

Table Of Contents

Volume I

Plenary Talk

Biometric Image Processing and Recognition	1
<i>J. Phillips, R. Michael McCabe and Rama Chellappa</i>	

TM SS-1

Watermarking, Copyright Protection and Access for Multimedia Systems

Digital Watermarking: An Overview	9
<i>G. Voyatzis, N. Nikolaidis and I. Pitas</i>	
On the Reliability of Detecting Electronic Watermarks in Digital Images	13
<i>Ton Kalker, Jean-Paul Linnartz, Geert Depovere and Maurice Maes</i>	
A M.A.P. Identification Criterion for DCT Based Watermarking	17
<i>M. Barni, F. Bartolini, V. Cappellini, A. Piva and F. Rigacci</i>	
A Blind Wavelet Based Digital Signature for Image Authentication	21
<i>Liehua Xie and Gonzalo R. Arce</i>	
Robust Audio Watermarking in the time domain	25
<i>P. Bassia and I. Pitas</i>	

TM SS-2

Combined Source and Channel Coding

Optimal and Sub-Optimal Decoding for Vector Quantization over Noisy Channels with Memory	29
<i>Mikael Skoglund</i>	
Approximating the protection offered by a channel code in terms of bit error rate	33
<i>Fabrice Labeau, Claude Desset, Benot Macq and Luc Vanderdorpe</i>	
Joint Binary Symmetric Source Channel Coding with Small Linear Codes	37
<i>Francois-Xavier Bergot and Olivier Rioul</i>	

TM S-3

Image and Video Coding

Image Compression Utilizing the DTOCS Topological Raster Patterns and Delaunay Triangulation	41
<i>Pekka J. Toivanen</i>	

Polyphase Adaptive Filter Banks for fingerprint image compression	45
<i>Omer N. Gerek and A. Enis Cetin</i>	
Universal context modeling for lossy wavelet image compression	49
<i>Bernd Menser and Frank Muller</i>	
Hybrid coding of video with spatio-temporal scalability using subband decomposition	53
<i>Marek Domanski, Adam Luczak, Slawomir Mackowiak and Roger Swierczynski</i>	
Fast embedded video compression using cache-based zerotree processing	57
<i>Charles D. Creusere</i>	
TM S-4	
Spectral Estimation	
Facts and Fiction in spectral Analysis of Stationary Stochastic Processes	61
<i>P.M.T. Broersen</i>	
A Fast Algorithm for Efficient Estimation of Frequencies	65
<i>Ta-Hsin Li</i>	
The generalized ACM-MUSIC without estimation of the number of sinusoidal components	69
<i>Olivier Caspary and Patrice Nus</i>	
On nonparametric Spectral Estimation	73
<i>Tomas Sundin and Petre Stoica</i>	
New criteria based on Gerschgorin radii for source number estimation	77
<i>Olivier Caspary and Patrice Nus</i>	
TM S-5	
Speech Enhancement	
Speech Enhancement in Wireless Digital Communication via Heuristic Rules and Image Relaxation Techniques	81
<i>Enzo Mumolo, Lorenzo Pivetta and Claudio Chiaruttini</i>	
Analytical and Iterative Approaches to the Equalisation of Sub-Band Errors in Speech and Speaker Recognition	85
<i>Ronald Auckenthaler and John S. Mason</i>	
TM P-6	
Audio and Electroacoustics I	
Multirate Acoustic Echo Cancellation: Which Adaptive Filters for Which Subbands?	89
<i>Desmond K. Phillips and Colin F.N. Cowan</i>	
Robust Performance of the Adaptive Periodic Noise Canceller in a Closed-Loop System	93
<i>J. Timoney and J.B. Foley</i>	
A Binaural System for the Suppression of Late Reverberation	97
<i>K. Lebart, J.M. Boucher and P.N. Denbigh</i>	

The All-Pass Filtered-X Algorithm	101
<i>John Garas and Piet C.W. Sommen</i>	
Multichannel Noise Reduction Algorithms and Theoretical limits	105
<i>Joerg Bitzer, Klaus Uwe Simmer and Karl-Dirk Kammeyer</i>	
Design of a Transform Coder For High Quality Audio Signals	109
<i>Mohammed Javed Absar, George Sapna and Antonio Alvarez</i>	
A New Subband Perceptual Audio Coder using CELP	113
<i>Olivier van der Vrecken, Laurent Hubaut and Florence Coulon</i>	
Auditory Modeling via Frequency Warped Wavelet Transform	117
<i>Gianpaolo Evangelista and Sergio Cavaliere</i>	
Wavelet Transform Based Coherence Function for Multi-Channel Speech Enhancement	121
<i>Djamila Mahmoudi and Andrzej Drygajlo</i>	
The auditory critical bands interpreted as a local Kautz transformation	125
<i>A.C. den Brinker</i>	
A Classification of Byzantine Singing Voices Based on Singer's Formant	129
<i>D.S. Delviniotis</i>	
TMP-7	
Transforms and Signal Compression	
Some thoughts on Morphological Pyramids and Wavelets	133
<i>Henk J.A.M. Heijmans and John Goutsias</i>	
New Fast DCT algorithms for composite sequence lengths	137
<i>Guoan Bi and L.W. Yu</i>	
Fast Algorithms for the Recursive Computation of Two-Dimensional Discrete Cosine Transform	141
<i>Wen-Hsien Fang, Neng-Chung Hu and Shih-Kuo Shih</i>	
Fast Actualization of Moments in Sliding Window Applications	145
<i>Judit Martinez and Federico Thomas</i>	
The Fast Computation of DCT in JPEG Algorithm	149
<i>Miodrag Popovic and Tomislav Stojic'</i>	
Optimized Frame Design for a Matching pursuit Based Compression Scheme	153
<i>Kjersti Engan, John Hakon Husi'y and Sven Ole Aase</i>	
Transform-Domain Polynomial Filtering	157
<i>Gêbor Peceli, Tamês Kova'csha'zy and Annamêria R. Vêrkonyi-Ki'czy</i>	
Design of Multi-Delay Predictive Filters Using Dynamic Programming	161
<i>Konsta Koppinen, Jari Yli-Hietanen and Peter Handel</i>	
Signal Segmentation Using Time-Scale Signal Analysis	165
<i>Ales Procha'zka, Magdalena Kolinova' and Jaroslav Stribrsky'</i>	
Anytime Algorithms in Embedded Signal Processing Systems	169

Annamêria R. Vêrkonyi-Koczy and Tamês Kovêcsa'zy

Fast Algorithms for Reduction a Modulo Polynomial and Vandermonde Transform Using FFT	173
<i>Alexander M. Krot and Helena B. Minervina</i>	

TA S-1

Array Signal Processing

Robust Adaptive Beamforming: Experimental Results	177
<i>A.B Gershman, E. Nemeth and J.F. Bohme</i>	
Modified Subspace Smoothing Technique for Multipath Direction Finding	181
<i>Mei Feng and Karl-Dirk Kammeyer</i>	
Self Calibration in Presence of correlated Discrete Sources	185
<i>O. Grellier and P. Comon</i>	
On forward-backward mode for direction of arrival estimation	189
<i>Magnus Jansson and Petre Stoica</i>	
MVDR beamforming with inverse updating	193
<i>Marc Moonen and Ian K. Proudler</i>	
High Resolution Array Processing for non circular signals	197
<i>C. Adnet, P. Gounon and J. Galy</i>	
Spatio-Temporal Coding for Radar Array Processing	201
<i>Philippe Calvary and Denis Janer</i>	
A method of direction finding operating on a heterogeneous array	205
<i>Yvon Erhel and Louis Bertel</i>	
Adaptive Separation of Sources and Estimation of their Directions of Arrival	209
<i>Odile Macchi and Zied Malouche</i>	
Maximum Likelihood Time-of-Arrival Estimation using Antenna Arrays: Application to Global Navigation Satellite Systems	213
<i>Gonzalo Seco and Juan A. Fernandez-Rubio</i>	
Simultaneously Estimating Frequency and direction of Coherent Signal via an Array Triplet in Motion	217
<i>Xin Su and Tianqui Chen</i>	

TA SS-2

Video Compression and Communications

Error Resilience and Concealment in Video Coding:	221
<i>A.K. Katsaggelos, F. Ishtiaq, L.P. Kondi, M.-C. Hong, M. Banham and J. Brailean</i>	
Networking Technologies for Future Video Communications	229
<i>Koichi Sano, Sadayasu Ono and Naohisa Ohta</i>	
Multiple Description Coding Using Non-Hierarchical Signal Decomposition	233

<i>Yao Wang</i>	
Rate control for delay-constrained video transmission	237
<i>Chi-Yuan Hsu and Antonio Ortega</i>	
Compression and Packetization for MPEG-2/4 Video and Audio	241
<i>Tokumichi Murakami, Kohtaro Asai and Hideo Ohira</i>	
MPEG-4 over Wireless Network	245
<i>Ralf Schaefer</i>	
Optimization of Wireframe Model Adaptation and Motion Estimation in a Rate-Distortion Framework	249
<i>Dimitrios Tzovaras, Stavros Vachtsevanos and Michael G. Strintzis</i>	
High-Order Motion Compensation for Low Bit-Rate Video	253
<i>Bernd Girod, Thomas Wiegand, Eckehard Steinbach, Markus Flierl and Xiaozheng Zhang</i>	
A Contribution to Video Coding Using Layers	257
<i>L. Torres and M. Lecha</i>	
TA S-3a	
Multirate Systems	
Results on Cyclic Signal Processing Systems	261
<i>P.P. Vaidyanathan</i>	
Non-uniformly down-sampled filter banks	265
<i>B.E. Sarroukh and A.C. Äen Brinker</i>	
A Design Method of 2-D Axial-Symmetric Paraunitary Filter Banks with a Lattice Structure	269
<i>Shogo Muramatsu, Akihiko Yamada and Hitoshi Kiya</i>	
Versatile Building Blocks for Multirate Processing of Bandpass Signals	273
<i>Markku Renfors and Teemu Kupiainen</i>	
Fast filter bank synthesis by periodical anamorphosis	277
<i>C. Croll, D. Pellerin and J. Herault</i>	
TA S-3b	
Filter Design	
Constrained Least Squares Design of FIR Filters Using Iterative Reweighted Least Squares	281
<i>C.S. Burrus</i>	
Design of polynomial interpolation filters based on Taylor series	283
<i>Jussi Vesma, Ridha Hamila, Tapio Samaraki and Markku Renfors</i>	
A Design Method for Half-Band Filters	287
<i>A.N. Wilson, Jr. and H.J. Orchard</i>	
Design of multiplierless elliptic IIR halfband filters and Hilbert transformers	291
<i>Miroslav D. Lutovac and Ljiljana D. Milic'</i>	

New Realizations of Second-Order All-Pass Transfer Functions	295
<i>Ana D. Simic and Miroslav D. Lutovac</i>	
TA S-4a	
Face Recognition	
Linear projection algorithms and morphological dynamic link architecture for frontal face verification	299
<i>Constantine Kotropoulos and Ioannis Pitas</i>	
Nonlinear scale decomposition based features for visual speech recognition	303
<i>Iain Matthews, J. Andrew Bangham, Richard Harvey and Stephen Cox</i>	
Wire Frame Fitting For Automatic Tracking In Model-Based Video Coding	307
<i>P.M. Antoszczyszyn, J.M. Hannah and P.M. Grant</i>	
Region-based segmentation and tracking of human faces	311
<i>Veronica Vilaplana, Ferran Marques, Philippe Salembier and Luis Garrido</i>	
Facial Feature Extraction in Frontal Views Using Biometric Analogies	315
<i>Sofia Tsekeridou and Ioannis Pitas</i>	
TA S-4b	
Image Restoration	
The Dual-Tree Complex Wavelet Transform: A New Efficient Tool for Image Restoration and Enhancement	319
<i>Nick Kingsbury</i>	
Spectral Amplitude Estimation-based X-Ray Image restoration: an extension of a speech enhancement approach	323
<i>Til Aach and Dietmar Kunz</i>	
Bayesian deconvolution of Poissonian point sources	327
<i>Guillaume Stawinski, Arnaud Doucet, Patrick Duvaut</i>	
Modelling PSF of Scanning Electron Microscopes for image Restoration	331
<i>J. Swindells, M. Razaz and K. Tovey</i>	
Iterative Blind Image Restoration Using Local Constraints	335
<i>Kaaren May, Tania Stathaki and Aggelos Katsaggelos</i>	
TA S-5	
Speech Recognition	
On the Integration of Dialect and Speaker Adaptation in a Multi-Dialect Speech Recognition System	339
<i>V. Digalakis, V. Doumptotis and S. Tsakalidis</i>	
Combining Bayesian Learning and Vector Field Smoothing for On-Line Incremental Speaker Adaptation	343
<i>C. Vair and L. Fissore</i>	

