

*Commenced Publication in 1973*

Founding and Former Series Editors:

Gerhard Goos, Juris Hartmanis, and Jan van Leeuwen

## Editorial Board

David Hutchison

*Lancaster University, UK*

Takeo Kanade

*Carnegie Mellon University, Pittsburgh, PA, USA*

Josef Kittler

*University of Surrey, Guildford, UK*

Jon M. Kleinberg

*Cornell University, Ithaca, NY, USA*

Alfred Kobsa

*University of California, Irvine, CA, USA*

Friedemann Mattern

*ETH Zurich, Switzerland*

John C. Mitchell

*Stanford University, CA, USA*

Moni Naor

*Weizmann Institute of Science, Rehovot, Israel*

Oscar Nierstrasz

*University of Bern, Switzerland*

C. Pandu Rangan

*Indian Institute of Technology, Madras, India*

Bernhard Steffen

*TU Dortmund University, Germany*

Madhu Sudan

*Microsoft Research, Cambridge, MA, USA*

Demetri Terzopoulos

*University of California, Los Angeles, CA, USA*

Doug Tygar

*University of California, Berkeley, CA, USA*

Gerhard Weikum

*Max-Planck Institute of Computer Science, Saarbruecken, Germany*

Chi Sing Leung Minho Lee  
Jonathan H. Chan (Eds.)

# Neural Information Processing

16th International Conference, ICONIP 2009  
Bangkok, Thailand, December 1-5, 2009  
Proceedings, Part I



Springer

Volume Editors

Chi Sing Leung  
City University of Hong Kong  
Department of Electronic Engineering  
Hong Kong  
E-mail: eeleungc@cityu.edu.hk

Minho Lee  
Kyungpook National University  
School of Electrical Engineering and Computer Science  
1370 Sankyuk-Dong, Puk-Gu, Taegu, 702-701, Korea  
E-mail: mholee@knu.ac.kr

Jonathan H. Chan  
King Mongkut's University of Technology Thonburi  
School of Information Technology  
126 Pracha-U-Thit Rd., Bangmod, Thungkru, Bangkok 10140, Thailand  
E-mail: jonathan@sit.kmutt.ac.th

Library of Congress Control Number: 2009939833

CR Subject Classification (1998): F.1, I.2, I.5, I.4, G.3, J.3, C.1.3, C.3

LNCS Sublibrary: SL 1 – Theoretical Computer Science and General Issues

ISSN 0302-9743  
ISBN-10 3-642-10676-5 Springer Berlin Heidelberg New York  
ISBN-13 978-3-642-10676-7 Springer Berlin Heidelberg New York

This work is subject to copyright. All rights are reserved, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, re-use of illustrations, recitation, broadcasting, reproduction on microfilms or in any other way, and storage in data banks. Duplication of this publication or parts thereof is permitted only under the provisions of the German Copyright Law of September 9, 1965, in its current version, and permission for use must always be obtained from Springer. Violations are liable to prosecution under the German Copyright Law.

[springer.com](http://springer.com)

© Springer-Verlag Berlin Heidelberg 2009  
Printed in Germany

Typesetting: Camera-ready by author, data conversion by Scientific Publishing Services, Chennai, India  
Printed on acid-free paper SPIN: 12799459 06/3180 5 4 3 2 1 0

## Preface

This two-volume set constitutes the Proceedings of the 16<sup>th</sup> International Conference on Neural Information Processing (ICONIP 2009), held in Bangkok, Thailand, during December 1–5, 2009. ICONIP is a world-renowned international conference that is held annually in the Asia-Pacific region. This prestigious event is sponsored by the Asia Pacific Neural Network Assembly (APNNA), and it has provided an annual forum for international researchers to exchange the latest ideas and advances in neural networks and related discipline. The School of Information Technology (SIT) at King Mongkut’s University of Technology Thonburi (KMUTT), Bangkok, Thailand was the proud host of ICONIP 2009. The conference theme was “Challenges and Trends of Neural Information Processing,” with an aim to discuss the past, present, and future challenges and trends in the field of neural information processing.

