvements of Channel Unwrapping for Convention-Adaptive MLSD **10:15 am**

Janghoon Yang and Keith M. Chugg,
University of Southern California

MA2b-2 Adaptive Pseudo-Maximum Likelihood Data Estimation Algorithm **10:40 am**

Hamid R. Sadjadpour, AT&T Laboratories
and Charles L. Weber, University of Southern California

MA2b-3 Joint Source Channel Coding of Images over Frequency Selective Fading Channels with Feedback Using DCT and Multicarrier Block Pulse Amplitude Modulation **11:05 am**

Venceslav Kafedziski,
Arizona State University

MA2b-4 Error Correcting Codes for Robust Transmission of Scalable Video Bit Stream Over Fading Channels **11:30 am**

Vasanth R.Gaddam and Sathyanarayan S.Rao,
Villanova University

MA2b-5 A Root Method for Volterra System Equalization **11:55 am**

Arthur J. Redfern and G. Tong Zhou,
Georgia Institute of Technology

Session MA3b — Multicarrier Communications

Chair: Jeffrey Strait
3Com Advanced Development Center

MA3b-1 Signal Processing for Multicarrier Modulation **10:15 am**
Jeffrey C. Strait,
3Com Advanced Development

MA3b-2 Software Radio Implementation of Carrier Offset Estimation for OFDM Communications **10:40 am**
Ufuk Tureli, University of Virginia, and
Hui Liu, University of Washington

MA3b-3 Cyclic Prefix Extension in DMT Systems **11:05 am**
Igor Djokovic, Pairgain Technologies

MA3b-4 Maximum Likelihood Detection of Nonlinearly Distorted Multicarrier Symbols by Iterative Decoding **11:30 am**
Jose Tellado and John M. Cioffi,
Stanford University

Session MA4b — Signal Processing for Networking

Chair: L. Tong,
University of Connecticut

MA4b-1 Mobil Multimedia Applications in the WATMnet Broadband Wireless System: Software Architecture & Media Processing Considerations **10:15 am**

D. Raychaudhuri, D. Reininger, and
M. Ott, NEC USA

MA4b-2 Equalization for Wireless ATM **10:40 am**

Lang Tong and Jeff Q. Bao,
University of Connecticut

MA4b-3 Network Assisted Diversity for Random Access Wireless Data Networks **11:05 am**

Michail K. Tsatsanis and Ruifeng Zhang,
Stevens Institute of Technology, and
Subrata Banerjee, Philips Research

MA4b-4 Combining Blind Equalization and Power Control in Wireless Networks **11:30 am**

K.J. Ray Liu, University of Maryland

MA4b-5 Joint Source and Channel Coding for Imaging Transmission Over Fading Channels **11:55 am**

Andrea Goldsmith, Michelle Effros, and
Tie Hai-Xin, California Institute of Technology

Session MA5b — Signal Processing for Interactive Multimedia I

Chair: Lina Karam,
Arizona State University

MA5b-1 JPEG-2000: A New Still Image Compression Standard **10:15 am**

Osama Al-Sheikh, Homer Chen, and
Iole Moccagatta, Rockwell Science Center

MA5b-2 The MPEG-4 Standard and its Applications in Virtual 3D Environments **10:40 am**

Peter Kauff, J. Ohm, and T. Sikora,
Heinrich-Hertz-Institute for Communications
Technology

MA5b-3 Picture Quality and Bandwidth Allocation for MPEG-2 Video Broadcasting **11:05 am**

Irene Koo, Panos Nasiopoulos, and
Rabab Ward, University of British Columbia

MA5b-4 Rate Control for Tetransmission-Based Video Transport Over Wireless Channel **11:30 am**

Supavadee Aramvith, I-Ming Pao,
Ming-Ting Sun, University of Washington

Session MA6b — Dual-Use Applications for Signal and Image Processing

Chairs: Terry Rickard, OPTIMARK; and
George Dillard, NCCOSC

MA6b-1 Theory of Optimal Transaction Implementation **10:15 am**
Terry Rickard, OptiMark Technologies

MA6b-2 Robust Adaptive Matched Field Processing **10:40 am**
Henry Cox, ORINCON Corporation

MA6b-3 A Generalization of the Neyman-Pearson Criterion with Applications to Image Processing **11:05 am**
David W.J. Stein SPAWAR Systems Center

MA6b-4 Wavelet Boundary Value Problem Geometric MMCR Protocol Structure for Theater Systems Intelligence Distribution **11:30 am**
Carol A. Niznik, NW Systems

Session MA7b — Still Image Compression I

Chair: Nasir Memon,
Hewlett Packard & Northern Illinois University

MA7b-1 Lossless Image Coding Using Embedded Zerotree Wavelet Framework: Part I - EZW Coding **10:15 am**

V. N. Ramaswamy, University of South Florida,
K.R. Namuduri,Clark Atlanta University, and
N. Ranganathan, University of South Florida

MA7b-2 A DWT-Based Perceptually Lossless Color Image Compression Architecture **10:40 am**

Francescomaria Marino, and Lina J. Karam,
Arizona State University;
Tinku Acharya, Arizona State University and
Intel Corporation

MA7b-3 Combined Multibase Transform/Wavelet Coding Without Blocking Artifacts **11:05 am**

David Akopian, Mika Helsingius, and
Jaakko Astola,
Tampere University of Technology

MA7b-4 More on Multi-Resolution TSVQ: Parameter Meaning and Choice **11:30 am**

Diego Dugatkin and Michelle Effros
California Institute of Technology

Session MA8b — Computer Arithmetic
(Interactive Lecture) 10:30 - 12:00

Chair: Fred Taylor,
University of Florida at Gainsville

MA8b-1 New Chinese Remainder Theorems with Applications in DSP
Yuke Wang, Concordia University

MA8b-2 On-line Algorithms for Complex Number Arithmetic
Robert McIlhenny and Milos D. Ercegovac,
University of California-Los Angeles

MA8b-3 A High-Speed Processor for Digital Sine/Cosine Generation and Angle Rotation
Dengwei Fu and Alan N. Willson, Jr.,
University of California-Los Angeles

MA8b-4 Application of Reconfigurable CORDIC Architectures
M. Morf and Oskar Mencer, Stanford University,
and Jean-Marc Delosme, Evry University

MA8b-5 Novel Residue Arithmetic Processors for High Speed Digital Signal Processing
Alexander Skavantzos, Louisiana State University
and Mohammad Abdallah, Intel Corporation

MA8b-6 CORDIC Algorithm with Digit Skipping
J. Hormigo, J. Villalba, and E.L. Zapata,
University of Malaga

MA8b-7 A Recursive Fast Multiplier
Earl E. Swartzlander, Jr. and Albert N. Danysh,
University of Texas at Austin

MA8b-8 The Renaissance - A RNS-Based, Application Specific Vector CoProcessor for Embedded DSP Applications
Manish Bhardwaj, SIEMENS Entwicklungszentrum and
Branko Ljusanin, Fachbereich Mikrosystemtechnik

Continued on next page...

MA8b-9 An Implementation of Level-Index Arithmetic Based on the Low Latency CORDIC System

Jae-Hyuck Kwak and Earl E. Swartzlander, Jr.,
University of Texas at Austin

MA8b-10 Number Representations for Reducing Data Bus Power Dissipation

John R. Sacha and Mary Jane Irwin,
The Pennsylvania State University

MA8b-11 A Fixed Point Arithmetic Unit for Image Processing Circuits

L. Dulau, L. Levasseru, F. Kadionik, Y. Berthoumieu,
P. Riffaud, and P. Nouel, Universite Bordeaux I

MA8b-12 A Combined Interval and Floating- Point Divider

James E. Stine and Michael J. Schulte,
Lehigh University

MA8b-13 Implementation of a Low-Power Accumulator for Filter Applications

Arjun Balaram, SIEMENS Entwicklungszentrum,
and Friedrich Jell, Johannes Kepler University

MA8b-14 Efficient FPGA Implementation of Multiplier-and-Adder — Quotient-Remainder Approach

Fuminori Kobayashi, Taro Tsujino, and
Hirokazu Saitoh, Kyushu Institute of Technology

MA8b-15 Listless Zerotree Coding for Color Images

Wen-Kuo Lin and Neil Burgess,
University of Adelaide

MA8b-16 Analog Digits: Bit Level Redundancy in a Binary Multiplier

Aryan Saed, Nortel Semiconductors, and
Majid Ahmadi, Graham A. Jullien, and
William C. Miller, University of Windsor

Session MP1a— Signal Processing for Interactive Multimedia II

Chair: Lina Karam,
Arizona State University

MP1a-1 Resilient Compression of Video for Transmission Over the Internet **1:30 pm**
Avideh Zakhor and Daniel Tan
University of California-Berkeley

MP1a-2 Visual Computing for Internet Applications **1:55 pm**
Minerva M. Yeung, Scott Cravel, Samuel Wong,
and Boon-Lock Yeo, Intel Research Laboratories

MP1a-3 Active Browsing with Similarity Pyramids **2:20 pm**
Jau-Yuen Chen, Charles Bouman, and
John Dalton Purdue University

MP1a-4 Benchmarking of Image Features for Content- Based Retrieval **2:45 pm**
Wei-Ying Ma and HongJiang Zhang, HP Labs

BREAK **3:10 pm**

Session MP1b — Internet Imaging

Chair: Ping Wah Wong, Hewlett Packard

MP1b-1 Interactive Image Retrieval: Concept, Procedure and Tools **3:30 pm**
Zijun Yang, Xia Sharon Wan, and
Jay C.-C. Kuo University of Southern California

MP1b-2 Interactive Multimedia Entertainment Using the LYRICOS Singing Voice Synthesizer **3:55 pm**
E. Bryan George, Texas Instruments and
Michael W. Macon, Oregon Graduate
Institute of Science & Technology

MP1b-3 Scalable Audio Coding Based on a Sinusoidal Signal Model **4:20 pm**
Ted Painter and Andreas S. Spanias,
Arizona State University

MP1b-4 MMD-ARMA Approximation to the Volterra Series Expansion **4:45 pm**
Veit S. Kafka and Ulrich Appel,
Universitaet der Bundeswehr Muenchen