Identification of Spoken European Languages	347
<i>Diamantino Caseiro and Isabel Trancoso</i>	
A Bayesian Triphone Model with Parameter Tying	351
<i>Ji Ming, Marie Owens and F. Jack Smith</i>	
Spectral Subtraction and Missing Feature Modeling for Speaker Verification	355
<i>Andrzej Drygajlo and Mounir El-Maliki</i>	
Blind Equalization in the Cepstral Domain for Robust Telephone Based Speech Recognition	359
<i>Laurent Mauuary</i>	
Robust Speech Recognition Algorithms in A Car Noise Environment	363
<i>Lin Cong and Saf Asghar</i>	
Frame Pruning for Automatic Speaker Identification	367
<i>L. Besacier and J.F. Bonastre</i>	
Integration of Parsing and Incremental Speech Recognition	371
<i>Sven Wachsmuth, Gernot A. Fink and Gerhard Sagerer</i>	
Optimizing Hidden Markov Models for Chinese An-set Syllables	375
<i>Q.H. He and S. Kwong</i>	
TA P-6	
Pattern Recognition and Neural Networks	
A unified approach to laterally-connected neural nets	379
<i>Simone Fiori and Aurelio Uncini</i>	
A Class of Fast Complex Domain Neural Networks for Signal Processing Applications	383
<i>Aurelio Uncini and Francesco Piazza</i>	
Efficient Layer-Wise Learning of a Feedforward Neural Networks Using the Backpropagation	387
<i>Nikolai S. Rubanov</i>	
Recurrent Neural Networks and Filters Adaptation with Stability Control	391
<i>Paolo Campolucci and Francesco Piazza</i>	
A Nonexclusive Classification System Based on Co-operative Fuzzy Clustering	395
<i>F.M. Frattale Mascioli, G. Risi, A. Rizzi and G. Martinelli</i>	
Fuzzy Logic control Based on Weighted Rules using Neural Network	399
<i>Jae-Soo Cho and Dong-Jo Park</i>	
The edge detection from images corrupted by mixed noise using fuzzy rules	403
<i>Hiroaki Ishii, Akira Taguchi and Mototaka Sone</i>	
A Combination of Classical and Fuzzy Classification Techniques on a Self Organized Memories (SOM).-Type Neural Network Computational Platform	407
<i>Spyros G. Tzafestas and Sotiris N. Raptis</i>	
A New Decision Criterion for Feature Selection. Application to the Classification of Non Destructive Testing Signatures	411
<i>Latifa Oukhellou, Patrice Aknin, Herve Stoppiglia and Gerard Dreyfus</i>	

A Quantitative Matching Technique Based on Eigenvector Approach	415
<i>Sang Ho Park, Kyoung Mu Lee and Sang Uk Lee</i>	
Direct Evaluation of Frame-Based Nonstationary Pattern Recognition Methods by Using Bhattacharyya Distance	419
<i>Milan Markovic , Milan Milosavljevic and Branko Kovacevic</i>	
Handwritten Farsi Character Recognition Using Evolutionary Fuzzy Clustering	423
<i>Mehdi Dehghan and Karim Faez</i>	
Hidden Markov Model with Nonstationary States	427
<i>Mohamed Ali Mahjou and Noureddine Ellouze</i>	
Experimental Car Plate Recognition System by Neural Networks and Image Processing	431
<i>R. Parisi, E.D. Di Claudio, G. Lucarelli and G. Orlandi</i>	
Parameter Estimation of Conics: Application to handwritten digits	435
<i>Mounir Amara, Pierre Courtellemont and Denis de Brucq</i>	
Multisensor Object Identification on Airports using Autoassociative Neural Networks	439
<i>Karin Haese</i>	
Neural Network-Based Event Detection for Surveillance Applications	443
<i>Ulf Knoblich, Michael Trompf, Siegfried Bar and Benoit Budisck</i>	
Noise Elimination in Approximation and Time Series Prediction with Hinging Hyperplanes	447
<i>S.R. Baldomir and D. Docampo</i>	
Multiscale versus Multiresolution Analysis for Multisensor Image Fusion	451
<i>Youcef Chibani and Amrane Houacine</i>	
Randomized Regression in Differentiators	455
<i>Sari Siren and Pauli Kuosmanen</i>	
TA P-7	
Architectures II	
A Study on Discrete Wavelet Transform Implementation for a High Level Synthesis Tool	459
<i>Jean-Marc Tourreilles, Christophe Nouet and Eric Martin</i>	
A 500 MHz 2d-DWT VLSI Processor	463
<i>A. Brizio, G. Masera, G. Piccinini, M. Ruo Roch and M. Zamboni</i>	
Improving “Performance vs. Silicon Size” Tradeoffs Using Coprocessors.	467
<i>Alain Pegatoquet, Michel Auguin and Emmanuel Gresset</i>	
Single Chip DSP Array Processor: 100 Million+ Transistors with Multithreading Approach	471
<i>Radovan Serneć, Matej Zajc and Jurij F. Tasic</i>	
Asynchronous Timing Model for High-Level Synthesis of DSP Applications	475
<i>Okito Dedou, Daniel Chillet and Olivier Sentieys</i>	
DSP Architecture for real time digital video converter	479
<i>Luisa Franchina</i>	

A PRML Equalizer for Hard Disk Drives with Low Sensitivity to Sampling Phase Variation	483
<i>A. Gerosa and G.A. Mian</i>	
A Recursive Algorithm for the Generation of Space-Filling Curves	487
<i>Greg Breinholt and Christoph Schierz</i>	
Automated Parallel-Pipeline Structure of FFT Hardware Design for Real-Time Multidimensional Signal Processing	491
<i>A. Petrovsky and M. Kachinsky</i>	
Parallel Implementation of a Face Location Algorithm Based on the Hough Transformation	495
<i>F. Yang, E. Drege, M. Paindavoine and H. Abdi</i>	
GSLC Architecture for sequence detectors using spatial diversity	499
<i>Miguel A. Lagunas, Ana I. Perez-Neira and J. Vidal</i>	
A pipelined architecture for DLMS algorithm considering both hardware complexity and output latency	503
<i>Tadaaki Kimijima, Kiyoshi Nishikawa and Hitoshi Kiya</i>	
A G-transform based systolic array for Least Squares Problems	507
<i>Evangelos Zervas, Athanassia Alonistioti and Nikos Passas</i>	
VLSI Implementation and Complexity Comparison of Residue Generators Modulo 3	511
<i>Stanislaw J. Piestrak, Fabrice Pedron and Olivier Sentieys</i>	
Adaptative filters implementation performances under power dissipation constraint	515
<i>Stephane Gailhard, Nathalie Julien and Eric Martin</i>	
Behavioral Synthesis of Digital Filters Using Attribute Grammars	519
<i>George Economakos, George Papakonstantinou and Panayiotis Tsanakas</i>	
The Impact of Data Characteristics on Hardware Selection for Low-Power DSP	523
<i>G. Keane, J.R. Spanier and R. Woods</i>	

Volume II

Plenary Talk

Partial Differential Equations in Image Analysis: Continuous Modeling, Discrete Processing	527
<i>Petros Maragos</i>	

WMS-1

Nonlinear Signal Processing for Communications

Nonlinear Signal Processing for Adaptive Equalisation and Multi-User Detection	537
<i>Bernard Mulgrew</i>	
Channel Equalization For Coded Signals In Hostile Environments	545
<i>Kristina Georgoulakis and Sergios Theodoridis</i>	
A Combined LMS-SOM Algorithm for time-varying non-linear channel equalization	549
<i>Steven Bouchired, Mohamed Ibnkahla and Williams Paquier</i>	
Non-Linear Equalizers that Estimate Error Rates During Reception	553
<i>Jesus Cid-Sueiro, Anibal R. Figueiras-Vidal</i>	
On the Nonlinearity of Linear Prediction	557
<i>Gernot Kubin</i>	
A Likelihood Framework for nonlinear Signal Processing with Finite normal Mixtures	561
<i>Tulay Adali, Bo Wang, Xiao Liu and Jianhua Xuan</i>	
Analysis of a Nonlinear Equalizer Based on High-Order Statistics	565
<i>J.B. Destro Filho, G. Favier and J.M. Travassos Romano</i>	
Bit Error Rate Optimization of DS-CDMA Receivers	569
<i>Ioannis N. Psaromiligkos and Stella N. Batalama</i>	
Constrained Pulse Shape Synthesis for Digital Communications	573
<i>P.L. Combettes and P. Bondon</i>	

WMS-5.2

Shape Analysis and Recognition

Sequential Local Transform Algorithms for Gray - Level Distance Transforms	577
<i>Pekka J. Toivanen and Hesham Elmongui</i>	
Hierarchical Skeleton Extraction based on a Deformable Particle System	581
<i>Franck Angella, Olivier Laviolle and Pierre Baylou</i>	
Shape representation for object correspondence based on sub-graph matching and Fourier descriptors	585
<i>Ferran Marques and Guillermo Gutierrez</i>	
Rapid location of convex objects in digital images	589

<i>E.R. Davies</i>	
Boundary Tracking in 3D Binary Images to Produce Rhombic Faces for A Docecahedral Model	593
<i>Edgar Garduno, Gabor T. Herman and Hava Katz</i>	
Efficient Curvature-based Shape Representation for Similarity Retrieval	597
<i>Farzin Mokhtarian, Sadegh Abbasi and Josef Kittler</i>	
Model Acquisition and Matching in Tagged Object Recognition (TOR)	601
<i>L.M. Soh, J. Matas and J. Kittler</i>	
Form Identification and Skew Detection from Projections	605
<i>N. Liolios, N. Fakotakis and G. Kokkinakis</i>	
The use of steerable filters for hand-written character recognition	609
<i>Emir Tufan and Vedat Tavsanoglu</i>	
Stereo-vision via connected-set operators	613
<i>Richard Harvey, Kimberly Moravec and J. Andrew Bangham</i>	
WMS-3	
Time - Frequency Analysis	
Optimum oversampling in the rectangular Gabor scheme	617
<i>Martin J. Bastiaans</i>	
Half-Quadratic Regularization of Time-Frequency AR Analysis for Recovery of Abrupt Spectral Discontinuities and their Detection by a Recursive Siegel Metric based on Information Geometry	621
<i>Frederic Barbaresco</i>	
Representation of Pseudoperiodic Signals by means of Pitch-Synchronous Frequency Warped Wavelet Transform	625
<i>Sergio Cavaliere and Gianpaolo Evangelista</i>	
Algorithm for the Instantaneous Frequency Estimation Using Time-Frequency Distributions with Adaptive Window Width	629
<i>Ljubisa Stankovic and Vladimir Katkovnik</i>	
Tracking of spectral lines in an ARCAP time-frequency representation	633
<i>M. Davy, B. Leprettre, C. Doncarli and N. Martin</i>	
Detection and tracking of multi-periodic signals	637
<i>I.J. Clarke and G. Spence</i>	
Sound Signature Analysis using Time-Frequency Signal Processing: Application to Active Stall Avoidance in Axial Compressors	641
<i>Thuyen Le, Thomas Dombek and Manfred Glesner</i>	
Extended Wavelet Transforms in Acoustic Diagnosis	645
<i>Georg Wirth and Dieter A. Mlynski</i>	
Quantization Effects in Implementation of Distributions from the Cohen Class	649
<i>Veselin Ivanovic, Ljubisa Stankovic and Zdravko Uskokovic</i>	