ICONIP 2009 accepted 145 regular session papers and 53 special session papers from a total of 466 submissions received on the Springer Online Conference Service (OCS) system. The authors of accepted papers alone covered 36 countries and regions worldwide and there are over 500 authors in these proceedings. The technical sessions were divided into 23 topical categories, including 9 special sessions. Technical highlights included a keynote speech by Shun-ichi Amari (the founder of APNNA); plenary and invited talks by Włodzisław Duch (President of the European Neural Network Society), Kunihiko Fukushima, Tom Gedeon, Yuzo Hirai (President of the Japanese Neural Network Society), Masumi Ishikawa, Nikola Kasabov (President of the International Neural Network Society), Minho Lee, Soo-Young Lee, Andrew Chi-Sing Leung, Bao-Liang Lu, Chidchanok Lursinsap, Paul Shaoning Pang, Ron Sun, Shiro Usui, DeLiang Wang, Jun Wang, Lipo Wang and Zhi-Hua Zhou. In addition, six tutorials by Włodzisław Duch, Chun Che Fung, Irwin King, Saed Sayad, Jun Tani and M. Emin Yuksel were part of ICONIP 2009. Also, for the first time, there was a Post-ICONIP Workshop held in a neighboring country to the host: the Workshop on Advances in Intelligent Computing (WAIC 2009) was held in Kuala Lumpur, Malaysia on December 7, 2009. Furthermore, the Third International Conference on Advances in Information Technology (IAIT2009) was collocated with ICONIP 2009.

We are indebted to the members of the conference Advisory Board as well as the Governing Board and Past Presidents of APNNA for their advice and assistance in the organization and promotion of ICONIP 2009. We are thankful to the Program Committee and Technical Committee members for their dedication and support in providing rigorous and timely reviews, especially for the last round of submissions due to our extended submission deadline. Each paper was reviewed by at least two referees and three or more reviews were provided in most of the cases. The Program Committee Chairs opted to use the relatively new OCS system and we put it through a rigorous workout and helped the system to smooth out numerous minor issues. We sincerely apologize for any inconvenience the authors may have experienced during the entire paper submission and reviewing process.

A special thanks to the Conference Secretariat, Olarn Rojanapornpun, who worked tirelessly to facilitate many of the conference delegates and to produce these final proceedings. The Organizing Committee members would like to express our sincere appreciation to the devoted behind-the-scene work by Wannida Soontreerutana, Chompoonut Watcharinkorn, Paweena Mongkolpongsiri, Thanyapat Natwaratit, Chutikarn Hongpitakkul, Korakot Eadpongdee, Suda Kasikitsakunphon, Kaniththa Charoensuk and Monthana Hunjinda. Last but not least, the organizers gratefully acknowledge the contribution and support from all speakers, panelists and authors, as well as all other participants, in making ICONIP 2009 a resounding success.

December 2009

Jonathan H. Chan  
Chi Sing Leung  
Minho Lee

## Organization

# Organizer

School of Information Technology (SIT), King Mongkut's University of Technology Thonburi (KMUTT), Bangkok, Thailand.

## Sponsor

Asia Pacific Neural Network Assembly (APNNA)

## Technical Co-sponsors

International Neural Network Society (INNS)

Japanese Neural Network Society (JNNS)

European Neural Network Society (ENNS)

IEEE Computational Intelligence Society (IEEE CIS)

## **Conference Committee**

## Honorary Chair

Shun-ichi Amari, Japan

## Advisory Board

Irwin King, Hong Kong  
Nikola Kasabov, New Zealand  
Soo-Young Lee, Korea  
Derong Liu, USA  
Nikhil R. Pal, India  
Shiro Usui, Japan

Tom Gedeon, Australia  
Takeshi Yamakawa, Japan  
Włodzisław Duch, Poland  
Lipo Wang, Singapore  
Jun Wang, Hong Kong

## Local Steering Committee

Borworn Papasratorn, Thailand  
Wichian Chutimaskul, Thailand  
Chakarida Nulkoolkit, Thailand

