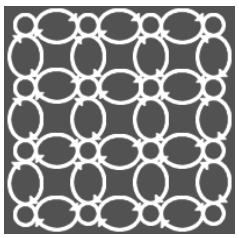

1999 IEEE Workshop on Neural Networks for Signal Processing

Madison Concourse Hotel and Governor's Club
Madison, Wisconsin

August 23–25, 1999

Workshop homepage: http://eivind.imm.dtu.dk/nnsp99

WELCOME

The Ninth IEEE Workshop on Neural Networks for Signal Processing (NNSP'99) is sponsored by The Neural Networks for Signal Processing Technical Committee of the IEEE Signal Processing Society with co-sponsorship form THOR Center for Neuroinformatics, Denmark.

In recent years the field of neural networks has matured considerably in both methodology and real-world application domains going far beyond the "standard" backpropagation network and academic examples. Contemporary neural networks for signal processing research shares many ideas of adaptive signal/image processing, machine learning, and advanced statistics. We consider the field of neural networks as the open-minded playground which combines many approaches for solving complex real-world signal processing problems.

This year the workshop features a special session arranged by Klaus-Robert Müller on Support Vector Machines which is an interesting new paradigm.

Our sincere thanks goes to Professor Thomas Huang, University of Illinois at Urbana-Champaign, Professor Vladimir Vapnik, AT&T Labs Research, and Professor Grace Wahba, University of Wisconsin for accepting to give keynote lectures at the workshop. Also we would like to thank the Program Committee for taking time to provide quality reviews, and above all, thanks to all the author's who made this workshop possible and interesting.

Special thanks goes to Ms. Jean Stover for carefully handling of the workshop registrations.

Continuing the tradition of paperless and easy communication we provided a re-designed workshop webpage (http://eivind.imm.dtu.dk/nnsp99) which among other features include web based submission, review and registration.

We hope you will enjoy NNSP'99 and wish you a successful visit to Madison.

Forthcoming workshop NNSP 2000 will be held in Sydney, Australia, see webpage http://eivind.imm.dtu.dk/nnsp2000.

EVENTS

Welcome Reception	Monday, August 23, 7:30–9:30 pm.
NNSP Technical Committee Lunch	Tuesday, August 24, 12:00 am – 1:00 pm.
Galla Banquet	Tuesday, August 24, 7:30 pm.

ORGANIZING COMMITTEE

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Dragan OBRADOVIC	Volker TRESP	Marc VAN HULLE

KEYNOTE LECTURE MONDAY, AUGUST 23, 8:30–9:30 AM

Professor Vladimir Vapnik, AT&T Labs-Research

Statistical Learning Theory and Induction Problem

Professor **Vladimir Vapnik** gained his Masters Degree in Mathematics. From 1965 to 1990 he worked at the Institute of Control Sciences, Moscow, where he became Head of the Machine Learning Research Department. He then joined AT&T Bell Laboratories and later AT&T Labs-Research. From 1995 he is also Professor of London University.

Professor Vapnik has taught and researched in, theoretical and applied statistics for over 30 years. He has published 7 books and over a hundred research papers. His major achievements have been the development of a general theory for minimizing the expected risk using empirical data, and a new type of learning machines called Support Vector Machines that possesses a high level of generalization ability. These techniques have been used to solve many pattern recognition and regression estimation problems and have been applied to the problems of dependency estimation, forecasting, and constructing intelligent machines.

His current research is presented in his latest books ”The Nature of Statistical Learning Theory”, Springer, New-York 1995, and ”Statistical Learning Theory”, John Wiley, New-York, 1998.

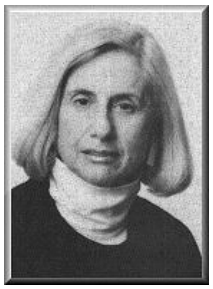
Professor Vapnik’s homepage: http://akpublic.research.att.com/info/vlad

KEYNOTE LECTURE MONDAY, AUGUST 23, 1:00–2:00 PM

Professor Grace Wahba, University of Wisconsin-Madison

Margin-Like Quantities and Generalized Approximate Cross Validation for Support Vector Machines