Cross-Terms Free Forms of Some Quadratic and Higher Order Time-Frequency Representations	653
<i>Ljubisa Stankovic and Srdjan Stankovic</i>	
WMS-4a	
Biomedical Signal Processing	
A Nonlinear Dynamical Model for Compression and Detection of ECG Data	657
<i>T. Schimming, M. Ogorzalek and H. Dedieu</i>	
Analysis of Brain Electroencephalograms with the Instantaneous Maximum Entropy Method	661
<i>Yumi Takizawa, Sunao Uchida, Makio Ishiguro and Atsushi Fukasawa</i>	
Fast optimal beam determination for conformation radiotherapy treatment planning	665
<i>Yong Yuan, William Sandham, Tariq Durrani and Charles Deehan</i>	
Single Channel Analysis of Sleep EEG: An Adaptive Database Method	669
<i>Christian Berthomier, Jacques Prado and Odile Benoit</i>	
Blood glucose prediction for diabetes therapy using a recurrent artificial neural network	673
<i>William Sandham, Dimitra Nikolettou, David Hamilton, Ken Paterson, Alan Japp and Catriona MacGregor</i>	
WMS-4b	
Biomedical Image Processing	
4-D Reconstruction of the left ventricle from a single cycle ultrasound acquisition	677
<i>Claudia Bonciu, Rodolphe Weber and Long Dang Nguyen</i>	
Ultrasonic Array Imaging Using CDMA Techniques	681
<i>Yannis S. Avrithis, Anastasios N. Delopoulos and Grigorios C. Papageorgiou</i>	
A Comparison of several interpolation methods in 3D x-ray cone beam reconstruction	685
<i>J.G. Donaire and I. Garcia</i>	
Weighting Hyperparameters for 3D Bayesian estimation in Eddy Current Tomography	689
<i>Olivier Venard and Denis Premel</i>	
Enhancement of Mammographic Images for Detection of Microcalcifications	693
<i>Damir Sersic and Sven Loncaric</i>	
WMS-5a	
Speech Analysis	
Voice Source Parameters for Speaker Verification	697
<i>Andreas Neocleous and Patrick A. Naylor</i>	
A Nonlinear Algorithm for Epoch marking in Speech Signals Using Poincare Maps	701
<i>Iain Mann and Steve McLaughlin</i>	
A Geometric Algorithm for Voice Activity Detection in Nonstationary Gaussian Noise	705
<i>Hamza Ozer and S. Gokhun Tanyer</i>	
Comparison of Some Time-Frequency Analysis Methods for Classification of Plosives	709

<i>Ewa Lukasik, Stefan Grochowski</i>	
Speech Parameters Vector Based on Arithmetic Fourier Transform	713
<i>Evgeny I. Bovbel and Igor E. Kheidorov</i>	
WMS-5b	
Speech and Audio Coding / Compression	
CELP with Priority to Critical Segments	717
<i>Löcio Martins da Silva and Abraham Alcaim</i>	
On the Combination of Redundant and Zero-Redundant Channel Error Detection in CELP Speech-Coding	721
<i>Norbert Gortz</i>	
A new intraframe LSP interpolation technique for low bit rate speech coding	725
<i>J.S. Mao, S.C. Chan and K.L. Ho</i>	
Backward Adaptive Warped Lattice for Wideband Stereo Coding	729
<i>Aki Harma, Unto K. Laine and Matti Karjalainen</i>	
An Algorithm for Wideband Audio Coding based on LMS / RLS Switched Predictors	733
<i>Enzo Mumolo, Mauro Scagnol and Alberto Carini</i>	
WMP-6	
Efficient Algorithms for Filter Design and Signal Reconstruction	
Adaptive System Identification using the Normalized Least Mean Fourth Algorithm	737
<i>Azzedine Zerguine and Maamar Bettayeb</i>	
Novel Adaptive Algorithm Based on Least Mean p-Power Error Criterion for Fourier Analysis in Additive Noise	741
<i>Yegui Xiao and Katsunori Shida</i>	
The Summational Projection Algorithm for the Adaptive Volterra Filter	745
<i>Yoshinobu Kajikawa and Yasuo Nomura</i>	
Convergence Analysis and Fast Algorithms of Volterra Adaptive Filters	749
<i>Jinhui Chao, Atsushi Inomata and Shinpei Uno</i>	
Evolving Complex Adaptive IIR Structures	753
<i>Seelan Sundaralingam and Ken Sharman</i>	
Fractionally-Spaced Equalization for Time-Varying Channels	757
<i>M.-L. Alberi and I. Fijalkow</i>	
Adaptive blind separation of convolved sources based on maximization of the generalized instantaneous energy	761
<i>Ivica Kopriva</i>	
Adaptive Blind Equalization for Asynchronous DS-CDMA Systems Based on RLS	765
<i>Geert Leus and Marc Moonen</i>	

Improved Neural Network Equalization by the use of Maximum Covariance Weight Initialization	769
<i>Arto Kantsila, Mikko Lehtokangas and Jukka Saarinen</i>	
Adaptive Nonlinear Filtering with the Support Vector Method	773
<i>Davide Mattera, Francesco Palmieri and Simon Haykin</i>	
Adaptive Weighted Vector Median Filter Using a Gradient Algorithm	777
<i>Laurent Lucat and Pierre Siohan</i>	
Smoothing of Noisy AR Signals Using an Adaptive Kalman Filter	781
<i>Gerhard Doblinger</i>	
Accurate LDA - spectra by resampling and ARMA - modeling	785
<i>S. de Waele and P.M.T. Broersen</i>	
Sintrack Analysis. Application to Detection and Estimation of Flutter for Flexible Structures	789
<i>Matthieu Jeanneau, Philippe Mouyon and Celine Pendaries</i>	
WMP-7a	
Image Filtering	
Nonlinear filtering of MR images using geometrically and statistically controlled diffusion	793
<i>Ivan Bajla, Viktor Witkovsky' and Milan Hanajik</i>	
A novel Algorithm for Digital Image Processing Applications	797
<i>S. Boussakta</i>	
Stable nonlinear filters with spatial prediction	801
<i>Jamal Abbas and M. Domanski</i>	
From continuum model to a detailed discrete theory of median shifts	805
<i>E.R. Davies</i>	
Fuzzy Colour Filtering Using Relative Entropy	809
<i>A. Fotinos, N. Laskaris and S. Fotopoulos</i>	
Decomposition and Order Statistics in Filtering	813
<i>Dinu Coltuc and Philippe Bolon</i>	
A True order recursive algorithm for two-dimensional least squares error linear prediction and filtering	817
<i>George-Othon Glentis</i>	
One-Dimensional Scale-Space Preserving Filters	821
<i>Richard Harvey, Alison Bosson and J. Andrew Bangham</i>	
Transfer Function Models for Continuous and Discrete Multidimensional Systems	825
<i>R. Rabenstein</i>	

WMP-7b

Image Restoration and Enhancement

The Periodic Step Gradient Descent Algorithm - General Analysis and Application to the Super Resolution Reconstruction Problem	829
<i>Tamir Sagi, Arie Feuer and Michael Elad</i>	
Reconstruction of locally homogeneous images	833
<i>Mila Nikolova</i>	
Statistical Restoration of Images Using a Hybrid Bayesian Approach	837
<i>D. Hudson and M. Razaz</i>	
A New Approach for Restoration of NMR Signals	841
<i>M. Razaz, R.A. Lee, P.S. Belton and K.M. Wright</i>	
Enhancing Handwritten Character Images thanks to a Re-Sampling Process Based on Convex Hull Extraction	845
<i>B. Gosselin</i>	
A Sequential Projections Based Postprocessor for Block-based Image Coding	849
<i>Joon-Ho Chang, Sang Hwa Lee, Jeong-Kwon Kim and Choong Woong Lee</i>	
Enhancement of Sketch Contours on Paintings Infrared Photographies: A Comparison	853
<i>Arnaldo de Albuquerque Araujo, Renato Moreira Hadad and Beatriz V. Coelh</i>	
An Integrated system for Object Tracking and Progressive Coding Based on Statistical Morphology ..	857
<i>Carlo S. Regazzoni, Andrea Teschioni and GianLuca Foresti</i>	
An inverse Problem: Histogram Equalization	861
<i>Dinu Coltuc and Philippe Bolon</i>	
WAS-1	
Architectures I	
Rapid Design of Discrete Transform Cores	865
<i>Jill K. Hunter and John V. McCanny</i>	
Low Power Implementation of Discrete Wavelet Transform	869
<i>K. Masselos, P. Merakos, T. Stouraitis and C.E. Goutis</i>	
Efficient Implementation of the Row-Column 8x8 IDCT on VLIW Architectures	873
<i>Rizos Sakellariou, Christine Eisenbeis and Peter Knijnenburg</i>	
Relaxed Look-Ahead Technique for Pipelined Implementation of Adaptive Multiple-antenna CDMA Mobile Receivers	877
<i>Ramin Baghaie, Stefan Werner and Timo Laakso</i>	
A Scheme for the VLSI Implementation of FIR Digital Filters with Reduced Latency	881
<i>Christos Gr. Caraiscos and Kiamal Z. Pekmestzi</i>	
Efficient Bit-Level Design of an On-Board Digital TV Demultiplexer	885
<i>S. Calvo, J. Sala, A. Pages and G. Vazquez</i>	
A Distributed Adaptive Block Matching Algorithm: DIS-ABMA	889
<i>F. Vermaut, Y. Deville, B. Macq and X. Marichal</i>	
Prediction of Decoding Time for MPEG-4 Video	893

Marco Mattavelli and Sylvain Brunetton

Real time image rotation using B-spline interpolation on FPGA's board 897
C. Berthaud, E. Bourennane, M. Paindavoine and C. Milan

Fully-Digital Highly-Modular Architecture of a Hamming-like Neural Network 901
A. Pavlidis, A. Arapoyianni and D. Loukas

WA S-2

Motion

A Fast Two Stage Translational and Warping Motion Compensation Scheme 905
D.B. Bradshaw and N.G. Kingsbury

A fast full search block matching algorithm using subblocks 909
Michael Brunig and Wolfgang Niehsen

A New Technique for Motion Estimation and Compensation of the Wavelet Detail Images 913
G. Van der Auwera, A. Munteanu, G. Lafruit and J. Cornelis

New closed-form solutions to image flow equations for ego-motion applications
considering variations of the focal distance 917
Jose M. Menendez, Narciso Garcia, Luis Salgado and Enrique Rendo'n

Motion segmentation and tracking using a seeded region growing method 921
I. Grinias and G. Tziritas

Motion estimation based on affine moment invariants 925
G. Tzanetakis, M. Traka and G. Tziritas

A Pseudo 3D Motion Estimator for Moving Object Estimation in Noisy Video Sequences 929
Christopher L. Topping and Jonathon A. Chambers

An Object-Based Hierarchical Motion compensation Technique Using the Greedy Method 933
Jun Seo Lee, Rin Chul Kim and Sang Uk Lee

Video Object Manipulation based on Mosaic Representation for post-production applications 937
H. Nicolas

Tracking Markers for Human Motion Analysis 941
Pascual J. Figueroa, Neucimar J. Leite, Ricardo L. Barros and Rene Brenzikofer

WA SS-3

Acoustic Echo and Noise Control

Acoustic Echo and noise Control - A Long Lasting Challenge 945
Pia Dreiseitel, Eberhard Hansler and Henning Puder

Speech Quality Evaluation of Hands-Free Telephones During Double Talk:
New Evaluation Methodologies 953
H.W. Gierlich, F. Kettler and E. Diedrich