## General Chair

Jonathan H. Chan, Thailand

Program Chair and Co-chair

Andrew Chi-Sing Leung, Hong Kong  
Minho Lee, Korea

### Local Organizing Chair

Kittichai Lavangnananda, Thailand

## VIII Organization

Special Sessions Chairs	Masumi Ishikawa, Japan Tom Gedeon, Australia Shaoning Pang, New Zealand
Workshops Chairs	Lai Weng Kin, Malaysia Chee-Peng Lim, Malaysia
Tutorials Chair	Kevin Wong, Australia
Competitions Chair	John Sum, Taiwan
Publicity Chair	Suree Funilkul, Thailand
Publication Chair	Kriengkrai Porkaew, Thailand
Posters and Demonstration Chair	Vithida Chongsuphajaisiddhi, Thailand
Local Arrangements Chair	Vajirasak Vanijja, Thailand
Conference Secretariat	Olarn Rojanapornpun, Thailand

## Program Committee

Shigeo Abe, Japan	Sabri Arik, Turkey
Siu Yeung Cho, Singapore	Yoonsuck Choe, USA
Doo-Hyun Choi, Korea	Seungjin Choi, Korea
Tommy W.S. Chow, Hong Kong	Fu Lai Chung, Hong Kong
Andrzej Cichocki, Japan	Kenji Doya, Japan
Ke-Lin Du, Canada	Tom Gedeon, Australia
Kaizhu Huang, China	Masumi Ishikawa, Japan
Daijin Kim, Korea	Sungshin Kim, Korea
Seong Kong, USA	Takio Kurita, Japan
James Tin-Yau Kwok, Hong Kong	Seong-Whan Lee, Korea
Soo-Young Lee, Korea	Yun-Jung Lee, Korea
Frank Leung, Hong Kong	Chunshien Li, Taiwan
Bao-Liang Lu, China	Bob McKay, Korea
Takashi Morie, Japan	Takashi Omori, Japan
Toshiaki Omori, Japan	Seiichi Ozawa, Japan
Nikhil R. Pal, India	Shaoning Pang, New Zealand
Hyeyoung Park, Korea	Jagath C. Rajapakse, Singapore
Naoyuki Sato, Japan	John Sum, Taiwan
Dianhui Wang, Australia	Young-Gul Won, Korea
Hau San Wong, Hong Kong	Zenglin Xu, Germany
Haixuan Yang, China	Zhirong Yang, Finland
Byoung-Ju Yun, Korea	Zhigang Zeng, China
Kun Zhang, Finland	Liming Zhang, China

## Technical Committee

Shotaro Akaho	Tetsuya Asai	Hideki Asoh
Sang-Woo Ban	Hong Bao	Cesar Caiafa
B Chandra	Atthawut Chanthaphan	Shen Chen
Songcan Chen	Xi Chen	Seong-Pyo Cheon
Eng Yeow Cheu	Andrew Chiou	Heeyoul Choi
Ho-Hyoung Choi	Ji Ryang Chung	Zhaohong Deng
Yongtae Do	Bin Dong	Justin Dauwels
Hiroshi Dozono	Béla A. Frigyik	Minoru Fukumi
GH Gan	Eikou Gonda	Raj Gupta
Rodolfo Haber	Hisashi Handa	Osman Hassab Elgawi
Ken Hawick	Hanlin He	Xingshi He
Zhashui He	Akinori Hidaka	Hee-Dong Hong
Jin-Hyuk Hong	Antti Honkela	Xiaolin Hu
Xuelei Hu	Wei Huang	Yung-Fa Huang
Hiroaki Inayoshi	Hirotaka Inoue	Masato Inoue
Rolly Intan	Takaichi Ito	Tae-Seok Jin
Martin Johnson	Norhaslinda Kamaruddin	Keisuke Kameyama
Dae-Seong Kang	Hyohyeong Kang	Satoru Kato
Fujimura Kikuo	Jung-Gu Kim	Kye-Hyeon Kim
Kwang-Baek Kim	Sung-hin Kim	Taesu Kim
Yong-Deok Kim	Yong-Tae Kim	YoungIk Kim
Yun-Ho Ko	Takanori Koga	Markus Koskela
Ryosuke Kubota	Jaerock Kwon	Johnny Lai
Choon Young Lee	Daewon Lee	Hyung-Soo Lee
Kwanyong Lee	Nung Kion Lee	Sang-Woong Lee
Gang Li	Gary C. L. Li	Xi Li
Xiangming Li	Xiao-Dong Li	Yufeng Li
Yen-Lun Liang	Chee Peng Lim	Dudy Lim
Heejin Lim	Kil-Taek Lim	Naiyan Lima
Iuon-Chang Lin	Wilfred Lin	Qingshan Liu
Rujie Liu	Weixiang Liu	Yu Liu
Zhiyong Liu	Danniel Cavalcante Lopes	Jacek Mańdziuk
Timothy Mann	Ohkita Masaaki	Seiji Miyoshi
Kenji Nagata	Mitsuteru Nakamura	Wakako Nakamura
Hidehiro Nakano	Yok Yen Nguwi	Qiang Ni
Kenji Nishida	Ikuko Nishikawa	Tohru Nitta
Richard Jayadi Oentaryo	Tetsuya Onoda	Matashige Oyabu
Tomoko Ozeki	Han-Saem Park	Hyung-Min Park
Kiyoung Park	Lae-Jeong Park	Sehoon Park
Seongbae Park	Sunho Park	Ekachai Phaisangittisagul
Anh Huy Phan	Kriengkrai Porkaew	Santitham Prom-on
Masukur Rahman	Piyush Rai	Myung-Cheol Roh
Hosaka Ryosuke	Ryo Saegusa	Stefan Schliebs
Gourab Sen Gupta	Daming Shi	Hiroyuki Shimai
Mats Sjöberg	Kingkarn Sookhanaphibarn	Shiliang Sun