Session MP2 — Advances in Spectrum Analysis

Chairs: Petar M. Djuric,
State University of New York at Stony Brook;
S.J. Godsill, Cambridge University

MP2-1 **Multiple-Window Spectrum Estimates for Nonstationary Processes** **1:30 pm**
David J. Thomson, AT&T Bell Laboratories

MP2-2 **Bayesian Smoothing Methods for Spectral Density Estimation** **1:55 pm**
Chris Carter, Hong Kong University of Science & Technology

MP2-3 **Time-Frequency Decompositions: Bayesian Model-Based Approaches** **2:20 pm**
Mike West, Duke University

MP2-4 **Evolutionary Analysis of Non-Stationary Signals** **2:45 pm**
Luis F. Chaparro, University of Pittsburgh

BREAK **3:10 pm**

MP2-5 **Robust Bayesian Spectral Analysis** **3:30 pm**
Christophe Andrieu and Arnaud Doucet,
Cambridge University

MP2-6 **Time-Varying Spectra for Underspread and Overspread Nonstationary Processes** **3:55 pm**
Gerald Matz and Franz Hlawatsch, INTHFT,
Technische Universitaet Witaet Wien

MP2-7 **Wavelet-Based Multifractal Spectrum Estimation** **4:20 pm**
Richard Baraniuk, Rice University, and
Paulo Goncalves, INRIA, Rocquencourt

MP2-8 **Parametric Modeling and Estimation of Time Varying Spectra** **4:45 pm**
Petar M. Djuric, State University of New York,
and S.J. Godsill, Cambridge University

Session MP3 — Biomedical Signal Processing

Chair: John C. Mosher,
Los Alamos National Laboratory

MP3-1 **Bayesian Inference Applied to the Neural Electromagnetic Inverse Problem** **1:30 pm**
David Schmidt,
Los Alamos National Laboratory

MP3-2 **Estimating Evoked Dipole Responses by EEG/MEG in the Presence of Interference Sources** **1:55 pm**
A. Dogandzic, University of Illinois and
Arye Nehorai, University of Illinois at Chicago

MP3-3 **Spatiotemporal Analysis of Sparsely Sampled Cardiac Potentials** **2:20 pm**
Rob MacLeod, Quan Ni, Richard O. Kuenzler,
University of Utah, Dana Brooks
Northeastern University, Bruno Taccardi and
Robert L. Lux, University of Utah

MP3-4 **Markov Random Field Image Prior Models for Map Reconstruction of Magnetoencephalogram Images** **2:45 pm**
Brian D. Jeffs, Brigham Young University
and Alan H. Gardiner,
Lockheed Martin Federal Systems

BREAK **3:10 pm**

MP3-5 **Estimating Sources in E/MEG Studies Involving Task and Control Conditions** **3:30 pm**
John J. Ermer and Richard M. Leahy,
University of Southern California, and
John C. Mosher, Los Alamos National Laboratory

MP3-6 **Applications of Subspace Techniques to Biomedical Signal Processing** **3:55 pm**
B.F. Womack, R. Jandaghisemani, and
D.R. Diller, The University of Texas at Austin

MP3-7 **Continuous Wavelet Transform Application to EMG Signals During Human Gait 4:20 pm**
Adham R. Ismail and Shihab Asfour,
University of Miami

MP3-8 **Correlation Between Cepstral Parameters and Heart Rate of Speakers** **4:45 pm**
K. Gopalan, Purdue University-Calumet and
E.J. Cupples, Air Force Research Laboratory

Session MP4 — Speech Coding

Chairs: W. Bastiaan Kleijn, Royal Institute of Technology; Vladimir Cuperman, University of California at Santa Barbara

MP4-1 **Analysis-By-Synthesis Speech Coding with Quantization Noise Modeling** **1:30 pm**

Soren Vang Andersen, Aalborg University; W. Bastiaan Kleijn, Royal Institute of Technology; Soren Holdt Jensen and Egon Hansen, Aalborg University

MP4-2 **A Multi-Band Nonlinear Oscillator Model For Speech** **1:55 pm**

H. Haas Vienna and Gernot Kubin, Vienna University of Technology

MP4-3 **Adaptive Multi-Rate - A Speech Service Adapted to Cellular Radio Network Quality**

Anders Uvliden, Stefan Bruhn, and Roar Hagen, Ericsson Radio Systems

MP4-4 **A Mixed Harmonic Excitation Linear Predictive Speech Coder For Low Bit Rate Applications** **2:20 pm**

Suat Yeldener and Marion R. Baraniecki, COMSAT Laboratories

MP4-5 **Quantization of Variable Dimension Spectral Vectors** **2:45 pm**

C. Li, E. Shlomot, and Vladimir Cuperman, University of California-Santa Barbara

BREAK **3:10 pm**

MP4-6 **A 3.6 KBIT/S Voice Codec Based on Prototype Waveform Interpolation Techniques** **3:30 pm**

U. Bhaskar, S. Nandkumar, K. Swaminathan, G. Zakaria, and C. Ravishankar, Hughes Network Systems

MP4-7 **Channel Adaptive Joint Source-Channel Coding of Speech** **3:55 pm**

Alexis Bernard, Abeer Alwan, and Richard Wesel, University of California-Los Angeles

MP4-8 **Improved Algorithms for Phase Prediction and Frame Interpolation in Low Bit Rate Sinusoidal Coders** **4:20 pm**

Sassan Ahmadi, Nokia Mobile Phones, Inc. and Andreas S. Spanias, Arizona State University

Session MP5 — Adaptive Filtering for Communications I

Chair: Markus Rupp,
Lucent Technologies

MP5-1 **A-Posteriori Analysis of Adaptive Blind Equalizers** **1:30 pm**
Markus Rupp, Lucent Technologies and
Scott C. Douglas, University of Utah

MP5-2 **Performance Analysis of Finite-Length DFE Receivers Based on a Polyphase Representation** **1:55 pm**
C. Papadias and Markus Rupp,
Lucent Technologies

MP5-3 **Performance Improvements Achieved by Equalizing Intermediate Rate FSK Signals** **2:20 pm**
Michael Ready and Jeff Harp, Applied Signal
Technology, Inc.

MP5-4 **An Oversampled Subband Adaptive Filter Structure** **2:45 pm**
Ricardo Merched and Ali H. Sayed,
University of California-Los Angeles

BREAK **3:10 pm**

MP5-5 **Adaptive Equalization in Oversampled Subbands** **3:30 pm**
Stephan Weiss, Saul R. Dooley,
Asoke K. Nandi, and Robert W. Stewart,
University of Strathclyde

MP5-6 **An Efficient, Fast Converging Adaptive Filter For Network Echo Cancellation** **3:55 pm**
Steven L. Gay, Lucent Technologies

MP5-7 **Cancellation of Acoustic Echoes Using a Block Update Algorithm for Lausanne** **4:20 pm**
Thomas Schertler, Technische Universitaet

MP5-8 **An Adaptive Close-Talking Microphone Array** **4:45 pm**
Gary W. Elko, Jim West, Dennis Morgan, and
Robert Kubli, Lucent Technologies

Session MP6 — Radar and Sonar

Chair: Curtis Schleher,
Naval Postgraduate School

MP6-1 **Comparison of Two Algorithms for Correcting Zero-Doppler Clutter in Turntable ISAR Imagery** **1:30 pm**
G.A. Showman, Mark A. Richards, and
K.J. Sangston, Georgia Tech Research

MP6-2 **A DSP Based Signal Processor for Focal Plane Array Radar (FPAR)** **1:55 pm**
Russell Lefevre, John Kirk, Ray Durand, and
Tom Durand, Technology Service Corporation

MP6-3 **Comparison of Reduced Rank Signal Processing Techniques** **2:20 pm**
Scott Goldstein and Peter Zulch,
MIT Lincoln Laboratory

MP6-4 **Hot Clutter Characterization and Mitigation Techniques Based on Fractional Lower-Order Statistics(FLOS)** **2:45 pm**
Panagiotis Tsakalides and
Chrysostomos L. Nikias,
University of Southern California

BREAK **3:10 pm**

MP6-5 **Probabilistic Adaptive CFAR** **3:30 pm**
D. Curtis Schleher, Naval Postgraduate School

MP6-6 **Radar Imaging Using Statistical Orthogonality** **3:55 pm**
David G. Falconer, SRI International

MP6-7 **Multitarget List Viterbi Tracking Algorithm** **4:20 pm**
Richard Perry and Kevin Buckley,
Villanova University

MP6-8 **Maximum Likelihood and Cramer-Rao Lower Bound Estimators for (Nonlinear) Bearing Only Passive Target Tracking** **4:45 pm**
S. Koteswara Rao,
Naval Science & Technology Laboratory

Session MP7 — Complexity Issues in Image/Video Coding

Chair: Antonio Ortega,
University of Southern California

MP7-1 **Implementation and Optimization Issues for the H.263 Compression Standard** **1:30 pm**
Alice Yu and Michael Flynn,
Stanford University

MP7-2 **Representing Information with Computational Resource Bounds** **1:55 pm**
Daby Sow and Alexandros Eleftheriadis,
Columbia University

MP7-3 **A Global Decision Coding Scheme for H.263 Video Coding** **2:20 pm**
Bo Xie and Xuelong Zhu, Tsinghua University

MP7-4 **A Computation-Rate-Distortion Comparison of Vector Coding Methods** **2:45 pm**
Vivek Goyal, University of California-Berkeley
and Martin Vetterli, UCB & Ecole Polytechnic
Fed. Lausanne

BREAK **3:10 pm**

MP7-5 **Implementation of a Fast H.263+ Encoder/Decoder** **3:30 pm**
Berna Erol, Hussein Alnuweiri, and
Faouzi Kossentini, University of British Columbia

MP7-6 **A Computation-Constrained Motion Vector Search Algorithm for Block-Based Motion Estimation** **3:55 pm**
Michael Gallant and Faouzi Kossentini,
University of British Columbia