Combined systems for noise reduction and echo cancellation 957

<i>Christophe Beaugeant and Pascal Scalart</i>	
Combined Residual Echo and noise Reduction: A Novel Psychoacoustically Motivated Algorithm	961
<i>Stefan Gustafsson and Peter Jax</i>	
Speech Enhancement for Mobile Telephony Based on Non-uniformly Spaced Frequency Resolution	965
<i>Pia Dreiseitel and Henning Puder</i>	
An Acoustic Echo Canceller with Compensation of Nonlinearities	969
<i>Alexander Stenger and Rudolf Rabenstein</i>	
On the use of new adaptive subband structures in acoustic echo cancellation	973
<i>Mariane R. Petraglia, Rogerio G. Alves and Antonio Petraglia</i>	
Steady - State Solutions of the Extended LMS Algorithm for Stereophonic Acoustic Echo Cancellation with Leakage or Signal Conditioning	977
<i>Tetsuya Hoya, Jonathon A. Chambers, Neil Forsyth and Patrick A. Naylor</i>	
DSP Implementation and Performance Evaluation of a Stereo Echo Canceller with Pre-Processing	981
<i>Yann Joncour, Akihiko Sugiyama and Akihiro Hirano</i>	
WA S-4a	
Statistical Signal Processing	
A General Maximum Likelihood Classifier for Modulation Classification	985
<i>C. Le Martret and D. Boiteau</i>	
Approximation of a-Stable Probability Densities Using Finite Gaussian Mixtures	989
<i>Ercan E. Kuruoglu, Christophe Molina and William J. Fitzgerald</i>	
Wavelet Thresholding for a Wide Class of noise Distributions	993
<i>D. Leporini and J.-C. Pesquet</i>	
Information Criteria Based Edge Detection	997
<i>Frederic Jouzel, Christian Olivier and Abdelaziz El Matouat</i>	
Estimating the Predictability and the Linearity of a Process by Kernels	1001
<i>Andreas Poncet and George S. Moschytz</i>	
WA S-4b	
Parameter Estimation	
Multi-user Channel Estimation Exploiting Pulse Shaping Information	1005
<i>Erik Lindskog and Jonas Strandell</i>	
A Subspace Fitting-like Method for Almost Low Rank Models	1009
<i>Mats Bengtsson</i>	
MAP Based Schemes for Detection of Abrupt Changes for Fading Channels	1013
<i>Catharina Carlemalm and Fredrik Gustafsson</i>	
Separate Temporal and Spatial Parametric Channel Estimation	1017

<i>Jonas Strandell and Erik Lindskog</i>	
Parameter estimation in partitioned nonlinear stochastic models	1021
<i>Ola Markusson and Håkan Hjalmarsson</i>	
Source Localization in Shallow Water in The Presence of Sensor Depth Uncertainty	1025
<i>Assi Jakoby, Jason Goldberg and Hagit Messer</i>	
WA S-5a	
Image Enhancement	
Reconstructing Missing Regions in Colour Images Using Multichannel Median Models	1029
<i>Steven Armstrong, Anil C. Kokaram and Peter J.W. Rayner</i>	
Unsharp Masking-Based Approach for Color Image Processing	1033
<i>Faouzi Alaya Cheikh, Lazhar Khriji and Moncef Gabbouj</i>	
The role of Gamma correction in colour image processing	1037
<i>Wilfried Kubinger, Markus Vincze and Minu Ayromlou</i>	
Quality limits in color printing with more than three primary colors	1041
<i>Werner Praefcke</i>	
Image Halftoning Using Optimized Dot Diffusion	1045
<i>Murat Mesve and P.P. Vaidyanathan</i>	
WA SS-5b	
Image Quality Evaluation	
A Technique for Image Quality Assessment based on a Human Visual System Model	1049
<i>Wilfried Osberger, Anthony Maeder and Neil Bergmann</i>	
Subjective Measure of Edge degradation for Vector Quantized Color Images	1053
<i>Christophe Charrier and Hocine Cherifi</i>	
Towards a Visual Quality Metric for Digital Video	1057
<i>Andrew B. Watson</i>	
Psychovisual measurement and Distortion Metrics for Image Sequences	1061
<i>Edmund M. Yeh, Anil C. Kokaram and Nick G. Kingsbury</i>	
Monitoring the Quality of MPEG Coded Video	1065
<i>K.T. Tan and M. Ghanbari</i>	
A Human Vision System Model for Objective Image Fidelity and Target Detectability Measurements	1069
<i>Jeffrey Lubin</i>	
WA P-6	
3-D Imaging	
Modeling 3D Textured Objects by Fusion of multiple Views	1073

<i>Timothee Jost, Christian Schutz and Heinz Hugli</i>	
Scene Analysis Using Fusion of Range and Color Data	1077
<i>Philippe Pujas and Marie-Jose Aldon</i>	
Tracking Camera Calibration in Multi-Camera Sequences through Automatic Feature Detection and Matching	1081
<i>Federico Pedersini, Augusto Sarti and Stefano Tubaro</i>	
Range Image Registration for Free-Form Surfaces Using Curvature Information as Invariance	1085
<i>Markus Rieder, Nicolas Guil and R. Dillmann</i>	
Visualisation of Videoconference Image Sequences Using VRML 2.0	1089
<i>Ioannis Kompatsiaris and Michael G. Strintzis</i>	
Object Segmentation in 3D Images Based on Alpha-Trimmed Mean Radial Basis Function Network	1093
<i>Adrian G. Bors and Ioannis Pitas</i>	
Classification of Archaeological Fragments Using a Description Language	1097
<i>Robert Sablatnig, Christian Menard and Walter Kropatsch</i>	
On the Application of Light field Reconstruction for Statistical Object Recognition	1101
<i>B. Heigl, J. Denzler and H. Niemann</i>	
Virtual Environment Generation by CAD-Based Methodology for Underwater Vehicle Navigation	1105
<i>Leila De Floriani, Vittorio Murino, Goffredo G. Pieroni and Enrico Puppo</i>	
Combining Intensity and Stereo Data to Improve Satellite Urban Scenes Modeling	1109
<i>N. Paparoditis and M. Cord</i>	
WA P-7a	
Applications and Architectures	
A new FPGA architecture for image processing: CYCLOP	1113
<i>Philippe Guermeur</i>	
Multi - FPGA Processor for gray-scale Morphology	1117
<i>Mohamed Akil and Shahram Zahirazami</i>	
Radom Transform for Internal Wave Detection and Orientation	1121
<i>Josep A. Ro'denas, Nicolas Mandelert and Rene Garello</i>	
Application of the Momentary fourier Transform to the SPECAN SAR Processing	1125
<i>Sandor Albrecht and Ian Cumming</i>	
Synthetic Aperture Radar Interferometry Using Ground Slope Vector to Phase Unwrapping	1129
<i>Xavier Dupuis, Pierre Mathieu and Michel Barlaud</i>	
WA P-7b	
Speech Processing	
Automatic pitch marking for speech transformations via TD-PSOLA	1133

<i>Yves Laprie and Vincent Colotte</i>	
The method of pitch frequency detection on the base of tuning to its harmonics	1137
<i>V. Sercov and A. Petrovsky</i>	
Acoustic Measure of Noise Energy in Vocal Folds Operated Patients	1141
<i>C. Manfredi, M. D'Aniello and P. Brusaglioni</i>	
Analysis of Pitch-Synchronous Modulation Effects by using Analytic Filters	1145
<i>Unto K. Laine</i>	
Perceptual Evidence for FO Variability Constraints of Phrase-Initial Accents in Greek	1149
<i>Christos Malliopoulos and George Carayannis</i>	
The Impact of relative average duration of vowels in Greek on the perception of a constant synthetic speech rate	1153
<i>Stavroula-Evita F. Fotinea, Michael A. Vlahakis and George V. Carayannis</i>	
Text-to-Speech Synthesis in Slovenian Language	1157
<i>Tomaz Sef, Ales Dobnikar and Matjaz Gams</i>	
Comparison of Two Different Text-to-speech Alignment systems: Speech Synthesis based VS. Hybrid HMM/ANN	1161
<i>O. Deroo, F. Malfrere and T. Dutoit</i>	
A Fuzzy Approach to Text-to-Speech Synthesis	1165
<i>Enzo Mumolo and William Costanzo</i>	
A method to choose an appropriate concatenating position for automatically generated synthesis unites	1169
<i>Hun Jae Park, Sang Hun Kim, Min Soo Han and Jae Ho Chung</i>	
A high performance vowel spotting system based on a multi-stage architecture	1173
<i>J. Sirigos, N. Fakotakis and G. Kokkinakis</i>	
On a Time-varying Complex Speech Analysis	1177
<i>Keiichi Funaki, Yoshikazu Miyanaga and Koji Tochinai</i>	
Autocorrelation Analysis of Speech Signals Using the Number Theoretic Transforms over the Direct Sums of Finite Fields	1181
<i>Nikolai S. Rubanov and Eugene I. Bovbel</i>	
Speech Analysis and Synthesis Using Instantaneous Amplitudes	1185
<i>Gang Li and Lunji Qiu</i>	
Spectral Estimation of Voiced Speech with Regressive Linear Prediction	1189
<i>Susanna Varho and Paavo Alku</i>	
The performance of a Novel Pre-processor for the Learning Vector Quantisation Classifier	1193
<i>H. Kelleher and E. Chilton</i>	
Low Delay Phone Recognition	1197
<i>Jose A.R. Fonollosa, Eloi Battle and Jose B. Mari</i>	
Design of a Command Interface with a Dynamic Grammar Speech Recognition Engine	1201
<i>S. Kruger, S. Chennoukh, J. Flanagan and L. Rothkrantz</i>	

ADPCM with Nonlinear Prediction	1205
<i>Marcos Faöndez-Zanuy and Oscar Oliva-Suarez</i>	
Non-Linear Processing in Cochlear Space Sub-Bands using Artificial Neural Networks for Multi-Microphone Adaptive Speech Enhancement	1209
<i>Amir Hussain and Douglas R. Campbell</i>	

Volume III

Plenary Talk

Optimization of filter banks based on properties of the input signal	1213
<i>P.P. Vaidyanathan</i>	

ThM S-1

Adaptive Systems I

A Block Adaptive DFE in the Frequency Domain based on Tentative Decisions	1221
<i>Kostas Berberidis and Panos Karaivazoglou</i>	
Implementation of a block adaptive filter working in the frequency domain combined with a robust adaptation control	1225
<i>Bernhard Nitsch</i>	
A Fast Prewhitened Affine Projection Algorithm	1229
<i>Karim Maouche and Dirk T.M. Slock</i>	
A Fast Multichannel Adaptive Filtering Algorithm	1233
<i>Mounir Bhourri, Mamadou Mboup and Madeleine Bonnet</i>	
Simplified FLS Algorithm for Linear Phase Adaptive Filtering	1237
<i>Leonardo S. Resende, João Marcos, T. Romano and Maurice G. Bellanger</i>	
A Delayless Subband Adaptive Filter Using the Projection Method	1241
<i>Hideaki Sakai and Shigeyuki Miyagi</i>	
Performance Limitations of Subband Adaptive Filters	1245
<i>S. Weiss, R.W. Stewart, A. Stenger and R. Rabenstein</i>	
Step-size Optimization of the BNDR-LMS Algorithm	1249
<i>J. A. Apolinário Jr., P.S.R. Diniz, T.I. Laakso and M.L.R. de Campos</i>	
LMS Tracking Behavior Under Periodically Changing Systems	1253
<i>Markus Rupp</i>	
A Controlled Block Implementation of the NLMS Algorithm	1257
<i>Kensaku Fujii and Juro Ohga</i>	

ThM SS-2

3-D Imaging and Virtual Inspection of Objects and Places

Automatic 3D Model Acquisition and Generation of New Images from Video Sequences	1261
<i>Andrew Fitzgibbon and Andrew Zisserman</i>	
Synthesis of virtual views of a scene from two or three real views	1269
<i>Georges M. Quenot</i>	

3D Photography using shadows	1273
<i>Jean-Yves Bouguet and Pietro Perona</i>	
Towards Flexible 3-D Digitizing Systems	1277
<i>P. Hebert, J. Tremblay, F. Blais, H. Chotard and S. Dyck</i>	
Acquisition and 3D Registration of Image Sequences for Structured Light Based Free-Form Surface Reconstruction	1281
<i>C. Schoenenberger, P. Graebing and E. Hirsch</i>	
Evaluation of the Construction of Novel Views by a combination of Basis Views	1285
<i>Bernard Buxton, Zahid Shafi and John Gilby</i>	
Three Dimensional View Registration by a Frequency Domain Technique	1289
<i>G.M. Cortelazzo, G. Doretto, L. Lucchese and S. Totaro</i>	
Multi-View Modeling & Synthesis	1293
<i>Chen Brestel and Shimon Ullman</i>	
ThM S-3	
Neural Networks and Fuzzy Systems	
Adaptive Learning Algorithms for Semantic Object Extraction	1297
<i>Nikolaos Doulamis, Anastasios Doulamis and Stefanos Kollias</i>	
Recurrent Neural Networks for Signal Processing Trained by a new Second Order Algorithm	1301
<i>Paolo Campolucci, Michele Simonetti and Aurelio Uncini</i>	
Neural Networks with Hybrid Morphological / Rank / Linear Nodes and their Application to Handwritten Character Recognition	1305
<i>Löcio F.C. Pessoa and Petros Maragos</i>	
Decision Level Fusion by Clustering algorithms for Person Authentication	1309
<i>Vassilios Chatzis, Adrian G. Bors and Ioannis Pitas</i>	
Supervised Multisensor Tracking algorithm	1313
<i>Vincent Nimier</i>	
Second Order Hebbian Neural Networks and Blind Source Separation	1317
<i>Konstantinos I. Diamantaras</i>	
Divide and conquer algorithms for constructing neural networks architectures	1321
<i>K. Koutroumbas, A. Pouliakis and N. Kalouptsidis</i>	
Implementing Size-Optimal Discrete Neural Networks Require Analog Circuitry	1325
<i>Valeriu Beiu</i>	
Fast Formation of Invariant Feature Maps	1329
<i>Stephen McGlinchey and Colin Fyfe</i>	