Javan Tan	Dacheng Tao	Takashi Takahashi
Masahiro Takatsuka	Mieko Tanaka-Yamawaki	Teik Toe Teoh
Chan Wai Ting	Meng-Hsiun Tsai	Whye Loon Tung
Hiroaki Wagatsuma	Hiroshi Wakuya	Liang Wan
Bo-Hyeun Wang	Jun Wang	Rongjie Wang
Zhanshan Wang	Zhongsheng Wang	Kazuho Watanabe
Bunthit Watanapa	Ginny Wong	Arthur Liang-chuan Wu
Jing Wu	Jiunn-lin Wu	Wei Wu
Zhenping Xie	Hao Xiong	Lu Xu
Yang Xu	Tomoyuki Yamaguchi	Hee-Deok Yang
Huei-Fang Yang	Shengji (Sophie) Yao	Xucheng Yin
Noha Yousri	Yingwei Yu	Zhiwen Yu
Jingling Yuan	Shiu Yin Yuen	Jeong-Min Yun
Rafal Zdunek	Haijun Zhang	He Zhang
Shaohong Zhan	ZhanCheng Zhang	Lei Zheng

## Special Session Organizers

Intelligent Data Mining	Kevin Wong
Data Mining for Cybersecurity	Tao Ban Daisuke Inoue Shaoning Pang Youki Kadobayashi
Towards Brain-inspired Systems	Keiichi Horio
SOM and Related Subjects and its Applications	Nobuo Matsuda Heizo Tokutaka Masahiro Takatsuka
Neural Networks for Data Mining	Furao Shen Zhi-Hua Zhou
Hybrid and Adaptive Systems for Computer Vision and Robot Control	Napoleon Reyes Andre Barczak Pitoya Hartono
Artificial Spiking Neural Systems: Nonlinear Dynamics and Engineering Applications	Toshimichi Saito Hiroyuki Torikai
Computational Advances in Bioinformatics	Asawin Meechai Santitham Prom-on
Evolutionary Neural Networks: Theory and Practice	Sung-Bae Cho Kyung-Joong Kim

## Local Sponsors

IEEE Thailand Section

Thailand Chapter of ACM

Software Park Thailand

Electrical Engineering/Electronics, Computer, Telecommunications and Information Technology Association of Thailand (ECTI)

National Electronics and Computer Technology Center (NECTEC)