It is now common knowledge that the support vector machine (SVM) paradigm, which has proved highly successful in a number of classification studies, can be cast as a variational / regularization problem in a reproducing kernel Hilbert space (RKHS), see Kimeldorf & Wahba (1971), Wahba (1990), Girosi (1997), Poggio & Girosi (1998), the papers and references in Schoelkopf, Burges & Smola (1999), and elsewhere. In this note, which is a sequel to Wahba (1998), we look at the SVM paradigm from the point of view of a regularization problem, which allows a comparison with penalized likelihood methods, as well as the application of model selection and tuning approaches which have been used with those and other regularization-type algorithms to choose tuning parameters in nonparametric statistical models. We first review the steps connecting the SVM paradigm in RKHS and its connection to the (dual) mathematical programming problem traditional in SVM classification problems. We then review the Generalized Comparative Kullback-Leibler Distance (GCKL) for the usual SVM paradigm, and observe that it is trivially a simple upper bound on the expected misclassification rate. Next we revisit the GACV as a proxy for the GCKL proposed in Wahba (1998) and the argument that it is a reasonable estimate of the GCKL. We found that it is not necessary to do the randomization of the GACV in Wahba (1998), because it can be replaced by an equally justifiable approximation which is readily computed exactly, along with the SVM solution to the dual mathematical programming problem. This estimate turns out interestingly, but not surprisingly to be simply related to what several authors have identified as the (observed) VC dimension of the estimated SVM. Some preliminary simulations are suggestive of the fact that the minimizer of the GACV is in fact a reasonable estimate of the minimizer of the GCKL, although further simulation and theoretical studies are warranted. It is hoped that this preliminary work will lead to better understanding of "tuning" issues in the optimization of SVM's and related classifiers.



Grace Wahba is John Bascom Professor of Statistics and Professor of Biostatistics at the University of Wisconsin-Madison. She is a member of the American Academy of Arts and Sciences, a fellow of several scientific societies and the author of 110+ scientific papers plus one book. Her scientific interests include supervised machine learning, statistical model building, medical and demographic risk factor estimation, numerical weather prediction and climate data analysis.

Professor Wahba's homepage: http://www.stat.wisc.edu/~wahba/

KEYNOTE LECTURE TUESDAY, AUGUST 24, 8:00–9:00 AM

Professor Thomas S. Huang, Univ. of Illinois at Urbana-Champaign

Using Neuronets in Multimodal Human Computer Interfaces

In recent years there has been much interest in developing novel human computer interfaces based on speech and visual processing, aiming at more natural and effective interaction between humans and computers. Examples of HCI tasks are: Person identification, speech recognition, emotion recognition, and combining speech and vision-based gesture analysis in display control. Artificial Neural Networks are potentially excellent candidates for achieving some of these tasks. The advantages of ANN include: Low latency; allowing nonlinear interactions; ability to handle time-varying patterns (e.g., Time-Delayed Neural Networks); and suitability for unsupervised clustering (e.g., Self-Organizing-Maps). In this talk, we shall describe the application of ANN to some of the HCI tasks.

Thomas S. Huang received his B.S. Degree in Electrical Engineering from National Taiwan University, Taipei, Taiwan, China; and his M.S. and Sc.D. Degrees in Electrical Engineering from the MIT, Cambridge, Massachusetts. He was on the Faculty of the Department of Electrical Engineering at MIT from 1963 to 1973; and on the Faculty of the School of Electrical Engineering and Director of its Laboratory for Information and Signal Processing at Purdue University from 1973 to 1980. In 1980, he joined the Univ. of Illinois at Urbana-Champaign, where he is now William L. Everitt Distinguished Professor of Electrical and Computer Engineering, and Research Professor at the Coordinated Science Laboratory, and Head of the Image Formation and Processing Group at the Beckman Institute for Advanced Science and Technology.

During his sabbatical leaves: Dr. Huang has worked at the MIT Lincoln Laboratory, the IBM Thomas J. Watson Research Center, and the Rheinishes Landes Museum in Bonn, Germany, and held visiting Professor positions at the Swiss Institutes of Technology in Zurich and Lausanne, University of Hannover, Germany, INRS-Telecommunications of the Univ. of Quebec in Montreal, Canada and Univ. of Tokyo, Japan. He has served as a consultant to numerous industrial firms and government agencies both in the U.S. and abroad.