ThM S-4	
Signal Processing for Communications I	

Performance Evaluation of Adaptive Subspace Detectors Based on Stochastic Representations	1333
<i>Shawn Kraut and Louis Scharf</i>	
Low Power Detection	1337
<i>Mohammed Nafie and Ahmed Tewfik</i>	
MLSE and Spatio-Temporal Interference Rejection Combining with Antenna Arrays	1341
<i>David Asztely and Bjorn Ottersten</i>	
Interference suppression in SS systems: a comparison between PTV P/S-type and W-type filters	1345
<i>Giacinto Gelli</i>	
A Space/Time Pre-Equalization Technique for Down-Link Signal Transmission in Time-Division-Duplex (TDD) Mobile Multimedia Communications	1349
<i>Shigeru Tomisato, Kazuhiko Fukawa and Tadashi Matsumoto</i>	
Fast Phase Sequences Spreading codes for CDMA using FFT	1353
<i>E. Del Re, R. Fantacci and L.S. Ronga</i>	
A new Orthogonal Sequence for DS/CDMA Systems	1357
<i>Seong Ill Park, Hong Gil Kim, Iickho Song, Suk Chan Kim, Yun Hee Kum and Jooshik Lee</i>	
Modelling Sea Clutter Using Conditional Heteroscedastic Models	1361
<i>Jacek L. Noga and William J. Fitzgerald</i>	
Robust Image Restoration Matched with Adaptive Aperture Formation in Radar Imaging systems with Sparse Antenna Arrays	1365
<i>Ivan Prudyus, Sviatoslav Voloshynovskiy and Taras Holotyak</i>	
A Real-Time Performance Evaluation Technique for Future DSP-Based “Software” Wireless Radio	1369
<i>Lorenzo Proserpi, Daniele Gianfelici, Luisa Franchina and Savvas A. Kosmopoulos</i>	
 ThM S-5	
Nonlinear Signals and Systems	
An Efficient Order Recursive Algorithm for Volterra System Identification	1373
<i>George-Othon Glentis and Nicholas Kalouptsidis</i>	
Signal Modeling Using Piecewise Linear Chaotic Generators	1377
<i>Thomas Schimming, Marco Gotz and Wolfgang Schwarz</i>	
Analysis of synchronization of chaotic systems based on local conditional Lyapunov exponents	1381
<i>Zbigniew Galias</i>	
Inversion of H-ARMA Models	1385
<i>David Declercq, Patrick Duvaut and Jerome Soubielle</i>	
A Time-Frequency Method for Nonlinear System Classification in Presence of Noise	1389
<i>Lorenzo Galleani and Letizia Lo Presti</i>	
Nonlinear frame-like decompositions	1393
<i>B. Pouye, A. Benazza-Benyahia, I. Pollak, J.-C. Pesquet and H. Krim</i>	

Numerical Integration of nonlinear PDEs Using MD Passive Circuits	1397
<i>F.N. Koumboulis and B.G. Mertzios</i>	
Digital Compression of Analytic Signals Using Nth Root	1401
<i>M. Bellanger and K. Ouaiassa</i>	
Generation of Idempotent Monotone Boolean Functions	1405
<i>Ilya Shmulevich</i>	
Nonlinear Decision Feedback Equalization Using RCPL Network	1409
<i>Levent Demirekler, Tulay Adali and Xiao Liu</i>	
ThM P-6a	
Speech Coding	
A new hybrid CELP-Harmonics speech coder at low bit rates	1413
<i>Laurent Hubaut, Olivier van der Vrecken and Florence Coulon</i>	
Increasing Quality of CELP Coders by Source-Filter Interrelation Using self Organizing Maps	1417
<i>Gokhan Avkarogullari and Tolga Ciloglu</i>	
On the Application of a Psychoacoustically Motivated Speech-Quality Measure in CELP Speech-Coding	1421
<i>Markus Hauenstein and Norbert Gortz</i>	
Fast LSP Calculation and Quantization with Application to the CELP FS1016 Speech Coder	1425
<i>S. Grassi, M. Ansorge and F. Pellandini</i>	
A preliminary study of an audio-visual speech coder: using video parameters to reduce an LPC vocoder bit rate	1429
<i>Elodie Foucher, Gang Feng and Laurent Girin</i>	
Warped Linear Predictive Audio Coding in Video Conferencing Application	1433
<i>Kalle Palomaki, Aki Harma and Unto K. Laine</i>	
Variable-rate speech coding: coding unvoiced frames with 400 bps	1437
<i>Wolfram Ehnert</i>	
Performance of Discrete Fourier Transform with small overlap in Transform-Predictive-Coding-based coders	1441
<i>A. Jbira</i>	
Improved Lost Frame Recovery Techniques for ITU-T G.723.1 Speech Coding System	1445
<i>Grant Ho, Suat Yeldener and Marion Baraniecki</i>	
An Adaptive Quantization Using IIR Filter Bank for Speech Compression	1449
<i>Hiroto Saito and Shogo Nakamura</i>	
ThM P-6b	
Speech Enhancement / Recognition	
Spatial Coherence Exploitation which Yields Non-Stationary Noise Reduction in Subband Domain	1453

<i>R. Atay, E. Mandridake, D. Bastard and M. Najim</i>	
Adaptive Kalman Filter for Speech Enhancement from Colored Noise	1457
<i>M. Gabrea, E. Mandridake and M. Najim</i>	
A Robust Begin-End Point Detector for Highly noisy Conditions	1461
<i>R. Martinez, A. Alvarez, P. Gomez, V. Nieto, V. Rodellar, M. Rubio and M. Perez</i>	
On real time implementation aspects of a source separation algorithm	1465
<i>Ulf A. Lindgren</i>	
A double talk detector based on the partial coherence function	1469
<i>R. Le Bouquin Jeannes and G. Faucon</i>	
Speaker Normalization for Automatic Speech Recognition - An on-line Approach	1473
<i>Ioannis Dologlou, Tom Claes, Louis ten Bosch, Dirk Van Compernelle and Hugo Van Hamme</i>	
On the Equivalence between Predictive Models for Automatic Speech Recognition	1477
<i>Bojan Petek</i>	
Cross-Language Text-Independent Speaker Identification	1481
<i>Geoffrey Durou and Frederic Jauquet</i>	
A Novel Model for Phoneme Recognition using Phonetically Derived Features	1485
<i>Naomi Harte, Saeed Vaseghi and Paul McCourt</i>	
Diverse Processing in Cochlear Spaced Sub-Bands for Multi-Microphone Adaptive Speech Enhancement in Reverberant Environments	1489
<i>Amir Hussain, Douglas R. Campbell and T.J. Moir</i>	
ThM P-7a	
Image and Video Coding	
A General-Tree-Structured Vector Quantizer for Image Progressive Coding	1493
<i>Lin Yu Tseng and Shiueng Bien Yang</i>	
Rate Distortion Optimal Contour Compression Using Cubic B-Splines	1497
<i>J. Zaletelj, R. Pecci, F. Spaan, A. Hanjalic and R.L. Lagendijk</i>	
Coding of Arbitrarily Shaped Video Objects Using B-Spline Wavelets	1501
<i>Mervi Sepponen and Visa Koivunen</i>	
Fast quasi-DCT algorithm for shape-adaptive DCT image coding	1505
<i>Ryszard Stasin'ski and Janusz Konrad</i>	
Fast Approximation of DCT Kernel in JPEG	1509
<i>Anton Marcek and Gregor Rozinaj</i>	
Statistical Modelling of Full Frame DCT Coefficients	1513
<i>M. Barni, F. Bartolini, A. Piva and F. Rigacci</i>	
Quality Scalable Coding of Selected Region	1517
<i>Wook-Joong Kim, Jong-Won Yi and Seong-Dae Kim</i>	
Lossless compression of images by a Search order based entropy coding	1521

<i>J. Jiang and C.V. Brett</i>	
A context-Based Recursive Nonlinear Interpolation for Near-Lossless Coding of X-Ray Images	1525
<i>Bruno Aiazzi, Stefano Baronti, Franco Lotti and Luciano Alparone</i>	
A study of a lossless image compression algorithm using adaptive prediction and context-based entropy coding	1529
<i>Guang Deng</i>	
Rate-Distortion Analysis of Nonlinear Quantisers for Video Coders	1533
<i>Yoo-Sok Saw, Peter M. Grant and John M. Hannah</i>	
Hierarchical MPEG 2 video transmission on ADSL for a higher Quality of Service (QoS)	1537
<i>M. Colin, M. Gharbi, M. Gazalet and C. Modlin</i>	
Fast color transformation by means of hierarchical table lookups	1541
<i>P.L. Dragotti and A.R.P. Ragozini</i>	
ThM P-7b	
Motion Estimation	
Robust Tracker of Small, Fast-Moving Low-Contrast Targets	1545
<i>D. Davies, P. Palmer and M. Mirmehdi</i>	
Accurate Motion Interpolation by using a Region Based Motion Estimator	1549
<i>R. Lancini, M. Ripamonti, S. Tubaro and P. Vicari</i>	
A Cooperative Top-Down / Bottom-Up Technique for Motion Field Segmentation	1553
<i>R. Leonardi, P. Migliorati and G. Tofanichio</i>	
Motion Estimation and Modeling in Video Sequences	1557
<i>Ciro Cafforio, Eugenio Di Sciascio and Cataldo Guaragnella</i>	
The Impulse RETINA : a smart velocity sensor	1561
<i>Emmanuel Marilly, Christophe Coroyer, Olga Cachard and Alain Faure</i>	
A Fast Block Matching Motion Estimation Algorithm Based on Simplex Minimisation	1565
<i>Mohammed E. Al-Mualla, Nishan Canagarajah and David R. Bull</i>	
Motion estimation based on triads of Gabor filters: DSP board implementation	1569
<i>A. Spinei, D. Pellerin and J. Herault</i>	
Hierarchical Estimation of Optical Flow Using Spectral Energy Method	1573
<i>Takashi Koike, Katsuya Kondo and Nozomu Hamada</i>	
Visual Module integration for optical flow estimation	1577
<i>Luigi Bedini, Andrea Cannata, Mario Ferraro, Emanuele Salerno and Anna Tonazzini</i>	
ThA S-1a	
Pattern Recognition	
A Vector Based Approximation of KLT and its Application to Face Recognition	1581
<i>Nicolas Tsapatsoulis, Vassilios Alexopoulos and Stefanos Kollias</i>	