# Table of Contents – Part I

## Cognitive Science and Computational Neuroscience

Hebbian-Based Neural Networks for Bottom-Up Visual Attention Systems ..... <i>Ying Yu, Bin Wang, and Liming Zhang</i>	1
Modeling of Cortical Signals Using Optimized Echo State Networks with Leaky Integrator Neurons ..... <i>Hanying Zhou, Yongji Wang, and Jiangshuai Huang</i>	10
Comparison of Near-Threshold Characteristics of Flash Suppression and Forward Masking ..... <i>Kenji Aoki, Hiroki Takahashi, Hideaki Itoh, and Kiyohiko Nakamura</i>	19
Some Computational Predictions on the Possibilities of Three-Dimensional Properties of Grid Cells in Entorhinal Cortex ..... <i>Tanvir Islam and Yoko Yamaguchi</i>	26
Data Modelling for Analysis of Adaptive Changes in Fly Photoreceptors ..... <i>Uwe Friederich, Daniel Coca, Stephen Billings, and Mikko Juusola</i>	34
A Computational Model of Spatial Imagery Based on Object-Centered Scene Representation ..... <i>Naoyuki Sato</i>	49
Biophysical Modeling of a <i>Drosophila</i> Photoreceptor ..... <i>Zhuoyi Song, Daniel Coca, Stephen Billings, Marten Postma, Roger C. Hardie, and Mikko Juusola</i>	57
Comparing a Cognitive and a Neural Model for Relative Trust Dynamics ..... <i>S. Waqar Jaffry and Jan Treur</i>	72
A Next Generation Modeling Environment PLATO: Platform for Collaborative Brain System Modeling ..... <i>Shiro Usui, Keiichiro Inagaki, Takayuki Kannon, Yoshimi Kamiyama, Shunji Satoh, Nilton L. Kamiji, Yutaka Hirata, Akito Ishihara, and Hayaru Shouno</i>	84

## Neurodynamics

Modeling Geomagnetospheric Disturbances with Sequential Bayesian Recurrent Neural Networks . . . . .	91
<i>Lahcen Ouarbya and Derrick T. Mirikitani</i>	
Finding MAPs Using High Order Recurrent Networks . . . . .	100
<i>Emad A.M. Andrews and Anthony J. Bonner</i>	
A Study on Bayesian Learning of One-Dimensional Linear Dynamical Systems . . . . .	110
<i>Takuto Naito and Keisuke Yamazaki</i>	
Decoding Characteristics of D/A Converters Based on Spiking Neurons . . . . .	118
<i>Masao Takiguchi and Toshimichi Saito</i>	
Separable Recursive Training Algorithms with Switching Module . . . . .	126
<i>Vijanth S. Asirvadam</i>	

Application-Driven Parameter Tuning Methodology for Dynamic Neural Field Equations . . . . .	135
<i>Lucian Alecu and Hervé Frezza-Buet</i>	

Interspike Interval Statistics Obtained from Non-homogeneous Gamma Spike Generator . . . . .	143
<i>Kantaro Fujiwara, Kazuyuki Aihara, and Hideyuki Suzuki</i>	

## Mathematical Modeling and Analysis

A Novel Method for Progressive Multiple Sequence Alignment Based on Lempel-Ziv . . . . .	151
<i>Guoli Ji, Congting Ye, Zijiang Yang, and Zhenya Guo</i>	

Variational Bayes from the Primitive Initial Point for Gaussian Mixture Estimation . . . . .	159
<i>Yuta Ishikawa, Ichiro Takeuchi, and Ryohei Nakano</i>	

A Bayesian Graph Clustering Approach Using the Prior Based on Degree Distribution . . . . .	167
<i>Naoyuki Harada, Yuta Ishikawa, Ichiro Takeuchi, and Ryohei Nakano</i>	

Common Neighborhood Sub-graph Density as a Similarity Measure for Community Detection . . . . .	175
<i>Yoonseop Kang and Seungjin Choi</i>	