Dr. Huang's professional interests lie in the broad area of information technology, especially the transmission and processing of multidimensional signals. He has published 12 books, and over 400 papers in Network Theory, Digital Filtering, Image Processing, and Computer Vision. He is a Fellow of the International Association of Pattern Recognition, IEEE, and the Optical Society of American; and has received a Guggenheim Fellowship, an A.V. Humboldt Foundation Senior U.S. Scientist Award, and a Fellowship from the Japan Association for the Promotion of Science. He received the IEEE Acoustics, Speech, and Signal Processing Society's Technical Achievement Award in 1987, and the Society Award in 1991. He is a Founding Editor of the International Journal Computer Vision, Graphics, and Image Processing; and Editor of the Springer Series in Information Sciences, published by Springer Verlag.

Professor Huang's homepage: http://www.ece.uiuc.edu/fachtml/huang.html

PROGRAM AT A GLANCE

Monday, August 23

8:15–8:30 am	Opening Remarks, General Chair Yu Hen Hu
8:30–9:30 am	Keynote Lecture: *Statistical Learning Theory and Induction Problem*, **Vladimir Vapnik**
9:30–9:40 am	*Coffee Break*
9:40–12:00 am	Special Session: Support Vector Machines
12:00 am–1:00 pm	*Lunch*
1:00–2:00 pm	Keynote Lecture: *Margin-Like Quantities and Generalized Approximate Cross Validation for Support Vector Machines*, **Grace Wahba**
2:00–3:00 pm	Algorithm and Architectures 1
3:00–3:20 pm	*Coffee Break*
3:20–4:00 pm	Algorithm and Architectures 1 (cont.)
4:00–6:00 pm	Poster Session 1: Support Vector Machines, Algorithm and Architectures
6:00–7:30 pm	*Dinner (on your own)*
7:30–9:00 pm	*Welcome Reception*

Tuesday, August 24

8:00–9:00 am	Keynote Lecture: *Using Neuronets in Multimodal Human Computer Interfaces*, **Thomas S. Huang**
9:00–9:40 am	Applications 1: Intelligent Human Computer Interfaces
9:40–10:00 am	*Coffee Break*
10:00–12:00 am	Algorithm and Architectures 2
12:00 am–1:00 pm	*Lunch*
1:00-3:20 pm	Algorithm and Architectures 2 (cont.)
3:20–3:40 pm	*Coffee Break*
3:40–6:00 pm	Poster Session 2: Applications
7:30 pm –	*Galla Banquet*

Wednesday, August 25

8:00–10:00 am	Applications 2: Blind Source Separation
10:00–10:20 am	*Coffee Break*
10:20–11:00 am	Applications 2: Blind Source Separation (cont.)
11:00–12:00 am	Applications 3
12:00 am–1:00 pm	*Lunch*
1:00–3:00 pm	Applications 4: Image Processing
3:00–3:20 pm	*Coffee Break*
3:20–4:00 pm	Applications 4: Image Processing (cont.)
4:00–5:20 pm	Applications 5
5:20–5:40 pm	Wrap Up and Farewell

DETAILED PROGRAM MONDAY, AUGUST 23

Mon, 8:15–8:30 am: ***Opening Remarks***, Yu Hen Hu, Univ. of Wisconsin-Madison

Mon, 8:30–9:30 am: ***Keynote Lecture: Statistical Learning Theory and Induction Problem***

Vladimir Vapnik
AT&T Labs Research, USA

Chair: Klaus-Robert Müller, GMD-FIRST

Mon, 9:30–9:40 am: ***Coffee Break***

Mon, 9:40–12:00 am: ***Special Session: Support Vector Machines***
Chair: Klaus-Robert Müller, GMD-FIRST

9:40 am *SUPANOVA - A Sparse Transparent Modelling Approach*
Steve R. Gunn, University of Southampton, UK
Martin Brown , Unilever, UK

10:00 am *Sequential Support Vector Machines*
N. de Freitas, M. Milo, P. Clarkson, M. Niranjan, and A. Gee, Cambridge University, UK

10:20 am *Fisher Discriminant Analysis with Kernels*
Sebastian Mika, Gunnar Rätsch, Jason Weston, Bernhard Schölkopf and Klaus-Robert Müller, GMD First, Germany

10:40 am *The Application of Support Vector Machines with Gaussian Kernels for Overcoming Co-Channel Interference*
Felix Albu, Falculty of Elect. and Telecom. Romania
Dominique Martinez, CNRS-LAAS, France