MP7-7 **Wavelet Transform Computation with Reduced Number of Operations** **4:20 pm**
Paul Fernandez and Antonio Ortega,
University of Southern California

MP7-8 **Image Recognition in Single-Scale and Multiscale Decoders** **4:45 pm**
Dirck Schilling, Pamela C. Cosman, and
Charles Berry, University of California-San Diego

Session MP8a — Algorithms and Structures for Adaptive Signal Processing
(Interactive Lecture)
1:30 - 3:00

Chair: Victor DeBrunner,
University of Oklahoma

MP8a-1 A New Adaptive Blind Equalizer Structure with Robustness to Loss of Channel Disparity
K. Skowratananont, S. Lambotharan, and
Johathon Chambers, Imperial College

MP8a-2 A Novel Re-Initialization Technique for CMA in the Presence of Channel Noise
Johathon Chambers, Imperial College

MP8a-3 Characteristics of Regions of Convergence of SMA Adaptive Blind Fractionslly Spaced Equalizer
Wonzoo Chung, Cornell University, Ming Gu,
University of Connecticut, C. Richard Johnson,
Cornell University, and Lang Tong,
University of Connecticut

MP8a-4 Convergence of LMS Adaptation Algorithm for Allpass Equalizer
Paul Oprisan and Wojtek Kolodzieg,
Oregon State University

MP8a-5 Adaptive IIR Filtering Using Input/Output Orthogonalization
A.A. (Louis) Beex and Sundar G. Sankaran,
Virginia Tech

MP8a-6 Accounting for Measurement Noise Color in Frequency Domain Adaptive Algorithms
Tonu Trump, Ericsson Radio Systems

MP8a-7 Hyperstable Adaption of "Resonator-In-Loop" Line Enhancer
V.V. Krishna, ZSP Corporation and
Channamallesh G. Hiremath, Signion Systems Pvt. Ltd.

MP8a-8 Steady-State Analysis of Continuous Adaptation Systems for Hearing Aids with a Delayed Cancellation Path
Marcio G. Siqueira and Abeer Alwan,
University of California-Los Angeles

Continued on next page...

MP8a-9 **Fitness-Based Exponential Probabilities for Genetic Algorithms Applied to Adaptive IIR Filtering**
Jacob D. Griesbach and Delores M. Etter,
University of Colorado

MP8a-10 **Adaptive Sidelob Blanker: A Novel Method of Performance Evaluation and Threshold Setting in the Presence of Inhomogeneous Clutter**
Daniel E. Kreithen, C. Frederick Pearson, and
Christ D. Richmond, MIT Lincoln Laboratory

MP8a-11 **Blind Adaptive Multiuser Detection over ISI Channels with Channel Estimation**
Yu Song and Sumit Roy,
University of Texas at San Antonio

MP8a-12 **Sample-by-Sample Multi-Transform Processing of Non-Stationary Speech Signals**
Bharath Rao Savkur and Victor DeBrunner,
University of Oklahoma

MP8a-13 **A Locally Stable Adaptive TLS Algorithm**
Bruce E. Dunne, Tellabs, Inc. and
Geoffrey A. Williamson,
Illinois Institute of Technology

MP8a-14 **Application of Concave/Schur-Concave Functions to the Learning of Overcomplete Dictionaries and Sparse Representations**
Kenneth Kreutz-Delgado and Bhaskar D. Rao,
University of Californ ia-San Diego

MP8a-15 **Subspace Adaptive Filtering Techniques for Multi-Sensor DS-CDMA Interference Suppression in the Presence of a Frequency-Selective Fading Channel**
Weiping Xu, University of California-San Diego;
Michael L. Honig, Northwestern University;
James R. Zeidler, Space & Naval Warfare Systems Center;
and Larry B. Milstein, University of California-San Diego

MP8a-16 **Convergence Analysis of the LMS Algorithm with a General Error Nonlinearity and an IID Input**
Tareq Y. Al-Naffouri, Georgia Institute of Technology;
Azzedine Zerguine and Maamar Bettayeb, KFUPM

Session MP8b — Distributed Detection (Interactive Lecture) and Data Fusion
3:30 - 5:00

Chair: Rick S. Blum,
Lehigh University

MP8b-1 FAME: Fusion Algorithm Measure of Effectiveness
Belur V. Dasarathy, Dynetics, Inc.

MP8b-2 Data Fusion Methodologies to Support Theater Level and Deployable Surveillance Systems
Mark D. Hatch and Joan L. Kaina, SPAWAR; Ronald P. Mahler, Lockheed Martin Tactical Defense Systems; and Robert S. Myre, Summit Research Corporation

MP8b-3 New Applications of Conditional and Relational Event Algebra to Fusion of Information
I.R. Goodman, SPAWARSYSCEN

MP8b-4 Outlier Resistant DS-SS Signal Processing
Stella N. Batalama, State University of New York at Buffalo; Michael Medley, Air Force Research Laboratory/IFGC and Dimitris A. Pados, State Univeristy of New York at Buffalo

MP8b-5 Order Statistics Based Diversity Combining for Fading Channels
S. Gollakota and R. Viswanathan, Southern Illinois University at Carbondale

MP8b-6 Multichannel Integration for Land Classification in Satelite Imagery
Mehmet Oner, ODTU and J. K. Aggarwal, University of Texas at Austin

MP8b-7 Communications Architecutre to Support Distributed Sensors
Jason Scholz, Don Gossink, and Martin Gill, DSTO

Continued on next page..

MP8b-8 Optimal Quantization Under Dependence
Peter Willett, University of Connecticut and
Peter Swaszek, University of Rhode Island

MP8b-9 Soft Handoff Strategies in Distributed Sensor Systems
T. Kasetkasem and P.K. Varshney, Syracuse University

MP8b-10 Image Fusion for a Digital Camera Application
Yumin Zhang and Rick S. Blum, Lehigh University

MP8b-11 Adaptive Data Fusion Processing: Thoughts and Perspectives
James Llinas and Tarun Sing,
State University of New York at Buffalo

MP8b-12 Distributed Detection of Gaussian Signals in Gaussian Noise
Rick S. Blum, Lehigh University

MP8b-13 Distributed Detection of a Change in Distribution
Venugopal Veeravalli, Cornell University

MP8b-14 Recent Developments in Fusing Microwave Radar Tracks with Relocatable Over-The-Horizon Radar (ROTHR) Tracks
William J. Yssel and William C. Torrez,
Space & Naval Warfare Systems Center

MP8b-15 A Time Series of Decisions Approach in Detection Systems
Mamdouh A. Ashraf, Naval Postgraduate School

Session TA1 — Multiuser Communications I

Chairs: Upamanyu Madhow and M. Honig, University of Illinois

TA1-1 **Computationally Efficient Iterative Multiuser Detection and Decoding** **8:30 am**
Suman Das, Elza Erkip, and Behnaam Aazhang, Rice University

TA1-2 **Iterative Soft Multiuser Detection** **8:55 am**
H. Vincent Poor and Xiaodong Wang, Princeton University

TA1-3 **Adaptive MMSE Detection Under Rapid Channel Variations** **9:20 am**
Upamanyu Madhow, Luis Galup, and Liping Julia Zhu, University of Illinois

TA1-4 **Blind Equalization via Least Squares Smoothing** **9:45 am**
Q. Zhao and Lang Tong, University of Connecticut

BREAK **10:10 am**

TA1-5 **Finite-Length Joint Linear and Decision Feedback Decorrelating Detectors for Asynchronous DS-CDMA in Multipath Channels** **10:25 am**
Irfan Ghauri and Dirk T.M. Slock, Institut Eurecom

TA1-6 **An RLS-Based Algorithm for Estimation and Demodulation of QS-CDMA Signals** **10:50 am**
Ronald A. Iltis, University of California-Santa Barbara

TA1-7 **Blind Stochastic Gradient Methods for Optimal Minimum Variance CDMA Receivers** **11:15 am**
Zhengyuan(Daniel) Xu and Michail K. Tsatsanis, Stevens Institute of Technology

TA1-8 **Optimal Multistage Interference Cancellation for CDMA Systems using the Nonlinear MMSE Criterion** **11:40 am**
S. Gollamundi, University of Notre Da me; R. M. Buehrer, Lucent Technologies-Bell Laboratories; S. Nagaraj and Yih-Fang Huang, University of Notre Dame

Session TA2 — Adaptive Filters for Nonlinear Signal Processing

Chair: Neil J. Bershad,
University of California - Irvine

TA2-1 **The Adaptation of Complex Layered Non-Linear Structures Using Global Search Strategies** **8:30 am**
Colin F.N. Cowan, F.J. Sweeney, and P. Power,
The Queen's University of Belfast

TA2-2 **Fluctuation Analysis of a Two-Layer Backpropagation Algorithm Used for Modelling Nonlinear Memoryless Channels** **8:55 am**
N. J. Bershad, University of California-Irvine;
M. Ibnkahla National Institute of Toulouse;
G. Blauwens and J. Cools, Catholic University
of Louvain; A. Soubrane and N. Ponson,
National Polytechnics of Toulouse

TA2-3 **Mean Squared Error Analysis of Analog Neural Networks Subject to Drifting Targets and Noise** **9:20 am**
Anthony Kub, University of Hawaii

TA2-4 **Exact and p'th Order Equalization and Linearization of Recursive Polynomial Systems** **9:45 am**
Alberto Carini Telital S.p.A.; V. John Mathews
University of Utah; and Giovanni L. Sicuranza
DEEI, Universit a degl Studi di Trieste

BREAK **10:10 am**

TA2-5 **Performance of Order Statistic LMS Equalisers on Stationary Channels** **10:25am**
Tetsuya Shimamura, Saitama University

TA2-6 **Adaptive Neural Nets Filter Using a Recursive Levenberg-Marquadt Search Direction** **10:50 am**
Lester S.H. Ngia, Jonas Sjoberg, and
Mats Viberg, Chalmers University of Technology

TA2-7 **A Gradient-Based Target Tracking Method Using Cumulants** **11:15 am**
Tsung-Hsien Liu and Jerry M. Mendel,
University of Southern California