Divergence, Optimization and Geometry . . . . .	185
<i>Shun-ichi Amari</i>	

Robust Stability of Fuzzy Cohen-Grossberg Neural Networks with Delays . . . . .	194
<i>Tingwen Huang and Zhigang Zeng</i>	
An Adaptive Threshold in Joint Approximate Diagonalization by the Information Criterion . . . . .	204
<i>Yoshitatsu Matsuda and Kazunori Yamaguchi</i>	
PPoSOM: A Multidimensional Data Visualization Using Probabilistic Assignment Based on Polar SOM . . . . .	212
<i>Yang Xu, Lu Xu, Tommy W.S. Chow, and Anthony S.S. Fong</i>	
Slice Oriented Tensor Decomposition of EEG Data for Feature Extraction in Space, Frequency and Time Domains . . . . .	221
<i>Qibin Zhao, Cesar F. Caiafa, Andrzej Cichocki, Liqing Zhang, and Anh Huy Phan</i>	
Stereo Map Surface Calculus Optimization Using Radial Basis Functions Neural Network Interpolation . . . . .	229
<i>Allan David Garcia de Araujo, Adriaao Duarte Doria Neto, and Allan de Medeiros Martins</i>	
Quasi-Deterministic Partially Observable Markov Decision Processes . . . . .	237
<i>Camille Besse and Brahim Chaib-draa</i>	
Hierarchical Text Classification Incremental Learning . . . . .	247
<i>Shengli Song, Xiaofei Qiao, and Ping Chen</i>	
Robust Stability of Stochastic Neural Networks with Interval Discrete and Distributed Delays . . . . .	259
<i>Song Zhu, Yi Shen, and Guici Chen</i>	
Hybrid Hopfield Architecture for Solving Nonlinear Programming Problems . . . . .	267
<i>Fabiana Cristina Bertoni and Ivan Nunes da Silva</i>	
Fault Tolerant Regularizers for Multilayer Feedforward Networks . . . . .	277
<i>Deng-yu Qiao, Chi Sing Leung, and Pui Fai Sum</i>	
Integrating Simulated Annealing and Delta Technique for Constructing Optimal Prediction Intervals . . . . .	285
<i>Abbas Khosravi, Saeid Nahavandi, and Doug Creighton</i>	
Robust Local Tangent Space Alignment . . . . .	293
<i>Yubin Zhan and Jianping Yin</i>	
Probabilistic Combination of Multiple Evidence . . . . .	302
<i>Heeyoul Choi, Anup Katake, Seungjin Choi, Yoonseop Kang, and Yoonsuck Choe</i>	

FIA: Frequent Itemsets Mining Based on Approximate Counting in Data Streams.....	312
<i>Younghée Kim, Joonsuk Ryu, and Ungmo Kim</i>	

Advances in PARAFAC Using Parallel Block Decomposition.....	323
<i>Anh Huy Phan and Andrzej Cichocki</i>	

An Observation Angle Dependent Nonstationary Covariance Function for Gaussian Process Regression .....	331
<i>Arman Melkumyan and Eric Nettleton</i>	

## Kernel and Related Methods

DOA Estimation of Multiple Convolutively Mixed Sources Based on Principle Component Analysis .....	340
<i>Weidong Jiao, Shixi Yang, and Yongping Chang</i>	

Weighted Data Normalization Based on Eigenvalues for Artificial Neural Network Classification .....	349
<i>Qingjiu Zhang and Shiliang Sun</i>	

The Optimization of Kernel CMAC Based on BYY Learning .....	357
<i>Guoqing Liu, Suiping Zhou, and Daming Shi</i>	

Closest Source Selection Using IVA and Characteristic of Mixing Channel .....	365
<i>Choong Hwan Choi, Jae-Kwon Yoo, and Soo-Young Lee</i>	

Decomposition Mixed Pixels of Remote Sensing Image Based on 2-DWT and Kernel ICA .....	373
<i>Huaiying Xia and Ping Guo</i>	

Echo Energy Estimation in Active Sonar Using Fast Independent Component Analysis .....	381
<i>Dongmin Jeong, Kweon Son, Yonggon Lee, and Minho Lee</i>	

Improving SVM Classification with Imbalance Data Set .....	389
<i>Zhi-Qiang Zeng and Ji Gao</i>	

Framework for Object Tracking with Support Vector Machines, Structural Tensor and the Mean Shift Method .....	399
<i>Bogusław Cyganek</i>	

Suitable ICA Algorithm for Extracting Saccade-Related EEG Signals ...	409
<i>Arao Funase, Motoaki Mouri, Andrzej Cichocki, and Ichi Takumi</i>	