11:00 am *A Gaussianity Measures for Blind Source Separation Insensitive to the Sign of Kurtosis*
Hsiao-Chun Wu and Jose Principe, Univ. of Florida, USA

11:20 am *Robust Machine Fault detection with Independent Component Analysis and Support Vector Data Description*
Alexander Ypma, David M. J. Tax and Robert P. W. Duin, Delft University of Technology, Netherlands

11:40 am *View-based 3D Object Recognition with Support Vector Machines*
Danny Roobaert, Royal Institute of Technology, Sweden, K.U. Leuven, Belgium
Marc M. Van Hulle, K.U. Leuven, Belgium

Mon, 12:00 am–1:00 pm: ***Lunch***

Mon, 1:00–2:00 pm: ***Keynote Lecture: Margin-Like Quantities and Generalized Approximate Cross Validation for Support Vector Machines***

Grace Wahba

Department of Statistics
University of Wisconsin-Madison, USA

Chair: Jan Larsen, Technical Univ. of Denmark

Mon, 2:00–3:00 pm: ***Algorithm and Architectures 1***
Chair: David Miller, Pennsylvania State University

2:00 pm *Gradient Based Adaptive Regularization*
Robert Eigenmann, Josef A. Nossek, Munich University of Technology, Germany

2:20 pm *Global Stability in Delayed Celluar Neural Networks*
Jinde Cao, Yunnan University, China

2:40 pm *Weight Estimation for the learning of Modular Perceptron Networks*
Y.P. Lee, Hsin-Chia Fu

Mon, 3:00–3:20 pm: ***Coffee Break***

Mon, 3:20–4:00 pm: ***Algorithm and Architectures 1 (cont.)***
Chair: David Miller, Pennsylvania State University

3:20 pm *General Statistical Inference by an Approximate Application of the Maximum Entropy Principle*
Lian Yan, David J. Miller, Pennsylvania State University, USA

3:40 pm *On Training Piecewise-Linear Networks*
A. Atiya, Caltech, USA
E. Gad, Carleton Univ., USA
S. Shaheen, Cairo Univ., Egypt
A. El-Dessouky, ERI, Egypt

Mon, 4:00–6:00 pm: ***Poster Session 1: Support Vector Machines, Algorithm and Architectures***
Chair: Scott Douglas, Southern Methodist University

- *Using Class-Center Vectors to Build Support Vector Machines*
  Xuegong Zhang, Tsinghua University, China
- *A Gaussianity Measures for Blind Source Separation Insensitive to the Sign of Kurtosis*
  Hsiao-Chun Wu and Jose Principe, Univ. of Florida, USA
- *Robust Machine Fault Detection with Independent Component Analysis and Support Vector Data Description*
  Alexander Ypma, David M. J. Tax and Robert P. W. Duin, Delft University of Technology, Netherlands
- *View-based 3D object Recognition with Support Vector Machines*
  Danny Roobaert, Royal Institute of Technology, Sewden, K.U. Leuven, Belgium
  Marc M. Van Hulle, K.U. Leuven, Belgium

- *Hidden Markov Mixtures of Experts for Prediction of Non-Stationary Dynamics*
  S. Liehr, K. Pawelzik, Univ. of Bremen, Germany
  J. Kohlmorgen, S. Lemm, K.-R. Müler, GMD First, Germany
- *Nearest-Prototype Classifier Design by Deterministic Annealing with Random Class Labels*
  Ertem Tuncel, Kenneth Rose, Univ. of California, Santa Barbara, USA
- *A Comparison Among Feature Selection Methods Based on Trained Networks*
  Mercedes Fernandez, Carlos Hernandez, Jaume-I University, Spain
- *Robust Neural Network Online-Learning in Time-Variant Regression Models*
  Thomas Briegel, Volker Tresp, Siemens AG, Munich, Germany
- *Separation of an Overlapped Signal using Speech Production Models*
  Hideyuki Watanabe, Satoru Fujita, ATR, Japan
  Shigeru Katagiri, ATR and NTT Communication Science Laboratories, Japan
- *Geometrical Structures of FIR Manifold and their Application to Multichannel Blind Deconvolution*
  L.-Q. Zhang, A. Cichocki, and S. Amari, RIKEN, Japan