Recognition of Rotated and Scaled Textures Using 2-D AR Modeling and the Fourier-Mellin Transform	1585
<i>C. Cariou, O. Alata, C. Rosenberger, J.-M. Ogier and K. Chehdi</i>	
Point pattern matching using a genetic algorithm and voronoi tessellation	1589
<i>Marius Tico and Corneliu Rusu</i>	
Knowledge Based Interpretation of Aerial Images Using Multiple Sensors	1593
<i>R. Tonjes and C.-E. Liedtke</i>	
Automatic Generation of a VLSI Parallel Architecture for QRS Detection	1597
<i>A. Koulouris, N. Koziris, T. Andronikos, G. Papakonstantinou and P. Tsanakas</i>	
 ThA S-1b	
Nonlinear Techniques for Channel Equalization	
A fuzzy logic filter for coherent detection in Mobile Communication Receivers	1601
<i>A. Perez-Neira, M.A. Lagunas, A. Jove and A. Artes</i>	
Viterbi Algorithm with Embedded Channel Estimation Based on Fuzzy Inference	1605
<i>Lorenzo Favalli, Alessandro Mecocci and Pietro Savazzi</i>	
Co-channel interference suppression using a fuzzy filter	1609
<i>Sarat Kumar Patra and Bernard Mulgrew</i>	
Blind Equalization of Nonlinear Channels Using Hidden Markov Models	1613
<i>Kristina Georgoulakis and Sergios Theodoridis</i>	
Symbol-by-Symbol Mobile Radio Channel Equalization Using the K-NN Classifier	1617
<i>Pietro Savazzi, Lorenzo Favalli, Eugenio Costamagna and Alessandro Mecocci</i>	
Reduced-complexity Decision Feedback Equalizer for Nonlinear Channels	1621
<i>Francisco J. Gonzalez-Serrano, Fernando Perez-Cruz and Antonio Artes-Rodriguez</i>	
 ThA S-2	
Blind Identification / Deconvolution	
Source separation without explicit decorrelation	1625
<i>Odile Macchi and Eric Moreau</i>	
Blind separation of polarized waves	1629
<i>J.L. Lacoume, F. Glangeaud and J. Mars</i>	
Blind Multichannel Estimation Exploiting the Finite Symbol Alphabet	1633
<i>Jaouhar Ayadi and Dirk T.M. Slock</i>	
Robustness of the least-squares and the subspace methods for blind channel Identification/equalization with respect to channel undermodeling	1637
<i>Athanasios P. Liavas, Phillip A. Regalia and Jean-Pierre Delmas</i>	
Identifiability Conditions for Blind and Semi-Blind Multichannel Estimation	1641
<i>Elisabeth de Carvalho and Dirk T.M. Slock</i>	

Blind and Informed Cyclic Array Processing for Cyclostationary Signals	1645
<i>Pascal Chevalier and Alain Maurice</i>	
A numerical algorithm for implementing the single-stage maximization criterion for multichannel blind deconvolution	1649
<i>Shuichi Ohno, Yujiro Inouye and Kazuaki Tanebe</i>	
DFT Based Optimal Blind Channel Identification	1653
<i>Claudio Becchetti, Giovanni Jacovitti and Gaetano Scarano</i>	
Blind Identification of IIR Model Based on Output Over-Sampling	1657
<i>Lianming Sun, Wataru Nisizawa, Wenjiang Liu and Akira Sano</i>	
Blind Multichannel Equalization with Controlled Delay	1661
<i>A. Touzni and I. Fijalkow</i>	
ThA S-3	
Image Analysis	
A Disjoint set Algorithm for the Watershed Transform	1665
<i>Arnold Meijster and Jos B.T.M. Roerdink</i>	
Electrostatic formulation for adaptive dilation	1669
<i>Olivier Laviolle and Pierre Baylou</i>	
Textured Regions Extraction Using matching pursuit Method	1673
<i>Takahide Kayanuma and Nozomu Hamada</i>	
Hexagonal Wavelet Decomposition for Texture Characterization	1677
<i>Aleksandra Mojsilovic, Srdan Markovic and Miodrag Popovic</i>	
Optimized Wold-Like Decomposition of 2D Random Fields	1681
<i>Patrizio Campisi, Giovanni Iacovitti and Alessandro Neri</i>	
A New Algorithm CGA for Image Labeling	1685
<i>Guo dong Guo, Shan Yu and Song de Ma</i>	
Maximum Entropy Contouring and Clustering for Fractal Attractors with Application to Self-Similarity Coding of Complex Texture	1689
<i>Kohji Kamejima</i>	
Region Based Analysis of Video Sequences with a General Merging Algorithm	1693
<i>Luis Garrido and Philippe Salembier</i>	
A Framework for Interactive Video Sequence Segmentation Based on Multiple Features	1697
<i>R. Castagno and T. Ebrahimi</i>	
Curvature Estimation of Oriented Patterns	1701
<i>M. Donias, P. Baylou and N. Keskes</i>	

ThA SS-4

Multimedia Signal Processing

ARHON: A Multimedia Database Design for Image Documents	1705
<i>K.V. Chandrinou, J. Immerker and P.E. Trahanias</i>	
A Multimedia System for the Surveillance of Unattended Railway Stations	1709
<i>Elena Stringa, Claudio Sacchi and Carlo S. Regazzoni</i>	
Down-Sampling of Compressed Images in the DCT Domain	1713
<i>A.N. Skodras and C.A. Christopoulos</i>	
Broadband Multimedia Systems Architecture and Integration	1717
<i>Irek Defee</i>	
A Color Segmentation and Classification Scheme for Facial Image and Video Retrieval	1721
<i>N. Herodotou, K.N. Plataniotis and A.N. Venetsanopoulos</i>	
Algorithms for Compressed Video Processing in Multimedia Applications	1725
<i>Francesca Dardi and Giovanni L. Sicuranza</i>	
Detecting and Classifying Video Shot Boundaries in MPEG Compressed Sequences	1729
<i>Irena Koprinska and Sergio Carrato</i>	
Image Region Extraction for Content-Based Image Retrieval	1733
<i>D. Androutsos, K.N. Plataniotis and A.N. Venetsanopoulos</i>	
ThA SS-5	
Transform Methods in Signal Processing	
Wavelets, filterbanks, and the Karhunen-Loeve transform	1737
<i>Michael Unser</i>	
Total variation based interpolation	1741
<i>F. Guichard and F. Malgouyres</i>	
Transform oriented technology for quantitative analysis of fetal movements in ultrasound image sequences	1745
<i>Leonid Yaroslavsky and Ben-Zion Shaick</i>	
Discrete-time linear-phase nearly orthogonal wavelet banks	1749
<i>Tapio Saramaki and Karen Egiazarian</i>	
Filtering in Consecutive Fractional Fourier Transform Domains -- A Method to Synthesize General Linear Systems for More Efficient Digital and Optical Implementations	1753
<i>M. Fatih Erden, Haldun M. Ozaktas and M. Alper Kutay</i>	
Fast Fractional Fourier Transform	1757
<i>E.V. Labunets and V.G. Labunets</i>	
Solution of the super-resolution problem through extrapolation of the orthogonal spectra using multi-valued neural technique	1761
<i>Igor Aizenberg, Naum Aizenberg, Jaakko Astola and Karen Egiazarian</i>	
New Fast Trigonometric Transforms	1765
<i>K. Egiazarian, V.G. Labunets, E.V. Labunets and J. Astola</i>	
Fast Algebraic Convolution for Prime Power Lengths	1769

ThA P-6a

Statistical and Array Signal Processing

On the issue of rank estimation in subspace tracking: the NA-CSVD solution	1773
<i>Philippe A. Pango and Benoit Champagne</i>	
The min-norm beamformer: a new estimate of the propagation speed of waves in a car exhaust	1777
<i>Gema Piñero and Luis Vergara</i>	
Direction-of-Arrival Estimation of Cyclostationary Coherent Signals in Array Processing	1781
<i>Jingmin Xin, Hiroyuki Tsuji, Yoshihiro Hase and Akira Sano</i>	
A Downlink Adaptive Transmitting Antenna Method for T/F/SDMA FDD Systems Avoiding DOA Estimation	1785
<i>T. Aste, P. Forster, L. Fety and S. Mayrargue</i>	
DOA Outlier Mitigation for Generalised Spatial Smoothing	1789
<i>Yuri I. Abramovich and Nicholas K. Spencer</i>	
Fast High Resolution Methods	1793
<i>S. Bourennane, M. Frikel and A. Bendjama</i>	
Geometrical determination of ambiguities in bearing estimation for sparse linear arrays	1797
<i>Anne Flieller, Pascal Larzabal and Henri Clergeot</i>	
Sufficient conditions for the unique localization of distributed sources	1801
<i>Shahrokh Valaee and Benoit Champagne</i>	
Spatial and Temporal Processing of Cyclostationary Signals in Array Antennas Based on Linear Prediction Model	1805
<i>Ami Kanazawa, Hiroyuki Tsuj, Jingmin Xin and Blagovest Shishkov</i>	
Improving Signal Subspace Estimation and Source Number Detection in the Context of Spatially Correlated Noises	1809
<i>P. Fabry, Ch. Serviere and J.L. Lacoume</i>	
Blind Separation of Cyclostationary Signals	1813
<i>Adriana Dapena, Daniel Iglesia and Luis Castedo</i>	
Blind Separation from α -contaminated mixtures	1817
<i>V. Koivunen, P. Pajunen, J. Karhunen and E. Oja</i>	

ThA P-6b

Spectral Estimation and Signal Analysis

Efficient Stochastic Maximum A Posteriori Estimation for Harmonic Signals.....	1821
<i>Christophe Andrieu and Arnaud Doucet</i>	
A Fuzzy Reasoning Based Arma Order Selection Method	1825
<i>Miki Haseyama and Hideo Kitajima</i>	

Spectral Methods for Stationary Harmonizable Alpha-Stable Processes	1829
<i>G.A. Tsihrintzis, P. Tsakalides and C.L. Nikias</i>	
Robust Bayesian Spectral Analysis via MCMC Sampling	1833
<i>Arnaud Doucet and Christophe Andrieu</i>	
Linear Prediction Modeling for Signal Selective DOA Estimation Based on Higher-Order Statistics ...	1837
<i>Hiroyuki Tsuji, Jingmin Xin, Yoshihiro Hase and Blagovest Shishkov</i>	
Wavelet-packet basis selection for abrupt changes detection in multicomponent signals	1841
<i>Eric Hitti and Marie-Francoise Lucas</i>	
Detection of cisoids in noise	1845
<i>Joakim Sorelius</i>	
High resolution nearly-ML estimation of sinusoids in noise using a fast frequency domain approach .	1849
<i>Malcolm D. Macleod</i>	
A Period Detector for Pseudo-Periodic Signals	1853
<i>Bart F. Rice</i>	
Relationship between the Wigner-Distribution and the Teager Energy	1857
<i>R. Hamila, F.A. Cheikh, J. Vesma, J. Astola and M. Gabbouj</i>	
LPC and CCF Vocal Tract Models in Speech Synthesis	1861
<i>Robert Vich and Zdenek Smekal</i>	
Real Time Detector for Cyclostationary RFI in Radio Astronomy	1865
<i>Rodolphe Weber and Christian Faye</i>	
ThA P-7	
Filter Design and Subband Techniques	
Ladder Scheme for Perfect Reconstruction Modulated Filter Banks	1869
<i>M. Gharbi, M. Colin, M. Gazalet and F.X. Coudoux</i>	
Multistage Implementation of Optimal Reconstruction in Noisy Filter Banks	1873
<i>Onoriu BraÛdenanu and Ulrich Appel</i>	
Optimal Subband Analysis Filters Compensating for Quantization and Additive Noise	1877
<i>Anastasios Doulamis, Nikolaos Doulamis and Anastasios Delopoulos</i>	
Multidimensional Multirate Filter Without Checkerboard Effects	1881
<i>Yasuhiro Harada, Shogo Muramatsu and Hitoshi Kiya</i>	
Inter-Relationships between Different structures for periodic systems	1885
<i>Desmond McLernon</i>	
A Design Approach to a Hierarchical Structure Transversal Filter Using GA	1889
<i>S. Nakamura, T. Hoshi, S. Watanuki and M. Yoneyma</i>	
Design of Primitive Operator Digital Filters Using Genetic Algorithms	1893
<i>David W. Redmill and David R. Bull</i>	
Design of Equiripple Minimum Phase FIR-Filters	1897

<i>A. Groth and H.G. Gockler</i>	
Designing Low-Pass Digital Filters with Fewer parameters	1901
<i>Gang Li</i>	
Cluster Filter	1905
<i>Jari Ili-Hietanen, Konsta Koppinen, Katriina Halonen</i>	
Least Squares Design of IIR Filters with Arbitrary Magnitude and Phase Responses and specified Stability Margin	1909
<i>Mathias C. Lang</i>	
Quadratic FIR - Filter Design as a Generalized Eigenproblem	1913
<i>Jeffrey O. Coleman</i>	
On the Optimal Structure of 2-D Digital Filters with L2-Sensitivity Minimization	1917
<i>Gang Li</i>	
Design of FIR filters for images based on properties of human vision	1921
<i>Naoyuki Aikawa and Masamitsu Sato</i>	
Lattice Structure of Transparent Layered Optical Systems	1925
<i>Yoshimi Monden and Hideki Hirayama</i>	
Complexity constraints - A way toward simpler structuring systems	1929
<i>Pertti Koivisto and Pauli Kuosmanen</i>	
An Effective Algorithm for Filtering and Observer Design	1933
<i>Salim Ibrir</i>	