## Learning Algorithms

Learning of Mahalanobis Discriminant Functions by a Neural Network .....	417
<i>Yoshifusa Ito, Hiroyuki Izumi, and Cidambi Srinivasan</i>	
Implementing Learning on the SpiNNaker Universal Neural Chip Multiprocessor .....	425
<i>Xin Jin, Alexander Rast, Francesco Galluppi, Mukaram Khan, and Steve Furber</i>	
Learning Gaussian Process Models from Uncertain Data .....	433
<i>Patrick Dallaire, Camille Besse, and Brahim Chaib-draa</i>	
A Bootstrap Artificial Neural Network Based Heterogeneous Panel Unit Root Test in Case of Cross Sectional Independence .....	441
<i>Christian de Peretti, Carole Siani, and Mario Cerrato</i>	
A Novel Hierarchical Constructive BackPropagation with Memory for Teaching a Robot the Names of Things .....	451
<i>Fady Alnajjar, Abdul Rahman Hafiz, and Kazuyuki Murase</i>	
Cellular Neural Networks Template Training System Using Iterative Annealing Optimization Technique on ACE16k Chip .....	460
<i>Selcuk Sevgen, Eylem Yucel, and Sabri Arik</i>	
Estimation of Driving Phase by Modeling Brake Pressure Signals .....	468
<i>Hiroki Mima, Kazushi Ikeda, Tomohiro Shibata, Naoki Fukaya, Kentaro Hitomi, and Takashi Bando</i>	
Optimal Hyperparameters for Generalized Learning and Knowledge Discovery in Variational Bayes .....	476
<i>Daisuke Kaji and Sumio Watanabe</i>	
Backpropagation Learning Algorithm for Multilayer Phasor Neural Networks .....	484
<i>Gouhei Tanaka and Kazuyuki Aihara</i>	
SNIWD: Simultaneous Weight Noise Injection with Weight Decay for MLP Training .....	494
<i>John Sum and Kevin Ho</i>	
Tracking in Reinforcement Learning .....	502
<i>Matthieu Geist, Olivier Pietquin, and Gabriel Fricout</i>	
Ensembling Heterogeneous Learning Models with Boosting .....	512
<i>Diego S.C. Nascimento and André L.V. Coelho</i>	
Improvement Algorithm for Approximate Incremental Learning .....	520
<i>Tadahiro Oyama, H. Kipsang Choge, Stephen Karungaru, Satoru Tsuge, Yasue Mitsukura, and Minoru Fukumi</i>	

A Meta-learning Method Based on Temporal Difference Error .....	530
<i>Kunikazu Kobayashi, Hiroyuki Mizoue, Takashi Kuremoto, and Masanao Obayashi</i>	
Local Learning Rules for Nonnegative Tucker Decomposition .....	538
<i>Anh Huy Phan and Andrzej Cichocki</i>	
Comparing Large Datasets Structures through Unsupervised Learning .....	546
<i>Guénaël Cabanes and Younès Bennani</i>	
Applying Duo Output Neural Networks to Solve Single Output Regression Problem .....	554
<i>Pawalai Kraipeerapun, Somkid Amornsamankul, Chun Che Fung, and Sathit Nakkrasae</i>	
An Incremental Learning Algorithm for Resource Allocating Networks Based on Local Linear Regression .....	562
<i>Seiichi Ozawa and Keisuke Okamoto</i>	
Learning Cooperative Behaviours in Multiagent Reinforcement Learning .....	570
<i>Somnuk Phon-Amnuaisuk</i>	
Generating Tonal Counterpoint Using Reinforcement Learning .....	580
<i>Somnuk Phon-Amnuaisuk</i>	
Robust Approximation in Decomposed Reinforcement Learning .....	590
<i>Takeshi Mori and Shin Ishii</i>	
Learning of Go Board State Evaluation Function by Artificial Neural Network .....	598
<i>Hiroki Tomizawa, Shin-ichi Maeda, and Shin Ishii</i>	
Quick Maximum Power Point Tracking of Photovoltaic Using Online Learning Neural Network .....	606
<i>Yasushi Kohata, Koichiro Yamauchi, and Masahito Kurihara</i>	
<b>Pattern Analysis</b>	
Semi-Naïve Bayesian Method for Network Intrusion Detection System .....	614
<i>Mrutyunjaya Panda and Manas Ranjan Patra</i>	
Speaker Recognition Using Pole Distribution of Speech Signals Obtained by Bagging CAN2 .....	622
<i>Shuichi Kurogi, Seitaro Sato, and Kota Ichimaru</i>	