Mon, 6:00–7:30 pm: ***Dinner (on your own)***

Mon, 7:30–9:00 pm: ***Welcome Reception***

DETAILED PROGRAM TUESDAY, AUGUST 24

Tue, 8:00–9:00 am: ***Keynote Lecture: Using Neuronets in Multimodal Human Computer Interfaces***

Thomas S. Huang
Beckman Institute for Advanced Science and Technology
University of Illinois at Urbana-Champaign

Chair: Yu Hen Hu, Univ. of Wisconsin-Madison

Tue, 9:00–9:40 am: ***Applications 1: Intelligent Human Computer Interfaces***
Chair: Yu Hen Hu, Univ. of Wisconsin-Madison

9:00 am *Statistical Multimodal Integration for Intelligent HCI*
Lizhong Wu, Sharon Oviatt, and Philip Cohen, Oregon Graduate Institute, USA

9:20 am *Hierarchy of Probabilistic Principal Component Subspaces for Data Mining*
Lan Luo, Yue Wang, The Catholic University of America, Washington DC
San Yun Kung, Princeton University, Princeton, USA

Tue, 9:40–10:00 am: ***Coffee Break***

Tue, 10:00–12:00 am: ***Algorithm and Architectures 2***
Chair: Amir Assadi, Univ. of Wisconsin-Madison

10:00 pm *A Control Theory Formulation for Random Variate Generation*
M. Magdon-Ismail and A. Atiya, Caltech, USA

10:20 pm *A Spiking Neural Network Architecture for Nonlinear Function Approximation*
Nicolangelo Iannella and Andrew Back, RIKEN, Japan

10:40 pm *Partial Likelihood Methods for Probability Density Estimation*
Hongmei Ni, Tülay Adalı, and Bo Wang, University of Maryland, Baltimore County, USA

11:00 am *Why a Nonlinear Solution for a Linear Problem?*
Tülay Adalı, Univ. of Maryland, Baltimore County, USA

11:20 am *Approximation by Random Networks with Bounded Number of Layers*
Erol Gelenbe, Univ. of Central Florida, USA
Z.-H. Mao, Y.-D. Li, Tsinghua Univ., China

11:40 am *Natural Power Method for Fast Subspace Tracking*
Yingbo Hua, Young Xiang, Tiangping Chen, Karim Abed-Meraim, and Yongfeng Miao, Univ. of Melbourne, Australia

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Tue, 12:00 am–1:00 pm: ***Lunch***

Tue, 1:00–3:20 pm: ***Algorithm and Architectures 2 (cont.)***
Chair: Amir Assadi, Univ. of Wisconsin-Madison

1:00 pm *Robust Neural Network Online-Learning in Time-Variant Regression Models*
Thomas Briegel, Volker Tresp, Siemens AG, Munich, Germany

1:20 pm *A Comparison Among Feature Selection Methods Based on Trained Networks*
Mercedes Fernandez and Carlos Hernandez, Jaume-I University, Spain

1:40 pm *Sizing of the Multilayer Perceptron via Modular Networks*
Hema Chandrasekaran, University of Texas at Arlington, USA
Kyung K. Kim, Lockheed Martin Tactical Aircraft Systems, USA
Michael T. Manry, University of Texas at Arlington, USA

2:00 pm *On Optimal Data Split for Generalization Estimation and Model Selection*
Jan Larsen and Cyril Goutte, Techn. Univ. of Denmark, Denmark

2:20 pm *Time Series Classification using Adaptive Dynamic Targets*
Ernst Haselsteiner, Technical University Graz, Austria

2:40 pm *Some Analytical Results on Critic-driven Ensemble Classification*
David J. Miller and Lian Yan, Pennsylvania State University, USA

3:00 pm *Neural Architectures for Parametric Estimation of a Posteriori Probabilities by Constrained Conditional Density Functions*
Juan Ignacio Arribas, Jesus Cid-Sueiro, University of Valladolid, Spain
Tülay Adalı, University of Maryland, Baltimore County, USA
Anibal R. Figueiras-Vidal, University Carlos III, Spain

Tue, 3:20–3:40 pm: ***Coffee Break***

Tue, 3:40–6:00 pm: ***Poster Session 2: Applications***
Chair: Kevin R. Farrell, T-NETIX, Inc.