TA2-8 **An Information-Theoretic Estimation/ Deflation Approach to Independent Component Analysis** **11:40 am**
Scott C. Douglas, University of Utah
and S.Y. Kung, Princeton University

Session TA3 — Multiscale Statistical Analysis & Applications

Chair: Hamid Krim
North Carolina State University

TA3-1 **Wavelet Analysis of the Multifractal Nature of Internet Traffic** **8:30 am**
Walter Willinger, AT&T Bell Laboratories

TA3-2 **Multiscale Regularization in Besov Spaces** **8:55 am**
D. Leporini and J.-C. Pesquet
University of Paris - Sud

TA3-3 **Multifractal Modeling and Analysis of Point Processes** **9:20 am**
Robert D. Nowak, Michigan State University

TA3-4 **The Least Statically-Dependent Basis and Its Applications** **9:45 am**
Naoki Saito, University of California-Davis

BREAK **10:10 am**

TA3-5 **Step-Change Localization in Additive and Multiplicative Noise via Multiscale Products** **10:25 am**
Anathram Swami and Brian Sadler,
Army Research Laboratory

TA3-6 **Low Complexity M-Hypotheses Detection: M Vecotrs Case** **10:50 am**
Ahmed Tewfik, University of Minnesota

TA3-7 **Multiscale Autoregressive Models and the Stochastic Realization Problem** **11:15 am**
Austin B. Frakt and Alan S. Willsky,
Massachusetts Institute of Technology

TA3-8 **Basis Selection in the Presence of Noise** **11:40 am**
Bhaskar D. Rao and Kenneth Kreutz-Delgado,
University of California-San Diego

Session TA4 — Smart Antennas in Wireless Communications

Chair: Hui Liu,
University of Washington

TA4-1 **Adaptive Beamforming and Power Allocation for OFDM Over Wireless Networks** **8:30 am**
M. Olfat, University of Maryland at College Park; F.R. Farrokhi, Bell Labs; and K.J. Ray Liu, University of Maryland

TA4-2 **Cochannel Signal Separation in Fading Channels Using a Modified Constant Modulus Array** **8:55 am**
Srikanth Gummadi and Brian L. Evans, University of Texas at Austin

TA4-3 **Technology Channel Estimation and Interference Rejection for Multi Channel Systems** **9:20 am**
Goran Klang Royal and Bjorn Ottersten, Royal Institute of Technology

TA4-4 **Space-Time Coding for the Parametric Wireless Channel** **9:45 am**
Sumeet Sandhu and Arogyaswami Paulraj, Stanford University

BREAK **10:10 am**

TA4-5 **Characterization of Fast Fading Wireless Vector Channels** **10:25 am**
A. Kavak, W. Yang, and Guanghan Xu, University of Texas at Austin

TA4-6 **A Weighted Energy Concentration Criterion for Improving the Performance of Deterministic Least Squares Blind Channel Identification** **10:50 am**
Michael D. Zoltowski and Der-Feng Tseng, Purdue University

TA4-7 **A Capacity Measure for Space-Division-Multiple-Access Channels** **11:15 am**
Murat Torlak and Guanghan Xu, University of Texas at Austin

TA4-8 **Impact of Switching Constraints on Selection Diversity Performance** **11:40 am**
James A. Ritcey and Murat Azizoglu University of Washington

Session TA5 — Time-frequency Representation

Chair: Moeness G. Amin,
Villanova University

TA5-1 **Gabor Transforms: Some New Properties and Applications** **8:30 am**
Xiang-Gen Xia, University of Delaware

TA5-2 **Time-Varying Estimators of Cross-Spectral Matrices** **8:55 am**
Ben Friedlander, University of California-Davis
and Louis L. Scharf University of Colorado

TA5-3 **Discrete Evolutionary Transform for Time-Frequency Analysis** **9:20 am**
Raungrong Suleesathira and Luis F. Chaparro,
University of Pittsburgh and
A. Akan, Istanbul University

TA5-4 **Optimal Scaled Windows for Spectrogram Decomposition of TFDs** **9:45 am**
William J. Williams, University of Michigan

BREAK **10:10 am**

TA5-5 **Application of Cross-Term Deleted Wigner Representation (CDWR) for Sonar Target Detection/Classification** **10:25 am**
Shubha Kadambe, Atlantic Aerospace Elect.
Corporation and Tulay Adali,
University of Maryland

TA5-6 **Nonstationary Interference Excision in Spread Spectrum Communications Using Time-Frequency Filtering Methods** **10:50 am**
Govind Mandapati and Moeness G. Amin,
Villanova University

TA5-7 **Broadband Interference Excision in Spread Spectrum Communication Systems via Fractional Fourier Transform** **11:15 am**
Olcay Akay and G. Faye Boudreaux-Bartels,
University of Rhode Island

TA5-8 **Beamspace Time-Frequency MUSIC for Airborne Antenna Arrays** **11:40 am**
Yimin Zhang and Moeness G. Amin,
Villanova University

Session TA6 — Video Processing

Chair: Alex Drukarev,
Hewlett Packard Labs

TA6-1 **A Fast DCT Domain Inverse Motion Compensation Algorithm Based on Shared Information in a Macroblock** **8:30 am**
J. Song, IBM T.J. Watson Research Center and
Boon-Lock Yeo, Intel Research Laboratories

TA6-2 **Rate Control Algorithms for Video Storage on Disk Based Video Servers** **8:55 am**
Zhourong Miao and Antonio Ortega,
University of Southern California

TA6-3 **Camera Pan Detection from Compressed Video With Application to Creating Stills from MPEG** **9:20 am**
Yucel Altunbasak and Andrew J. Patti,
Hewlett-Packard Labs

TA6-4 **Efficient Processing of Compressed Video Streams** **9:45 am**
Susie J. Wee Hewlett-Packard Labs

BREAK **10:10 am**

TA6-5 **A Sliding Window Approach to Real-time H.263+ Frame Rate Adjustment** **10:25 am**
Hwangjun Song, Jongwon Kim, and
Jay C.-C. Kuo, University of Southern California

TA6-6 **Scalable, Subband-Based Video Coding with a Locally-Adaptive Perceptual Disortion Measure** **10:50 am**
Ingo Hontsch and Lina J. Karam,
Arizona State University

TA6-7 **On the Compression of Video Using the Derivative of Gaussian Transform** **11:15 am**
Jeffrey A. Bloom, Signafy Inc. & UC-Davis
and Todd R. Reed, University of California-Davis

TA6-8 **Variable Size Block Motion Estimation** **11:40 am**
D. Sheckler, Y. Ozturk, and Huseyin Abut,
San Diego State University

Session TA7 — Digital Image/Video Libraries

Chair: B.S. Manjunath,
University of California-Santa Barbara

TA7-1 **Visual Media Management Research at IBM Almaden Research: Beyond QBIC** **8:30 am**
Dragutin Petkovic, Visual Media Management

TA7-2 **Real-Time Content-Based Processing of Multicast Video** **8:55 am**
Ye Shen, Wensheng Zhou, Asha Vellaikal, and
Jay C.-C. Kuo, University of Southern California

TA7-3 **Humane Interfaces to Video** **9:20 am**
Andrew Lippman, Nuno Vasconcelos,
and Giri Iyengar

TA7-4 **Representation of Spatio-Temporal Relationships in Video** **9:45 am**
Yining Deng and B.S. Manjunath,
University of California-Santa Barbara

BREAK **10:10 am**

TA7-5 **Internet Access to Digital Medical X-Ray by Image Features and Associated Text** **10:25 am**
L. Rodney Long and George R. Thoma,
National Library of Medicine

TA7-6 **Finding Pictures of Objects in Large Collections** **10:50 am**
David Forsyth,
University of California-Berkeley

TA7-7 **Structure and Content-Based Video Browsing** **11:!5 am**
HongJiang Zhang and Wei-Ying Ma,
Hewlett Packard Labs

TA7-8 **Video Abstraction: Summarizing Video Content for Retrieval and Visualization** **11:40 am**
Art Pope, Rakesh Kumar, and
Harpreet Sawhney, Sarnoff Corporation

Session TA8a — Blind Image Restoration and Image Processing Applications
(Interactive Lecture) 8:30 - 10:00

Chair: Brian Jeffs,
Brigham Young University

TA8a-1 Blind Super-Resolution of Turbulence-Degraded Images
D. Sheppard and Bobby Hunt,
University of Arizona

TA8a-2 Physical Constrained Blind Deconvolution
Stuart M. Jefferies, National Solar Observatory;
Julian C. Christou, Starfire Optical Range;
Keith Hege and Matt Cheselka, University of Arizona

TA8a-3 Myopic Deblurring of Space-Variant Blur by Using Phase-Diverse Speckle
Richard G. Paxman, Brian J. Thelen, and
D.A. Carrara, ERIM-International

TA8a-4 Blind Deconvolution for Space-Object Imaging Through Atmospheric Turbulence
Timothy J. Schulz,
Michigan Technological University

TA8a-5 Semi-Blind Image Restoration Based on Telltale Watermarking
Deepa Kundur and Dimitris Hatzinakos,
University of Toronto

TA8a-6 Generalized-Cross-Validation Estimation of the Regularization Parameters of the Subbands in Wavelet Domain Regularized Image Restoration
Koannis M. Stephanakis and Stefanos Kollias
National Technical University of Athens

TA8a-7 A General Algorithm for Recognizing Small, Vague, and Imagery-Alike Objects in a Nonuniformly Illuminated Medical Diagnostic Image
Samuel C. Lee and Yiming Wang,
University of Oklahoma

TA8a-8 Motion Segmentation and Human Face Location
Chao Yuan and Changshui Zhang,
Tsinghua University

Continued on next page...