Volume IV

Pleenary Talk

Audio-Visual Signal Processing for Mobile Communications	1937
<i>P. Haavisto</i>	

FM SS-1

Applications of Multirate Digital Signal Processing

N-th Band Filter Design	1943
<i>Tapio Saramaki and Markku Renfors</i>	
Fractional Rate Decimator and Interpolator Design	1949
<i>Tor A. Ramstad</i>	
Subband Coding of Speech and Audio	1953
<i>Charles D. Creusere</i>	
Multiresolution Coding of Image and Video Signals	1957
<i>Bernd Girod, Frank Hartung and Uwe Horn</i>	
Acoustic Echo Control in Subbands - An Application of Multirate Systems	1961
<i>Gerhard Schmidt</i>	
Transmultiplexers-Some new Applications	1965
<i>R.D. Koilpillai, T.Q. Nguyen and K.C. Zangi</i>	
Discrete Wavelet Packet Based Multitone Modulation for Transmitting Complex Symbols	1969
<i>T.K. Adhikary and V.U. Reddy</i>	
Oversampling A/D and D/A Converters	1973
<i>Gabor C. Temes</i>	

FM S-2

Signal Processing for Communications II

Permutation Spreading in Wavelet OFDM Systems	1977
<i>F. DAVIS, M. Mondin and F. Daneshgaran</i>	
Performance analysis of a Wavelet-Based Generalized Sidelobe Cancellers	1981
<i>Yi Chu, Wen-Hsien Fang and Shun-Hsyung Chang</i>	
A Decorrelating Multiuser Receiver for DS/CDMA Systems Using TCM	1985
<i>Kwang Soon Kim, Hong Gil Kim, Ickho Song, So Ryoung Park, Seok Ho Yoon and Hyung-Myung Kim</i>	
Bearings-only Target Motion Analysis by estimation of densities	1989
<i>Marc Spigai, Jean-Francois Grandin</i>	
PLL Frequency Synthesizer System Utilizing Multi-Programmable Dividers	1993

<i>Yasuaki Sumi, Kouichi Syoubu, Shigeki Obote, Yutaka Fukui and Yoshio Itoh</i>	
DSP-FLL for FSK Demodulation	1997
<i>Shigeki Obote, Yasuaki Sumi, Kouichi Syoubu, Yoshio Itoh and Yutaka Fukui</i>	
Some improvements of a rotation invariant autoregressive method. Application to the neural classification of noisy sonar images	2001
<i>H. Thomas, C. Collet, K. Yao and G. Burel</i>	
A new approach to ECF design is proposed based on IRLS algorithm	2005
<i>Andrija Petrovic, Aleksa Zejak, Igor Simic , Bojan Zrnic</i>	
 FM SS-3	
Simulation Based Computational Methods for Statistical Signal Processing	
On a New Stochastic Version of the EM Algorithm	2009
<i>Colin Campbell and Simon Godsill</i>	
Variable Selection by a reversible jump MCMC approach	2013
<i>Petar M. Djuric</i>	
A comparison of sample based filters and the extended Kalman filter for the bearings- only tracking problem	2017
<i>Neil Gordon and Michael Pitt</i>	
Some Examples of Inverse Problems in Geophysics	2021
<i>Marc Lavielle and David Marquez</i>	
Bayesian Decomposition Trees with Application to Signal Denoising	2025
<i>D. Leporini</i>	
MCMC Methods for Restoration of Nonlinearly Distorted Autoregressive Signals	2029
<i>Paul T. Troughton and Simon J. Godsill</i>	
Multidimensional Optimisation of Harmonic Signals	2033
<i>Paul J. Walmsley, Simon J. Godsill and Peter J.W. Rayner</i>	
 FM S-4a	
Adaptive Systems II	
Undermodeled Equalization: Extrema of the Godard/Shalvi-Weinstein Criterion	2037
<i>Phillip A. Regalia and Mamadou Mboup</i>	
Blind Single-Channel Interference Rejection Using Godard's Criterion	2041
<i>D. Nussbaum and O. Macchi</i>	
Robust Second-Order Blind Equalization of Polyphase Channels	2045
<i>Constantinos Papadias, David Gesbert and Arogyaswami Paulraj</i>	
A Constant Modulus Approach to Multiple Access Interference Rejection	2049
<i>Joaquin Miguez and Luis Castedo</i>	
Constrained Normalized Adaptive Filters for CDMA Mobile Communications	2053

FM SS-4b

Blind Source Separation

Direct exploitation of non-Gaussianity as a discriminant	2057
<i>I.J. Clarke</i>	
Performance of Blind Discrete Source Separation	2061
<i>O. Grellier and P. Comon</i>	
A Residual Bound for the Mixing Matrix in ICA	2065
<i>Lieven De Lathauwer and Joos Vandewalle</i>	
Generalization of a Maximum-Likelihood Approach to Blind Source Separation	2069
<i>Vicente Zarzoso and Asoke K. Nandi</i>	
De-noising of experimental signals from pyroelectric sensors by a source separation method	2073
<i>R. Huez, D. Nuzillard and A. Billat</i>	

FM S-5

Motion / Compression

Hierarchical Mesh-based motion estimation using a differential approach and application to video coding	2077
<i>Patrick Lechat, Michael Ropert and Henri Sanson</i>	
Compact representation of motion parameters for object-based video coding	2081
<i>Roger A. Packwood, Michael K. Stelios and Graham R. Martin</i>	
Object oriented coding using 3D motion estimation	2085
<i>G. Calvagno, V. Orsatti, R. Rinaldo and L. Sbaiz</i>	
Adaptive orthogonal filter bank trees for encoding of motion-compensated frame differences	2089
<i>Wolfgang Niehsen and Mathias Wien</i>	
Architectures for Vector-Tracing based Motion Estimation for MPEG2 type coding for TV and HDTV	2093
<i>M. Gumm, F. Mombert, S. Dogimont, I. Remi and D. Mlynek</i>	
Vector Tracing Techniques for Motion Estimation Algorithms in Video Coding	2097
<i>Marco Mattavelli and Giorgio Zoia</i>	
A Background Memory Update Scheme for H.263 Video Codec	2101
<i>Kui Zhang and Josef Kittler</i>	
Connected operators for sprite creation and layered representation of image sequences	2105
<i>P. Salembier, O. Pujol and L. Garrido</i>	
Low-bitrate Video coding with Third Order Geometric Transformations	2109
<i>Cornelis H. Slump, Marcel A.J.A van Veen and Frederik J. de Bruijn</i>	

FM P-6

System Identification and Parameter Estimation

Generalized Quadratic Minimization and a Signal processing application	2113
<i>A. Gorokhov and P. Stoica</i>	
Frish filtering of noisy signals	2117
<i>Paolo Guidorzi and Roberto Guidorzi</i>	
An Algebraic Approach to the Subset Selection Problem	2121
<i>Ahmed Tewfik and Mohammed Nafie</i>	
Person Identification via the EEG Using Computational Geometry Algorithms	2125
<i>M. Poulos, M. Rangoussi and E. Kafetzopoulos</i>	
A Vector Quantization Schema for Non-Stationary Signal Distributions Based on ML Estimation of Mixture Densities	2129
<i>N. A. Vlassis, K. Blekas, A. Stafylopatis and G. Papakonstantinou</i>	
Fourth-order cumulant-based algorithms for non-minimum phase MA system identification	2133
<i>Diego P. Ruiz, Antolino Gallego and Maria C. Carrion</i>	
Stochastic system identification for ATM network traffic models: a time domain approach	2137
<i>Katrien De Cock and Bart De Moor</i>	
Blind identification of sparse multipath channels using cyclostationary statistics	2141
<i>Karim Abed-Meraim and Yingbo Hua</i>	
On the linearly constrained blind multichannel equalization	2145
<i>Santiago Zazo, Jose Manuel Paez-Borrillo</i>	
Evolutionary Multimodel Partitioning Filters for Multivariable Systems	2149
<i>G.N. Beligiannis, K.G. Berketis, D.A. Fotakis and S.D. Likothanassis</i>	
Adaptive AR Model Identification Based on the FAEST Filters	2153
<i>S.D. Likothanassis, E.N. Demiris and D.G. Karelis</i>	
Markovian approach to random fields nonlinear detection and estimation problems	2157
<i>A.B. Shmelev</i>	
Blind and Semi-Blind Maximum Likelihood Techniques for Multiuser Multichannel identification	2161
<i>Elisabeth de Carvalho, Luc Deneire and Dirk T.M. Slock</i>	

FM P-7

Image and Shape Analysis

A Robust Method for Reflections Analysis in Color Image Sequences	2165
<i>Andrea Teschioni and Carlo S. Regazzoni</i>	
Locating text in color document images	2169
<i>Erel Ortacag, Bulent Sankur and Khalid Sayood</i>	
Characterisation of circular objects based on the Hough Transform	2173
<i>Bento Correia, F. Carvalho Rodrigues</i>	

How to detect dominant points on 3-D curves	2177
<i>Kazuhide Sugimoto and Fumiaki Tomita</i>	
Curvature Variation of Projected Cross-Sections from Straight Uniform Generalized Cylinders	2181
<i>William Puech and Jean-Marc Chassery</i>	
3-D measurements using conoscopy and application to ophthalmology	2185
<i>Christophe Moser, George Barbastathis and Demetri Psaltis</i>	
Projection-Based Registration of Radiological Images	2189
<i>Cigdem Eroglu and A. Enis Cetin</i>	
Lip Features for Speech and speaker Recognition	2193
<i>Ronald Auckenthaler, Jason Brand and John S. Mason</i>	
Precise Eye Detection from Image Sequences	2197
<i>Weimin Huang, Jian-Kang Wu, Qibin Sun and Chain-Prong Lam</i>	
A New Stereo Matching algorithm Based on Probabilistic Diffusion	2201
<i>Sang Hwa Lee, Jong Il Park and Choong Woong Lee</i>	
An efficient balanced hierarchical data structure for multiversion accesses to spatio-temporal data	2205
<i>Hiroyuki Dekihara and Yasuaki Nakamura</i>	
Vision Navigation of an Autonomous Vehicle by Fuzzy Reasoning	2209
<i>W. Li and F.M. Wahl</i>	
Measuring Tree-Ring Parameters using the Generalised Fisher Ratio	2213
<i>S. Zheng and C.G. Molina</i>	
FA S-1	
Signal Processing for Communications III	
ABRLS Algorithm for Time Variant Channel Equalisation	2217
<i>Tetsuya Shimamura and Colin F.N. Cowan</i>	
The Use of Evolutionary Optimisation in Channel Equalisation	2221
<i>F. Sweeney, P. Power and C.F.N. Cowan</i>	
An Algorithm for Channel Equalization with Adaptive Tap Position Control.....	2225
<i>M.T. Arvind and P.G. Poonacha</i>	
A Constant Modulus Array for Real Signals	2229
<i>W. Pora, S. Lambotharan, J.A. Chambers and A.G. Constantinides</i>	
Blind Iterative Separation of CDMA Signals by Nonlinear Independent Component Analysis	2233
<i>Ari Hottinen</i>	
A bayesian method for GPS signals delay estimation	2237
<i>J. Soubielle, I. Fijalkow, P. Duvaut, J.Y. Delabbaye and A. Bibaut</i>	
Radio Frequency Interference Rejection in Radio Astronomy Receivers	2241
<i>Peter Fridman</i>	