- *Neuro Bayesian Blind Equalization with BER Estimation in Digital Channels*
  L. M. San Jose Revuelta, J. Cid Sueiro, Univ. de Valladolid, Spain
- *Discrimination of Cylinders with Different Wall Thicknesses using Neural Networks and Simulated Dolphin Sonar Signals*
  Lars Nonboe Andersen, Techn. Univ. of Denmark, Denmark
  Whitlow Au, University of Hawaii, USA
  Jan Larsen and Lars Kai Hansen, Techn. Univ. of Denmark, Denmark
- *Adaptive Web Caching Using Logistic Regression*
  Annie P. Foong, Yu-Hen Hu, and Dennis M. Heisey, University of Wisconsin-Madison, USA
- *Near-Optimal Flight Load Synthesis Using Neural Nets*
  Michael T. Manry, Cheng-Hsiung Hsieh, and Hema Chandrasekaran, University of Texas at Arlington, USA
- *Two-Dimensional Joint Process Adaptive Filtering via Principal Component Support Region*
  Dai I. Kim and P. De Wilde, Imperial College, Univeristy of London, UK
- *Clustering Approach to Square and Non-square Blind Source Separation*
  Marc M. Van Hulle, K.U. Leuven, Belgium

- *Learning Gestalt Of Surfaces In Natural Scenes*
  Amir Assadi, UW-Madison, USA
  Stephen Palmer, UC-Berkeley, USA
  Hamid Eghbalnia, UW-Madison, USA
- *An Adaptive Metric Learning Procedure for Reconfigurable Facial Signature Authentication*
  Takami Satonaka, Tatsuo Otsuki, and Takao Chikamura, Matsushita Electronics Corpration, Osaka, Japan
- *A Topology Independent Active Contour Tracking*
  Dongxiang Xu, Jenq-Neng Hwang, Univ. of Washington, USA
- *Hierarchy of Probabilistic Principal Component Subspaces for Data Mining*
  Lan Luo, Yue Wang, The Catholic University of America, Washington DC
  San Yun Kung, Princeton University, Princeton, USA

Tue, 7:30 pm– ***Galla Banquet***

DETAILED PROGRAM WEDNESDAY, AUGUST 25

Wed, 8:00–10:00 am: ***Applications 2: Blind Source Separation***
Chair: Marc Van Hulle, K.U. Leuven

8:00 am *All-Pass vs. Unit-Norm Constraints in Contrast-Based Blind Deconvolution*
Scott C. Douglas, Southern Methodist University, USA
S.-Y. Kung, Princeton University, USA

8:20 am *A Stable and Robust ICA Algorithm Based on t-Distribution and Generalized Gaussian Distribution Model*
Jianting Cao, Sophia University, Tokyo and RIKEN Brain Science Institute, Japan
Noboru Murata, RIKEN Brain Science Institute, Japan

8:40 am *Separation of an Overlapped Signal using Speech Production Models*
Hideyuki Watanabe, Satoru Fujita, ATR, Japan
Shigeru Katagiri, ATR and NTT Communication Science Laboratories

9:00 am *Geometrical Structures of FIR Manifold and their Application to Multichannel Blind Deconvolution*
L.-Q. Zhang, A. Cichocki and S. Amari, Brain Science Institute, RIKEN, Japan

9:20 am *Clustering Approach to Square and Non-square Blind Source Separation*
Marc M. Van Hulle, K.U. Leuven, Belgium

9:40 am *Separation of Acoustic Signals using Self-Organizing Neural Networks*
Temujin Gautama and Marc Van Hulle, K.U. Leuven, Belgium

Wed, 10:00–10:20 am: ***Coffee Break***

Wed, 10:20–11:00 am: ***Applications 2: Blind Source Separation (cont.)***
Chair: Marc Van Hulle, K.U. Leuven

10:20 am *Maximum Likelihood Blind Source Separation in Gaussian Noise*
Joaquín Míguez and Luis Castedo, Univ. da Coruña, Spain

10:40 am *A Suboptimal Bayesian Equalizer using an Nonlinear Multilayer Combiner*
Sooyong Choi and Daesik Hong, Yonsei University, Seoul, Korea

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Wed, 11:00–12:00 am: ***Applications 3***
Chair: Naonori Ueda, NTT Communication Science Labs