TA8a-9 **Dense Motion Field Reduction for Motion Estimation**

Sheila S. Hemami and Aaron Deever,
Cornell University

TA8a-10 **Efficient Feature Tracking with Application to Camera Motion Estimation**

Paul D. Fiore, Dane Kottke, Sanders,
Wojciech Krawiec, and David Campagna,
Sanders, A Lockheed Martin Corporation

TA8a-11 **Edge Detection Using A Modified Morphological Gradient**

Gongyuan Qu and Sally Wood,
Santa Clara University

TA8a-12 **Optimal Prefiltering for Improved Image Interpolation**

Jeffery R. Price and Monson H. Hayes III,
Georgia Institute of Technology

TA8a-13 **New Image Processing Algorithms Requiring Almost No Apriori Design Information**

Claude S. Lindquist, University of Miami;
Todd S.C. Lindquist, Intelisyn; and Tad V. Lindquist,
California State University-Long Beach

TA8a-14 **Improvements for Image Compression Using Adaptive Principal Component Extraction (APEX)**

Nigel Ziyad, NASA Goddard Space Flight Center
& Howard University; E.T. Gilmore and
M.F. Chouikha, Howard University

TA8a-15 **A CFAR Intensity Pattern Detector for MMW SAR Images**

Li-Kang Yen and Jose Principe,
University of Florida

TA8a-16 **Two Dimensional Blind Volterra Signal Modelling for Texture Feature Extraction Using Nonlinear Constrained Optimisation**

Tania Stathaki, Imperial College

Session TA8b — Implementation of Analog and Digital Systems
(Interactive Lecture) 10:30 - 12:00

Chair: Vijay Madisetti,
Georgia Institute of Technology

TA8b-1 Optimal Architectures for Massively Parallel Implementation of Hard Real-time Beamformers
Karen P. Watkins, University of Texas at Austin

TA8b-2 A Two Trillion Operations per Second Miniaturized Mixed-Signal Radar Receiver/Processor
Willian S. Song, MIT Lincoln Laboratory

TA8b-3 Signal Processing for Low SNR Digital Communications
Claudio S. Marino and Paul M. Chau,
University of California-San Diego

TA8b-4 Code Noise in Delta-Sigma Modulators
Claude S. Lindquist, University of Miami

TA8b-5 Block Architectures for Discrete Wavelet Transform
Michael Weeks, Jimmy Limqueco, and
Magdy Bayoumi,
University of Southwestern Louisiana

TA8b-6 The Application of a Customized DSP Board for the Control of Power Electronic Converters in a DC Zonal Electric Distribution System
John G. Ciezki and Robert W. Ashton,
Naval Postgraduate School

TA8b-7 Evaluating EVD and SVD Errors in Signal Processing Environments: An Asymptotic Upper Bound Approach
Eugene Scott Baker and Ronald D. DeGroat,
University of Texas at Dallas

TA8b-8 Design Rule Driven Behavioral Synthesis for Test
Samuel Norman Hamilton, Tomas Gonzales, and
Alex Orailoglu, University of California-San Diego

Continued on next page...

TA8b-9 **A Comparative Study of Complexity-Based Capacitance Macro-Models**
Enrico Macii, Massimo Poncino, and
Riccardo Scarsi, Politecnico di Torino

TA8b-10 **Reducing Peak Power Consumption of Combinational Test Sets**
Enrico Macii, Alberto Macii, and Massimo Poncino, Politecnico di Torino

TA8b-11 **F-Gate: A Device for Glitch Power Minimization**
L. Benini Universita di Bologna;
Enrico Macii, Alberto Macii, Massimo Poncino,
and Riccardo Scarsi, Politecnico di Torino

TA8b-12 **Comparing Different Boolean Unification Algorithms**
Enrico Macii, Massimo Poncino, and Riccardo Scarsi, Politecnico di Torino

TA8b-13 **An Energy Efficient Scheduling Scheme for Signal Processing Applications**
Vamsi Krishna, N. Ranganathan, and
N. Vijaykrishnan, University of South Florida

TA8b-14 **An Alternative Architecture for On Chip Global Interconnect: Segmented Bus Power Modeling**
Yan Zhang, Wu Ye, and Mary Jane Irwin,
Penn State University

TA8b-15 **Low-Power Design of a 64-tap, 4-bit Digital Matched Fiulter Using Systolic Array Architecture and CVSL Circuit Techniques in CMOS**
Tolga Yalcin and Neslin Ismailoglu, ODTU

Session TP1 — Space-Time Adaptive Signal Processing for Wireless Communications

Chair: Michael D. Zoltowski,
Purdue University

TP1-1 **Joint Coding and Beamforming with Imprecise Channel Knowledge at the Transmitter** **1:30 pm**
Robert W. Heath, Jr. and Arogyaswami Paulraj,
Stanford University

TP1-2 **Space-Time Multiuser Detection** **1:55 pm**
Xiaodong Wang and H. Vincent Poor,
Princeton University

TP1-3 **Adaptive Beamforming for Wireless Communications** **2:20 pm**
Simon Haykin, McMaster University

TP1-4 **Multichannel Interference Cancellation for CDMA in the Presence of Fading** **2:45 pm**
V. Ghazi-Moghadam and M. Kaveh,
University of Minnesota

BREAK **3:10 pm**

TP1-5 **A Data-Adaptive Antenna Array Algorithm for Cochannel TDMA Signals** **3:30 pm**
Rajiv Chandrasekaran and John J. Shynk,
University of California-Santa Barbara

TP1-6 **Spatial Temporal Channel Identification and Equalization in the Presence of Strong Co-Channel Interference** **3:55 pm**
Chong-Meng Samson See, DSO National Laboratories; Arye Nehorai, University of Illinois at Chicago; and Colin F.N. Cowan, The Queen's University of Belfast

TP1-7 **Spatial Processing for Frequency Diversity Schemes** **4:20 pm**
Miguel A. Lagunas and Ana I. Perez,
Modulo D5 - Barcelona

TP1-8 **Adaptive Reduced-Rank Residual Correlation Algorithm for DS-CDMA Interference Suppression** **4:45 pm**
Scott Goldstein, MIT Lincoln Laboratory and
Michael L. Honig, Northwestern University

TP1-9 **Novel Zero-Forcing, MMSE, and DFE Equalizer Structures Employing Oversampling and Multiple Receiver Antennas** **5:10 pm**
Michael D. Zoltowski and Timothy Thomas,
Purdue University

Session TP2 — Blind Channel Estimation and Equalization

Chair: Z. Ding, Auburn University

TP2-1 **Blind/semi-blind Single/multi-user Equalization Wireless Communications** **1:30 pm**
David Gesbert, J. Sorelius, and
Arogyaswami Paulraj, Stanford University

TP2-2 **Semi-Blind Estimation of Multipath Channel Parameters** **1:55 pm**
A. Lee Swindlehurst,
Brigham Young University

TP2-3 **Semi-blind Equalization of Nonlinear Communication Channels Using Transmitter Precoding** **2:20 pm**
Erchin Serpedin and Georgios B. Giannakis,
University of Virginia

TP2-4 **Inverting Overdetermined Toeplitz Matrices with Application to Channel Equalization in Block Transmission Systems** **2:45 pm**
Anna Scaglione and Sergio Barbarossa,
University of Rome "La Sapienza" and
Georgios B. Giannakis, University of Virginia

BREAK **3:10 pm**

TP2-5 **Blind Estimation and Equalization of Time- and Frequency-Selective Channels Using Filterbank Precoders** **3:30 pm**
Cihan Tepedelenlioglu and
Georgios B. Giannakis, University of Virginia

TP2-6 **Dithered Signed-Error CMA: The Complex Valued Case** **3:55 pm**
P. Schniter and C.R. Johnson, Jr.,
Cornell University

TP2-7 **Enhanced RAM-based Equalizers for Nonlinear Channels** **4:20 pm**
James P. LeBlanc, New Mexico State University

TP2-8 **Blind Channel Approximation: Effective Channel Length Determination** **4:45 pm**
Athanasios P. Liavas, Phillip A. Regalia, and
Jean-Pierre Delmas, Institut National des
Telecommunications

Session TP3 — Analysis and Performance of Adaptive Filters

Chair: Scott C. Douglas,
University of Utah

TP3-1 **Basic Theory of the LMS Adaptive Filter: Recent Developments** **1:30 pm**
Hans J. Butterweck,
Eindhoven University of Technology

TP3-2 **New Results and Insights for the Filtered-s LMS Algorithm** **1:55 pm**
Orlando J. Tobias and Jose C. M. Bermudez,
Universidade Federal de Santa Catarina;
N.J Bershad, University of California-Irvine; and
Rui Seara, Universidade Federal de Santa Catarina

TP3-3 **Convergence Properties of Affine Projection and Normalized Data Reusing Methods** **2:20 pm**
Robert A. Soni, Kyle A. Gallivan, and
W. Kenneth Jenkins, University of Illinois
at Urbana-Champaign

TP3-4 **Are Ensemble-Average Learning Curves Reliable in Evaluating the Performance of Adaptive Filters?** **2:45 pm**
Vitor H. Nascimento and Ali H. Sayed,
University of California-Los Angeles

BREAK **3:10 pm**

TP3-5 **Measuring Performance Limits of Subband Adaptive Filters** **3:30 pm**
Stephan Weiss, University of Strathclyde;
Alexander Stenger, University of Erlangen-Nurnberg;
and Robert W. Stewart, University of Strathclyde

TP3-6 **A Two-Channel Wiener Filter Interpretation of the Adaptive Matched Filter** **3:55 pm**
Shawn Kraut and Louis L. Scharf,
University of Colorado

TP3-7 **On the Separation of Channel and Frequency Offset Estimation** **4:20 pm**
Markus Rupp, Lucent Technologies

TP3-8 **Adaptive Step Size Techniques for Decorrelation and Blind Source Separation** **4:45 pm**
Scott C. Douglas, University of Utah and
Andrzej Cichocki, RIKEN Brain Science Institute

Session TP4 — Applications-Specific Architectures

Chair: Keshab K. Parhi,
University of Minnesota

TP4-1 A **Convolutionally-Coded Adaptive CDMA Receiver Architecture** **1:30 pm**
Sabera Kazi, Honeywell, Inc. and Lori Lucke, Minnetronix, Inc.