Spatial-Temporal Processing with Restriction of Degrees of Freedom for CDMA-Multiuser Detection	2245
<i>O. Mu×oz, J.A. Ferna'ndez-Rubio</i>	
An Efficient Non Linear Receiver for High Density Optical Recording	2249
<i>L. Agarossi, S. Bellini, F. Bregoli and P. Migliorati</i>	
FA S-2a	
Image Filtering	
Noise Reduction of Image Sequences as Preprocessing for MPEG2 Encoding	2253
<i>P.M.B van Roosmalen, A.C. Kokaram and J. Biemond</i>	
Variational Principles Applied to Image Filtering	2257
<i>Lorenzo Jose Tardo'n-Garcia, Javier Portillo-Garcia</i>	
Removal of mixed noise by adaptive Linear combination of weighted order statistics (LWOS) filters based on local statistics	2261
<i>Akira Taguchi and Tadasuke Inoue</i>	
A New Operator for Image Processing Based on Lp-Filter Approximation	2265
<i>M. Tabiza and Ph. Bolon</i>	
Signal and Image Denoising in Transform Domain and Wavelet Shrinkage: A Comparative Study	2269
<i>Rusen Oktem, Leonid Yaroslavsky and Karen Egiazarian</i>	
FA S-2b	
Watermarking	
Generation of the Signature with the Structured Information of the Image	2273
<i>Hirotsugu Kinoshita and Masafumi Satoh</i>	
Self-similarity based image watermarking	2277
<i>Patrick Bas, Jean-Marc Chassery and Franck Davoine</i>	
Removing Spatial Spread Spectrum Watermarks by non-linear Filtering	2281
<i>Gerrit C. Langelaar, Reginald L. Lagendijk and Jan Biemond</i>	
Robust Image Watermarking in the Subband or Discrete Cosine Transform Domain	2285
<i>Dimitrios Tzovaras, Nikitas Karagiannis and Michael G. Strintzis</i>	
Non-Invertible Statistical Wavelet Watermarking	2289
<i>Gianluca Nicchiotti and Ennio Ottaviani</i>	
FA S-3	
Image and Video Coding	
User Interaction in Content-Based Video Coding and Indexing	2293
<i>Paulo Correia and Fernando Pereira</i>	
An MPEG2 Compliant PSNR controller for a Constant High Quality Studio Environment	2297

<i>Enrico Frumento and Rosa Lancini</i>	
Adaptive Tree-Structured Lattice Vector Quantization for Video Coding	2301
<i>Vincent Ricordel and Moncef Gabbouj</i>	
Linear Combination of Face Views for Low Bit Rate Face Video Compression	2305
<i>Ioannis Koufakis and Bernard Buxton</i>	
Computational Graceful Degradation for Video Decoding	2309
<i>Marco Mattavelli and Sylvain Brunetton</i>	
Cost-Based Region Growing for Fractal Image Compression	2313
<i>Hannes Hartenstein and Dietmar Saupe</i>	
Context-based adaptive arithmetic coding for lossy plus lossless image compression	2317
<i>Guang Deng</i>	
High Compression of Chrominance Exploiting its Correlation with Luminance	2321
<i>Maciej Bartkowiak and Marek Domanski</i>	
Progressive Medical Image Compression Using a Diagnostic Quality Measure on Regions-of-Interest	2325
<i>Alberto Signoroni and Riccardo Leonardi</i>	
Multidimensional companding for Lattice Vector Quantization of Circularly Symmetric Densities	2329
<i>Stephan F. Simon and Werner Praefcke</i>	
FA S-4	
Audio and Electroacoustics II	
Stochastic gradient algorithms in active control	2333
<i>Alberto Gonzalez</i>	
Stereophonic Acoustic Echo Canceller using single adaptive filter per channel	2337
<i>Eun Sook Kim, Kyu Hwa Jeong, Won Cheol Lee and Dae Hee Youn</i>	
Modified Multidelay Adaptive Filter for Acoustic Echo Cancellation	2341
<i>Tonu Trump</i>	
Audio Subband Coding with Improved Representation of Transient Signal Segments	2345
<i>Jorg Kliewer and Alfred Mertins</i>	
Adaptive context based sequential prediction for lossless audio compression	2349
<i>Ciprian Doru Giurcaneanu, Ioan Tabus and Jaakko Astola</i>	
Active Binaural Sound Localization	2353
<i>Greg Reid and Evangelos Miliotis</i>	
Recognition of Isolated Musical Patterns using Discrete Observation Hidden Markov Models	2357
<i>Aggelos Pikrakis, Sergios Theodoridis and Dimitris Kamarotos</i>	
Toward the automatic synthesis of nonlinear wave digital models for musical acoustics	2361
<i>Federico Pedersini, Augusto Sarti, Stefano Tubaro and Roberto Zattoni</i>	

Number Theoretical Means of Resolving a Mixture of Several Harmonic Sounds	2365
<i>Anssi Klapuri</i>	
FA S-5a	
System Identification	
Identification of linear time-variant systems by spectral correlation measurements	2369
<i>Luciano Izzo and Antonio Napolitano</i>	
A Polynomial-Algebraic Method for Non-Stationary TARMA Signal Analysis	2373
<i>R. Ben M rad, S.D. Fassois and J.A. Levitt</i>	
Performance analysis of some methods for identifying continuous-time autoregressive processes	2377
<i>Torsten Soderstrom and Magnus Mossberg</i>	
The bicepstral distance between random signals: a new tool for comparison of arma models identification methods based on higher-order statistics	2381
<i>Jean-Luc Vuattoux and Eric Le Carpentier</i>	
Discrete Time Equivalents of Linear Systems Driven by White Noise	2385
<i>N. Martins and A.C. Rosa</i>	
FA S-5b	
Higher Order Statistics	
An HOS based Statistical Test for Multiplicative Noise Detection	2389
<i>Martial Coulon and Jean-Yves Tournet</i>	
Bussgang Test: A Powerful Non-Gaussianity Test	2393
<i>Caetano Giunta, Giovanni Jacovitti and Gaetano Scarano</i>	
Nonlinear Constrained Optimization Using Lagrangian Approach for Blind Source Separation	2397
<i>Benoit Stoll and Eric Moreau</i>	
Non-Minimum Phase AR Identification Using Blind Deconvolution Methods	2401
<i>Gaetano Scarano and Giampiero Panci</i>	
Limitations of the ARMA w-Slice Method Using a Linear Combination of Higher-Order Cumulants	2405
<i>Damjan Zazula and Jean-Luc Vuattoux</i>	
Modulation Classification Based on a Maximum-Likelihood Receiver in the Cyclic-Hos Domain	2409
<i>Pierre Marchand, Christophe Le Martret and Jean-Louis Lacoume</i>	
FA P-6	
Applications	
Localization Error Analysis of a Fast, Broadband Matched Field Method for a Single Hydrophone ..	2413
<i>Erland Sangfelt and Bernt Nilsson</i>	

Cascaded Scattering Functions for Sonar Signal Processing	2417
<i>Lora G. Weiss and Leon H. Sibul</i>	
A Fast Near-Field Bearing Estimation Via Spatial Exponential Kernel Distribution	2421
<i>S.-H. Chang, W.-W. Lin and W.-H. Fang</i>	
A system for Seismic Data Processing	2425
<i>Klaus Koster and Michael Spann</i>	
A Feature Extractor of Seismic Data Using Genetic Algorithms	2429
<i>A.V. Adamopoulos, S.D. Likothanassis and E.F. Georgopoulos</i>	
Classification Microstructure of Human Sleep Using EEG Modelling	2433
<i>Jose M. Allen Lima and Agostinho C. da Rosa</i>	
Wavelet based neural network architecture for ECG signal compression	2437
<i>Shubha Kadambe and Pramila Srinivasan</i>	
Process-adapted Biosignal Processing - an Approach of Wavelet Transformation to Intracardial Leads	2441
<i>R. Poll, T. Rauwolf and E. Meisel</i>	
Wavelet-Entropy Applied to Brain Signal Analysis	2445
<i>O.A. Rosso, R. Quian Quiroga, S. Blanco, A. Figliola and E. Basar</i>	
Denoising of ECG signals using Wavelet Shrinkage with time-frequency dependant treshold	2449
<i>Nikolay Nikolaev and Atanas Gotchev</i>	
Hidden Markov models compared to the wavelet transform for P-wave segmentation in EGC signals	2453
<i>L. Clavier, J.M. Boucher and E. Polard</i>	
Hierarchical Neural Network System to Breasts Cancer Diagnosis	2457
<i>L.F. Mingo, J. Castellanos, V. Gimenez and A. Vilarrasa</i>	
An Instantaneous Frequency Dispersion Estimator for Detecting High Intensity Transient Signals in Human Blood Flow	2461
<i>Emmanuel Roy, Silvio Montresor, Pierre Abraham and Marc Baudry</i>	
Detection of microcalcifications using non-linear filtering	2465
<i>Dirk Meersman, Paul Scheunders and Dirk Van Dyck</i>	
ECG compression using PCA with polynomial estimation of higher order coefficients	2469
<i>David Hamilton, William Sandham and Alberto Blanco</i>	
Complete Coding Scheme Using Optimal Time Domain ECG Compression Methods	2473
<i>Ranveig Nygaard and Dag Haugland</i>	
Segmentation with Predictive Error and Recursive Likelihood Ratio Deviation methods in material characterization	2477
<i>S. Femmam and N.K. MÔSirdi</i>	
Adaptive Directional Order Filters and Mathematical Morphology for Road Network Extraction on SAR Images	2481
<i>Jocelyn Chanussot, Imad Issa and Patrick Lambert</i>	
Fractal Estimation in a Given Frequency Range. Application to Smectite Images	2485

<i>R. Harba, M. Cintract, M. Zabat and H. Van Damme</i>	
Radio Frequency interferences suppression for ultra Wide Band radar	2489
<i>Bruno Juhel, Georges Vezzosi and Marc Le Goff</i>	
FA P-7	
Image Analysis	
Segmentation of Urban Areas in Spot images using MRF	2493
<i>F. Richard, F. Falzon, J. Zerubia, and G. Giraudon</i>	
A supervised Lloyd algorithm and segmentation of handwritten Japanese characters	2497
<i>Fujiki Morii</i>	
Image decomposition capabilities of the joint wavelet and radon transform	2501
<i>G. Olmo, L. Lo Presti and E. Magli</i>	
Segmentation of Boron Carbide Microscopic Images which present twins	2505
<i>Wanessa Nascimento Matta, Arnaldo de Albuquerque Araujo, Marcos Carneiro de Andrade and Gilles Bertrand</i>	
Information Criteria for Histogram Thresholding Techniques	2509
<i>Pierre Courtellemont, Christian Olivier and Frederic Jouzel</i>	
CT image labeling using simulated annealing algorithm	2513
<i>Zoran Majcenic and Sven Loncaric</i>	
Image Segmentation by a Multiresolution Approach	2517
<i>Nacera Benamrane, Karima Kies and Jun Shen</i>	
Invariant Supervised Texture Recognition Using Multi-Channel Gabor Filters	2521
<i>Manfred Bresch</i>	
Supervised texture classification - Selection of moment lags	2525
<i>Vladimirov Antoniadis and Asoke K. Nandi</i>	
Unsupervised texture segmentation using discrete wavelet frames	2529
<i>S. Liapis, N. Alvertos and G. Tziritas</i>	
Scale Invariant Texture Classification with Mathematical Morphology	2533
<i>Virginia L. Ballarin, Emilce G. Moler and Marcel Brun</i>	
An Identification method for Texture AR-2D Modelling Based on Auto- and Partial Correlation Measures	2537
<i>Isabelle Claude and Andre Smolarz</i>	
Mean Depth-Width Ratio of Extrema as Textural Feature for Automated Cell Proliferation Analysis	2541
<i>Corkidi Gabriel, Vega Leticia and Marquez Jorge</i>	
On the Initial Label Configuration of MRF	2545
<i>Guo dong Guo, Shan Yu and Song de Ma</i>	
Curvature Scale Space Based Image Corner Detection	2549
<i>Farzin Mokhtarian and Riku Suomela</i>	

Road boundaries detection using Color Saturation	2553
<i>Pierre Charbonnier, Philippe Nicolle, Yannick Guillard and Jean Charrier</i>	
Directional second order derivatives: application to edge and corner detection	2557
<i>S. Guillon and M. Donias</i>	
Linear feature detectors and their application to cereal inspection	2561
<i>E.R. Davies, D.R. Mason, M. Bateman, J. Chambers and C. Ridgway</i>	
A Probabilistic Framework for the Hough Transform and Least Squares Pose Estimation	2565
<i>Jorge S. Marques</i>	