11:00 am *A New Tool for the Market Research using a Modified Auto-Associative Memory*
V. Giménez-Martínez, J. Castellanos, and F. de Mingo, Univ. Politécnica de Madrid, Spain

11:20 am *Pattern Classification using a Mixture of Factor Analyzers*
Naonori Ueda, Ryohei Nakano, NTT Communication Science Labs, Kyoto, Japan
Zoubin Ghahramani, Geoffery Hinton, University College London, UK

11:40 am *On Condition Monitoring of Exhaust Valves in Marine Diesel Engines*
T. L. Fog, MAN B&W Diesel A / S, Copenhagen, Denmark
L. K. Hansen, J. Larsen, Techn. Univ. of Denmark, Denmark
H. S. Hansen, L. B. Madsen, P. Sørensen, E. R. Hansen, and P. S. Pedersen, MAN B&W Diesel A / S, Copenhagen, Denmark

Wed, 12:00 am–1:00 pm: ***Lunch***

Wed, 1:00–3:00 pm: ***Applications 4: Image Processing***
Chair: Jenq-Neng Hwang, Univ. of Washington

1:00 pm *Applications of SOAR to Monochromatic Image Restoration*
Yusuf Ozturk and Huseyin Abut San Diego State University, USA

1:20 pm *Efficient Approximation of a Neural Filter for Quantum Noise Removal in X-Ray Images*
Kenji Suzuki, Isao Horiba, Aichi Prefectural University, Aichi, Japan
Noboru Sugie, Meijo University, Nagoya, Japan

1:40 pm *Learning Gestalt Of Surfaces In Natural Scenes*
Amir Assadi, UW-Madison, USA
Stephen Palmer, UC-Berkeley, USA
Hamid Eghbalnia, UW-Madison, USA

2:00 pm *Rate-Constrained Self-Organising Neural Maps and Efficient Psychovisual Methods for Low Bit Rate Video Coding*
Keith Ferguson and Nigel Allinson, UMIST, Manchester, UK

2:20 pm *Selective Image Smoothing via Dyadic Wavelet-based Conduction Equation*
Chwen-Jye Sze, Hong-Yaun Mark Liao, Shih-Kun Huang and Chun-Shien Lu, Academia Sinica, Taiwan, ROC

2:40 pm *An Adaptive Metric Learning Procedure for Reconfigurable Facial Signature Authentication*
Takami Satonaka, Tatsuo Otsuki, and Takao Chikamura, Matsushita Electronics Corpration, Osaka, Japan

Wed, 3:00–3:20 pm: ***Coffee Break***

Wed, 3:20–4:00 pm: ***Applications 4: Image Processing***
Chair: Jenq-Neng Hwang, Univ. of Washington

3:20 pm *Global Color Image Segmentation Strategies: Euclidian Distance vs. Vector Angle*
Slawo Wesolkowski, NCR Canada Ltd., Waterloo and Univ. of Waterloo, Canada
Robert D. Dony, Univ. of Guelph, Guelph, Canada
M. E. Jernigan, Univ. of Waterloo, Canada

3:40 pm *A Topology Independent Active Contour Tracking*
Dongxiang Xu and Jenq-Neng Hwang, Univ. of Washington, USA

Wed, 4:00–5:20 pm: ***Applications 5***
Chair: Hervé Bourlard, EPFL

4:00 pm *Model Combination and Weight Selection Criteria for Speaker Verification*
Kevin R. Farrell, T-NETIX / SpeakEZ Inc., Englewood, CO, USA

4:20 pm *Subspace Techniques in Speech Enhancement*
Gavin Smith, Cambridge University, Cambridge, UK
Mahesan Niranjan, T. Robinson, Sheffield University, Sheffield, UK

4:40 pm *Multi-Channel Piecewise Selective Averaging of Cognitive Evoked Potentials with Variable Latency*
Arthur Flexer, The Austrian Research Institute for Artificial Intelligence, Vienna, Austria
Herbert Bauer, Univ. of Vienna, Austria

5:00 pm *A Comparative Study of a Hidden Markov Model Detector for Atrial Fibrillation*
Brian Young, Done Brodnick, and Randy Spaulding, GE Marquette Medical Systems, USA

Wed, 5:20–5:40 pm: ***Wrap Up and Farewell***