TP4-2 **Low-Power Digital Signal Processing via Dynamic Algorithm Transformations (DAT)** **1:55 pm**
Manish Goel and Naresh R. Shanbhag, University of Illinois at Urbana-Champaign

TP4-3 **General Purpose FIR Filter Arrays Using Optimized Redundancy Over Direct Product Polynomial Rings** **2:20 pm**
M. Shahkarami; Graham A. Jullien; B. Li and William C. Miller, University of Windsor

TP4-4 **Power Comparison of Flow-Graph and Distributed Arithmetic Based DCTs** **2:45 pm**
Martin Kuhlmann and Keshab K. Parhi, University of Minnesota

BREAK **3:10 pm**

TP4-5 **Systolic VLSI Architectures for 1-D Discrete Wavelet Transforms** **3:30 pm**
Tracy C. Denk, Broadcom Corporation and Keshab K. Parhi, University of Minnesota

TP4-6 **Performance Tradeoffs in Digit-Serial DSP Systems** **3:55 pm**
Hiroshi Suzuki, Yun-Nan Chang, and Keshab K. Parhi, University of Minnesota

TP4-7 **Optimal Bipartite Multi-Processor Implementation of Recurrent DSP Algorithm with Fixed Communication Delay** **4:20 pm**
Yu Hen Hu and Hung-ying Tyan, University of Wisconsin

TP4-8 **Pipelining of Bit-Serial IIR Digital Filters Using New Loop-Bound Formulation** **4:45 pm**
Jin-Gyun Chung, Taek-Sung Kim and Hang-Geun Jeong, Chonbuk National University

TP4-9 **Efficient RNS to Binary Conversion Using SRT Division Architecture** **5:10 pm**
Neil Burgess, The University of Adelaide

Session TP5 — Still Image Compression II

Chair: K. Konstantinidis, Stream Machine

TP5-1 **A Nearly Lossless Vector Quantization Algorithm for Compression of Remotely Sensed Images** **1:30 pm**
K. Sayood, University of Nebraska

TP5-2 **RAPP: Lossless Image Compression Using Runs of Adaptive Pixel Patterns** **1:55 pm**
Viresh Ratnakar, Epson Palo Alto Laboratory

TP5-3 **Image Domain Compression of Simple Image** **2:20 pm**
Youngjun Yoo, Younggap Kwon, and
Antonio Ortega,
University of Southern California

TP5-4 **Algorithmic Techniques for Tracking Source Nonstationarity** **2:45 pm**
Xiaolin Wu, University of Western Ontario

BREAK **3:10 pm**

TP5-5 **A Multiresolution Compression Technique for Compound Documents** **3:30 pm**
David Taubman, Hewlett-Packard Labs

TP5-6 **A Simple Variable Quantization Technique for JPEG Part 3** **3:55 pm**
Nasir Memon and Dan Tretter,
Hewlett-Packard Labs

TP5-7 **Region Based Image Compression Using Recursive Triangular Partitioning with a Blending Model** **4:20 pm**
Joceli Mayer and Glen Langdon,
University of California-Santa Cruz

TP5-8 **Improvement of Coding Efficiency Using Wavelet Block Chaining in ZTE Coding** **4:45 pm**
Yasser F. Syed and K.R. Rao,
University of Texas at Arlington

Session TP6 — Hyperspectral Imaging and Remote Sensing

Chair: Stephanie Sandor-Leahy, TRW

TP6-1 **Material Characterization using a Hyperspectral Infrared Imaging Spectrometer** **1:30 pm**
Randy Roberts,
Lawrence Livermore National Laboratory

TP6-2 **Comparison of Physics Based Processing to Orthogonal Subspace Projection Methods for the Classification of Vegetation in High Resolution Hyperspectral Data** **1:55 pm**
E.M. Winter, Technical Research Associates, Inc.

TP6-3 **Computation Convexity and the Hyperspectral Mixed Pixel Problem** **2:20 pm**
Joseph W. Boardman,
Analytical Imaging and Geophysics

TP6-4 **The TRWIS III Hyperspectral Imager: Instrument Performance and Remote Sensing Applications** **2:45 pm**
Stephanie Sandor-Leahy, Peter Jarecke,
DingAn Xu, Ted Hedman, Miguel Figueroa,
Sveinn Thordarson, and Debra Beiso, TRW

BREAK **3:10 pm**

TP6-5 **3-D Image Analysis and Orthogonal View Prediction of Electrical Discharges** **3:30 pm**
Mathini Sellathurai, McMaster University

TP6-6 **Multiscale Modelling for Target Detection in Complex Synthetic Aperture Radar Imagery** **3:55 pm**
Jim Schroeder, CSSIP; and David Howard,
Defence Science & Technology Organisation

TP6-7 **Wavelet Compression of Complex SAR Imagery Using Complex- and Real-Valued Wavelets: A Comparative Study** **4:20 pm**
Robert W. Ives, Sandia National Laboratories;
and Neeraj Magotra and Chris Kiser,
University of New Mexico

TP6-8 **Focusing Resonance Signatures in Ultra-wideband SAR** **4:45 pm**
Richard Rau and James H. McClellan,
Georgia Institute of Technology

TP6-9 **Cyclostationary Signal Models for the Detection and Characterization of Vibrating Objects in SAR Data** **5:10 pm**
Nikola S. Subotic, Brian J. Thelen, and
David A. Carrara, ERIM International

Session TP7 — Applications of Statistical Array Processing

Chair: Mats Viberg,
Chalmers University of Technology

TP7-1 **Model Fitting and Testing in Near Surface Seismics Using Maximum Likelihood in Frequency** **1:30 pm**
Domain C. Frederick Pearson, MIT Lincoln Laboratory and M. Westebbe Ruhr and H. Krummel Ruhr, University Bochum

TP7-2 **Detection of Ship Wake by an Airborne Magnetic Sensor** **1:55 pm**
Arye Nehorai, University of Illinois at Chicago

TP7-3 **A Robust Hybrid Spectral Estimation Method for SAR Imaging and Target Feature Extraction** **2:20 pm**
Jian Li, Z. Bi, Renbiao Wu, and E.G. Zelnio, University of Florida; and Petre Stoica, Uppsala University

TP7-4 **Adaptive Processing in Underwater Acoustics** **2:45 pm**
Jeffrey L. Krolik, Duke University

BREAK **3:10 pm**

TP7-5 **The Theoretical Performance of a Class for Space-Time Adaptive Detection and Training Strategies for Airborne Radar** **3:30 pm**
Christ D. Richmond, MIT Lincoln Laboratory

TP7-6 **Adaptive Array Processing for Wideband Nulling in GPS Systems** **3:55 pm**
Gary F. Hatke, MIT Lincoln Laboratory

TP7-7 **Performance of OFDM/CDMA Systems Using Antenna Arrays** **4:20 pm**
Murat Torlak and Guanghan Xu, University of Texas at Austin

TP7-8 **A Computationally Efficient Method for Joint Direction Finding and Frequency Estimation in Colored Noise** **4:45 pm**
Mats Viberg, Chalmers University of Technology; and Petre Stoica, Uppsala University

TP7-9 **Direction Finding with a Dually Polarized Antenna Array Using Path-Wise Constraints with Application to Real Data** **5:10 pm**
Per Pelin, Chalmers University of Technology

Session TP8a — Wavelets and Digital Signal Processing Applications
(Interactive Lecture) 1:30 - 3:30

Chairs: Monique Fargues
and Ralph Hippenstiel,
Naval Postgraduate School

TP8a-1 Fuzzy Adaptive Discrete Cosine Transform
Gerard Coutu, University of California-Irvine

TP8a-2 Per-Survivor Frequency-Shift Filtering for Co-channel Interference Suppression
Michael P. Clark and W.A. Brown, Mission Research Corporation

TP8a-3 Sensor Fusion and Classification of Acoustic Signals Using Bayesian Networks
Michael J. Larkin, Naval Undersea Warfare Center

TP8a-4 Identification and Removal of Man- Made Transients from Geomagnetic Array Time Series: A Wavelet Transform Based Approach
Thomas T. Liu and Antony C Fraser-Smith, Stanford University

TP8a-5 Empirical Bayes Wavelet Denoising Using Jeffreys Prior
Mario A.T. Figueiredo, Instituto Superior Tecnico
and Robert D. Nowak, Michigan State University

TP8a-6 Detection Issues Over Multiresolution Subspaces
Nurgun Erdol, Florida Atlantic University
and Feng Bao, 8x8, Inc.

TP8a-7 Design of Lattice Wave Digital Filter Banks
Juergen Vollmer, German National Research
Center for Information Technology

TP8a-8 Hybrid Wavelet Packet Analysis: Characterization and Implementation
Robert Hedges and Douglas Cochran,
Arizona State University

Continued on next page...

TP8a-9 **Total Error Performance Analysis of a Subband Adaptive Digital Filter**

Hisaya Munemoto and Hiroshi Ochi,
University of the Ryukyus

TP8a-10 **A Moebius Matrix Representation for Real Symmetric Toeplitz Matrices**

German Feyh, Cirrus Corp.

TP8a-11 **A Genetic Algorithm for Optimization of Linear Phase FIR Filter Coefficients**

Mehmet Oner, ODTU

TP8a-12 **Parametric Estimation and Suppression of Non-stationary Interference in DS-Spread Spectrum Communications**

Muhammad Z.Ikram, Georgia Institute of Technology; A. Belouchrani,
National Polytechnic School of Algiers;
and Karim Abed-Meraim, University of Melbourne & Georgia Institute of Technology

TP8a-13 **Wavelets for Detection and Analysis of Power System Transients**

Visshwanth M. Reddy and Sathyanarayan S. Rao,
Villanova University

TP8a-14 **Transient Signal Detection Using Unitary Transformation**

Sokbom Han and Douglas Cochran,
Arizona State University

TP8a-15 **Lapped Transforms of Arbitrary Block Size**

Trac D. Tran, University of Wisconsin; and
Truong Q. Nguyen, Boston University

Session TP8b — Estimation and Detection
(Interactive Lecture)
3:30 - 5:00

Chair: J. Li, University of Florida

TP8b-1 A New Velocity Estimator for Cellular Systems Based on Higher Order Crossings

Ali Abdi and Mostafa Kaveh,
University of Minnesota

TP8b-2 An Adaptive Spatial Diversity Receiver for Correlated Non-Gaussian Noise and Interference

Yumin Zhang and Rick S. Blum, Lehigh University

TP8b-3 Improved Matrix Pencil Methods

Biao Lu, Dong Wei, Brian L. Evans, and Alan C. Bovik, University of Texas at Austin

TP8b-4 Interference Identification for Detection and Estimation of Second Order Random Processes

Michael L. McCloud and Louis L. Scharf,
University of Colorado

TP8b-5 Chirp Parameter Estimation Using Rank Reduction

Bjorn Volcker and Bjorn Ottersten,
Royal Institute of Technology

TP8b-6 Non-Efficiency of the Non-Linear Least Square Estimator of Polynomial Phase Signals in Colored Noise

Anathram Swami, Army Research Lab; and
Mounir Ghogho, University of Strathclyde

TP8b-7 Sampling Theorems for Linear Time-Varying Systems with Bandlimited Inputs

Soonman Kwon and Daniel R. Fuhrmann,
Washington University

TP8b-8 Fast Algorithm for the Two-Dimensional Modified Covariance Method of Linear Prediction

Lawrence Marple, Jr.,
ORINCON Corporation

Continued on next page...

TP8b-9 **The Linear Minimum-Mean-Squared-Error Estimation of an Undersampled Wide-Sense Stationary Random Process**
Michael B. Matthews,
Monterey Bay Aquarium Research Institute

TP8b-10 **Signal Recovery Under Noise**
M. Pawlak,
University of Manitoba

TP8b-11 **Low Power Detection using Stochastic Resonance**
Mohammed Nafie and Ahmed Tewfik,
University of Minnesota

TP8b-12 **Resolution and Ambiguity Bounds for Interferometric Like Systems**
Michael Zatman and Steven Smith,
MIT - Lincoln Laboratory

TP8b-13 **An Inverse Signal Approach to Computing the Envelope of a Real Valued Signal**
Ramdas Kumaresan, University of Rhode Island

TP8b-14 **Verified Global Optimization: What it is, how it can be used, and the GlobSol package**
R. Baker Kearfott,
University of Southwestern Louisiana

TP8b-15 **A New Approximate Karhunen-Loeve Transform for Data Compression**
Ali D. Pirooz and Irving S. Reed,
University of Southern California

TP8b-16 **A New Interval-Based Algorithm for Parameter Estimation from Bounded-Error Data**
Xin Feng, and George Corliss,
Marquette University;
Richard Kelnhofer, Allen-Bradley Co.

Session WA1 — Adaptive Filtering for Communications II

Chair: Howard Fan,
University of Cincinnati

WA1-1 **Training Sequence Design for Adaptive Equalization of Multi-User Systems** **8:30 am**
Giuseppe Caire, Politecnico di Torino; and
Urbashi Mitra, Ohio State University

WA1-2 **QR Decomposition Based Blind Channel Identification and Equalization** **8:55 am**
Xiaohua Li and Howard Fan,
University of Cincinnati

WA1-3 **A Rectangular Constellation-Based, Blind Equalization Technique** **9:20 an**
Edgar H. Satorius,
California Institute of Technology and
James J. Mulligan, TASC

WA1-4 **Blind Equalization Via Linearly Constrained Minimum Variance Processing** **9:45 am**
L. B. Fertig and James H. McClellan,
Georgia Institute of Technology

BREAK **10:10 am**

WA1-5 **Performance Analysis of the Sequential Beamforming Algorithm for Cochannel TDMA Signals** **10:25 am**
Rajiv Chandrasekaran and John J. Shynk,
University of California-Santa Barbara

WA1-6 **Cone Constrined Constant Modulus Algorithm for Blind Adaptive Multiuses Interference Suppression** **10:50 am**
Milos Doroslovacke, Lei Yao, and
Branimir R. Vojcic, George Washington University

WA1-7 **On the Performance of CMA in Spatial Macro-Diversity Antennas** **11:15 am**
Weifeng Mu and Moeness G. Amin,
Villanova University

WA1-8 **Performance Analysis of Adaptive Fault Tolerant Digital Filters in the Presence of Single and Multiple Coefficient Bit Errors** **11:40 am**
G. Leon and W. Kenneth Jenkins,
University of Illinois at Urbana-Champaign

Session WA2 — Space-Time Adaptive Processing

Chair: A. Lee Swindlehurst,
Brigham Young University

WA2-1 **Adaptive Monopulse Processing of Monostatic Clutter and Coherent Interference in the Presence of Mainbeam Jamming** **8:30 am**
Yaron Seliktar, Douglas B. Williams, and E. Jeff Holder,
Georgia Institute of Technology

WA2-2 **Adaptive Detection Performance of Principal Components Inverse, Cross Spectral Metric and the Partially Adaptive Multistage Wiener Filter** **8:55 am**
Brian Freburger and Don Tufts,
University of Rhode Island

WA2-3 **Constraint Optimization for Partially Adaptive Subspace STAP Algorithms** **9:20 am**
Ed Baranoski, MIT Lincoln Laboratory

WA2-4 **Detection Performance Degradation for Airborne Radar in the Presence of Miscalibrated Arrays** **9:45 am**
Steven Ricks and A. Lee Swindlehurst,
Brigham Young University

BREAK **10:10 am**

WA2-5 **Space-Time Adaptive Processing with Sparse Antenna Arrays** **10:25 am**
James Ward, MIT Lincoln Laboratory

WA2-6 **Sub-Space Approximation for Adaptive Multichannel Radar Filtering** **10:50 am**
Adam W. Bojanczyk, Cornell University;
William Melvin and E. Jeff Holder,
Georgia Institute of Technology

WA2-7 **Spatio-Temporal Array Processing for CDMA/SDMA Downlink Transmission** **11:15 am**
Giuseppe Montalbano, Politecnico di Torino & Institut Eurecom; Irfan Ghauri and Dirk T.M. Slock, Institut Eurecom

WA2-8 **A Blind Least-Squares Approach to STAP Using MCARM Data** **11:40 am**
Sheeyun Park and Tapan K. Sarkar,
Syracuse University

Session WA3 — Source Separation and Channel Estimation

Chair: Michail K. Tsatsanis,
Stevens Institute of Technology

WA3-1 **Blind Fractionally spaced Dual Channel Signal Reconstruction** **8:30 am**
Ben Friedlander and Ariela Zeira,
University of California-Davis

WA3-2 **Adaptive Multi-User Detection for Fading CDMA Channels Using Antenna Arrays** **8:55 am**
H. Huang, L. Mailaender, and C. Papadias,
Lucent Technologies (Bell Labs Research)

WA3-3 **Blind Channel Identification with MSK Inputs** **9:20 am**
Pierre Comon, O. Grellier, and B. Mourrain,
EURECOM

WA3-4 **Source Separation Using Second Order Statistics: Identifiability Conditions and Algorithms** **9:45 am**
Michail K. Tsatsanis,
Stevens Institute of Technology

BREAK **10:10 am**

WA3-5 **Further Results on Optimally Weighted Subspace Based Blind Channel Estimation** **10:25 am**
Martin Kristensson and Bjorn Ottersten,
Royal Institute of Technology

WA3-6 **Source Separation of Convolutive Mixtures: A Contrast Function Based Approach** **10:50 am**
C. Simon, C. Vignat, and Ph. Loubaton,
Universite de Marne la Vallee; C. Jutten
and G. d'Urso, Institut National
Polytechnique de Grenoble

WA3-7 **Independent Component Analysis in Noise** **11:15 am**
Lang Tong, Cornell University and S.Y. Kung,
Princeton University

WA3-8 **Optimal Joint Azimuth-Elevation and Signal-Array Response Estimation Using Parallel Factor Analysis** **11:40 am**
R. Bro The Royal Bet. & Agri.University;
Nicholas D. Sidiropoulos and
Georgios B. Giannakis, University of Virginia

Session WA4 — Multimedia Signal Processing

Chair: K.J. Ray Liu,
University of Maryland

WA4-1 **Joint Optimal Boundary Encoding and DPCM Model Selection** **8:30 am**
Gerry Melnikov, Guido M. Schuster, and
Aggelos K. Katsaggelos, Northwestern University

WA4-2 **Dynamic Frame-Skipping for Transform Domain Video Transcoding** **8:55 am**
Jenq-Neng Hwang and Tzong-Der Wu,
University of Washington

WA4-3 **A New Loading Algorithm for Image Transmitting over Noisy Channel: Combined Source Coding and Multicarrier Modulation Approach** **9:20 am**
H. Zheng, A. Raghupathy, and K.J. Ray Liu,
University of Maryland

WA4-4 **A Two-Pass Video Encoding Scheme for Streaming Video Applications** **9:45 am**
I-Ming Pao and Ming-Ting Sun,
University of Washington

BREAK **10:10 am**

WA4-5 **Image Transmission over Channels with Bit Errors and Packet Erasures** **10:25 am**
Pamela C. Cosman, Jon K. Rogers,
P. Greg Sherwood, and Kenneth Zeger,
University of California-San Diego

WA4-6 **Modeling of H.263 Encoded Low-Bit-Rate Video Traffic for Tactical Video Conferenceing Applications** **10:50 am**
Robert E. Parker and Murali Tummala,
Naval Postgraduate School

WA4-7 **Robust Image Compression Based on Fast Resynchronizatino Huffman Code and Inter-Subband Dependency** **11:15 am**
Te-Chang Yang and Jay C.-C. Kuo,
University of Southern California

Session WA5 — Wavelets/Time-Scale Representations

Chair: Nurgun Erdol,
Florida Atlantic University

WA5-1 **Detection, Shiftability, and Wavelets** **8:30 am**
Jose M.F. Moura,
Carnegie Mellon University

WA5-2 **Wavelet Transforms and Denoising Algorithms** **8:55 am**
Kathrin Berkner, Rice University

WA5-3 **Wavelet Transform Techniques for Time Varying Propagation and Scattering Characterization** **9:20 am**
Leon H. Sibul and Michael J. Roan,
The Pennsylvania State University

WA5-4 **A New Time / Frequency Technique for Detecting Chirped Signals** **9:45 am**
Adele B. Doser,
University of Texas at Dallas

BREAK **10:10 am**

WA5-5 **Design of Two-Channel Low Delay Perfect Reconstruction Filter Banks** **10:25 am**
Rajeev Gandhi and Sanjit K. Mitra,
University of California-Santa Barbara

WA5-6 **Optimal Two Channel Synthesis IIR Filter Banks with Subband Noise** **10:50 am**
J. Hernan Scalabrini Ortiz,
Francisco E. Castiglioni, and Sara Tressens,
Universidad de Buenos Aries

WA5-7 **Multidimensional Matched Sampling Systems and PRCC Filter Banks** **11:15 am**
Ajit S. Bopardikar and Raghuveer M. Rao,
Rochester Institute of Technology

WA5-8 **Wavelet-Based Approaches to Underwater Signal Classification** **11:40 am**
Monique P. Fargues and Ozhan Duzenli,
Naval Postgraduate School

Session WA6 — Models in Imaging and Tomography

Chair: Charles Boumann,
Purdue University

WA6-1 **Image Enhancement Using Fourth Order Partial Differential Equations** **8:30 am**
Yu-Li You, Digital Theater System and
Mostafa Kaveh, University of Minnesota

WA6-2 **A Multiscale Penalized Maximum Likelihood Estimation Method for Poisson Inverse Problems** **8:55 am**
Robert D. Nowak, Michigan State University
and Eric Kolaczyk, Boston University

WA6-3 **Medical CenterSpatial Resolution and MAP Estimation for Single Photon Emission Computed Tomography** **9:20 am**
Jim Bowsher and Ron Jaszczak,
Duke University Medical Center

WA6-4 **Prior Models for Multiscale Bayesian Image Reconstruction** **9:45 am**
Thomas Frese and Charles Boumann,
Purdue University; Ken Sauer,
University of Notre Dame

BREAK **10:10 am**

WA6-5 **Active Contour Models for Segmentation and Reconstruction on Medical Images** **10:25 am**
Sylvie Teboul, Syst. Remes de Sophia Antipolis;
Laure Blanc-Feraud, Laboratoire I3S;
G. Aubert and Michel Barlaud,
Universite de Nice-Sophia Antipolis

WA6-6 **Multiscale Texture Segmentation Using Wavelet-Domain Hidden Markov Models** **10:50 am**
Hyeokho Choi and Richard Baraniuk,
Rice University

WA6-7 **Channel Order Estimation for Multichannel Blind Image Recovery** **11:15 am**
Gopal Harikumar, Tellabs Research
Laboratories; and Yoram Bresler, University
of Illinois at Urbana-Champaign

WA6-8 **Fractal Interpolation of Images & Volumes** **11:40 am**
Jeffery R. Price and Monson H. Hayes, III,
Georgia Institute of Technology

Session WA7 — System Level Design Tools, Methods, and Case Studies

Chair: Brian L. Evans,
University of Texas at Austin

WA7-1 **Software Synthesis From Dataflow Models for Embedded Software Design in the G Programming Lanuage and the LabVIEW Development Environment** **8:30 am**

Hugo Andrade and Scott Kovner,
National Instruments Corporation

WA7-2 **Cosimulating Dataflow with Analog RF Circuits** **8:55 am**

Jose Luis Pino and Kal Kalbasi, HP EEsof

WA7-3 **Interaction of Finite State Machines and Concurrency Models** **9:20 am**

Bilung Lee and Edward A. Lee,
University of California-Berkeley

WA7-4 **Systems Level Design Using Temporal Models of Software and Architectures** **9:45 am**

Moinul Khan and Vijay K. Madisetti,
Georgia Institute of Technology

BREAK **10:10 am**

WA7-5 **Real-Time Sonar Beamforming on a Unix Workstation Using Process Networks and POSIX Threads** **10:25 am**

Gregory E. Allen, David C. Schanbacher, and
Brian L. Evans, University of Texas at Austin

WA7-6 **System-Level Modeling of SDP and Embedded Processors** **10:50 am**

Vojin Zivojnovic, Synopsys. Inc.

WA7-7 **MPEG-2 Video Decoding on the TMS320C6X DSP Architecture** **11:15 am**

S. Sriram and Ching-Yu Hung,
Texas Instruments, Inc

Session WA8a — Signal Processing for Communications II
(Interactive Lecture) 8:30 - 10:00

Chair: Naofal Al-Dhahir,
GE Corp. Research & Development

WA8a-1 **Mismatched DFE and THP**
Wei Shi and Richard D. Wesel,
University of California-Los Angeles

WA8a-2 **A New Trellis Coded Residual Scalar Quantizer**
Mohammad A. Khan, Mark J.T. Smith, and
Steven W. McLaughlin, Georgia Institute of Technology

WA8a-3 **Dynamic Bandwidth Optimization for Wireline and Wireless Channels**
Ache Leke and John M. Cioffi,
Stanford University

WA8a-4 **Capacity of Frequency Selective Fading Channels with Receiver Side Information**
Venceslav Kafedziski, Arizona State University

WA8a-5 **Effect of Nonlinearities on Spread Spectrum Communications**
Pramod K. Varshney, I. Demirkiran, and
D.D. Weiner, Syracuse University; and
A.L. Drozd, Andro Consulting

WA8a-6 **Performance Analysis of Non Coherent DPSK in a Raleigh Fading Channel Using First, Second, and Third Order Post Selection Combining Techniques**
Tahir Conka, Ralph Hippenstiel, and
Tri T. Ha, Naval Postgraduate School

WA8a-7 **Analysis and Improvement of the J.83 Annex B Trellis Code for Cable Modems**
Alan Gatherer and Murtaza Ali, Texas Instruments

WA8a-8 **Turbo Equalization and Coding for Magnetic Recording**
Laura L. McPheters and Steven W. McLaughlin,
Georgia Institute of Technology

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WA8a-9 Signal Processing ASIC Requirements for High Speed Wireless Data Communications

Babak Daneshrad,
University of California-Los Angeles

WA8a-10 The Value of Doppler Information for Multiple Access and Power Control in LEO Satellite Systems

Irfan Ali, Naofal Al-Dhahir, and John E. Hershey,
GE Corp. Research & Development;
Gary J. Saulnier, Rensselaer Polytechnic Institute

WA8a-11 Anti-Jam, Anti-Multipath Spread Spectrum OPDM System

Gary J. Saulnier and Zhong Ye,
Rensselaer Polytechnic Institute;
and Michael Medley, Air Force Research Labatory/IFGC

WA8a-12 Space-Time Coding and Transmission Optimization for Wireless Channels

John M. Cioffi and Ardavan Maleki-Tehrani,
Stanford University

WA8a-13 Adaptive Equalization for Space-Time Coded Wireless Communications

Ayman F. Naguib and Nambi Seshadri,
AT&T Labs - Research

WA8a-14 An Oversampled Subband Adaptive Filter Structure

Ricardo Merched and Ali H. Sayed,
University of California-Los Angeles

WA8a-15 Power Efficient FIR Folding Transformation for Wireline Digital Communications

Ahmed F. Shalash and Keshab K. Parhi,
University of Minnesota

Session WA8b — Multiuser Communications II
(Interactive Lecture)
10:30 - 12:00

Chair: Hui Liu,
University of Washington

WA8b-1 Transmitter-Receiver Design in Multi-carrier CDMA Communications
Hui Liu and Hujun Yin,
University of Washington

WA8b-2 Optimal FIR Transmit Filters for Multiuser Wireline Communications
Mohammed Nafie and Ahmed F. Shalash,
University of Minnesota

WA8b-3 Wavelet-Based Multirate Diversity Modulation for Multiple Access Cellular Radio Channels
Chris Gao and Elvino Sousa,
University of Toronto

WA8b-4 Performance Analysis of CDMA Mobile Systems Using Antenna Arrays and Multi-user Detection
Nermin A. Mohamed and James George Dunham,
Southern Methodist University

WA8b-5 Adaptive Time Delay and Frequency Estimation for Digital Signal Synchronization in CDMA Systems
Saul R. Dooley and Asoke K. Nandi,
University of Strathclyde

WA8b-6 Delay Decision Based PN Code Acquisition
Sam Heidari, LINKABIT Wireless

WA8b-7 A Frequency Domain Method for DS-CDMA Synchronization
Andreas Jakobsson and Claes Tidestav,
Uppsala University; A. Lee Swindlehurst and
Brian Jeffs, Brigham Young University;
David Asztely, Royal Institute of Technology;

WA8b-8 Novel Scheme for Blind Symbol Separation in CDMA Downlink
Tapani Ristaniemi and Jyrki Joutsensalo,
University of Jyvskyl

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WA8b-9 Semi-blind MMSE Multi-User Detectors for CDMA: Subspace Methods

Anders Host-Madsen,
Kwangju Institute of Science & Technology

WA8b-10 The Effect of the Oversampling Ratio on Sigma-Delta Adaptive Filters for CDMA Interference Suppression

Daniel Garcia-Alis and Robert W. Stewart,
University of Strathclyde

WA8b-11 Multipath Parameter Estimation for DS-CDMA with Aperiodic Spreading Codes

Kemin Li and Hui Liu, University of Washington

WA8b-12 Fractionally Sampled Linear Detectors for DS-CDMA

Donald R. Brown, D.L. Anair, and
C.R. Johnson, Jr., Cornell University

WA8b-13 Joint Transmitter-Receiver Optimization for Non-maximally Decimated Filterbank Precoding Systems

Tongtong Li and Zhi Ding, Auburn University

WA8b-14 Time Domain Channel Estimation for the Uplink of Multicarrier DS-CDMA Systems

Getian Ye, Guoan Bi, and Liquan Fang,
Nanyang Technological University

WA8b-15 Improving the Performance of Blind CDMA 2D-RAKE Receivers with Phase Ambiguity in the Bit Decision Variable

Alex Stephenne and Benoit Champagne,
Universite du Quebec

WA8b-16 Multistage Semi-blind Spatio-Temporal Processing for Short Burst Multiuser SDMA Systems

Alexandr Kuzminskiy and Dimitris Hatzinakos,
University of Toronto

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