Fast Intra Mode Decision for H.264/AVC Based on Directional Information of I4MB .....	630
<i>Kyung-Hee Lee, En-Jong Cha, and Jae-Won Suh</i>	
Palmprint Recognition Based on Local DCT Feature Extraction .....	639
<i>H. Kipsang Choge, Tadahiro Oyama, Stephen Karungaru, Satoru Tsuge, and Minoru Fukumi</i>	
Representative and Discriminant Feature Extraction Based on NMF for Emotion Recognition in Speech .....	649
<i>Dami Kim, Soo-Young Lee, and Shun-ichi Amari</i>	
Improvement of the Neural Network Trees through Fine-Tuning of the Threshold of Each Internal Node .....	657
<i>Hirotomo Hayashi and Qiangfu Zhao</i>	

A Synthesis Method of Gene Networks Having Cyclic Expression Pattern Sequences by Network Learning .....	667
<i>Yoshihiro Mori and Yasuaki Kuroe</i>	

## Face Analysis and Processing

Gender Identification from Thai Speech Signal Using a Neural Network .....	676
<i>Rong Phoophuangpairoj, Sukanya Phongsuphap, and Supachai Tangwongsan</i>	
Gender Classification Based on Support Vector Machine with Automatic Confidence .....	685
<i>Zheng Ji and Bao-Liang Lu</i>	
Multiple Occluded Face Detection Based on Binocular Saliency Map ...	693
<i>Bumhwui Kim, Sang-Woo Ban, and Minho Lee</i>	
A Mutual Information Based Face Recognition Method .....	701
<i>Iman Makaremi and Majid Ahamdi</i>	
Basis Selection for 2DLDA-Based Face Recognition Using Fisher Score .....	708
<i>Peratham Wiriyathammabhum and Boonserm Kijisirikul</i>	
A Robust Keypoints Matching Strategy for SIFT: An Application to Face Recognition .....	716
<i>Minkook Cho and Hyeyoung Park</i>	
Selecting, Optimizing and Fusing ‘Salient’ Gabor Features for Facial Expression Recognition .....	724
<i>Ligang Zhang and Dian Tjondronegoro</i>	

- Self-Organized Gabor Features for Pose Invariant Face Recognition ..... 733  
*Saleh Aly, Naoyuki Tsuruta, and Rin-ichiro Taniguchi*

## Image Processing

- Image Hierarchical Segmentation Based on a GHSOM ..... 743  
*Esteban José Palomo, Enrique Domínguez,  
Rafael Marcos Luque, and José Muñoz*
- An Efficient Coding Model for Image Representation ..... 751  
*Zhiqing Li, Zhiping Shi, Zhixin Li, and Zhongzhi Shi*
- SSTEM Cell Image Segmentation Based on Top-Down Selective Attention Model ..... 759  
*Sangbok Choi, Sang Kyoo Paik, Yong Chul Bae, and Minho Lee*
- Data Partitioning Technique for Online and Incremental Visual SLAM ..... 769  
*Noppharat Tongprasit, Aram Kawewong, and Osamu Hasegawa*
- Improvement of Image Modeling with Affinity Propagation Algorithm for Semantic Image Annotation ..... 778  
*Dong Yang and Ping Guo*
- An Image Identifier Based on Hausdorff Shape Trace Transform ..... 788  
*Rerkchai Fooprateepsiri, Werasak Kurutach, and Suttipong Tamsuppaolerd*
- Personalized Fingerprint Segmentation ..... 798  
*Xinjian Guo, Yilong Yin, and Zhichen Shi*
- Automatic Image Restoration Based on Tensor Voting ..... 810  
*Toan Nguyen, Jonghyun Park, Soohyung Kim, Hyukro Park, and Gueesang Lee*
- Robust Incremental Subspace Learning for Object Tracking ..... 819  
*Gang Yu, Zhiwei Hu, and Hongtao Lu*
- Reversible Data Hiding Using the Histogram Modification of Block Image ..... 829  
*Hyang-Mi Yoo, Sang-Kwang Lee, Young-Ho Suh, and Jae-Won Suh*
- A Rock Structure Recognition System Using FMI Images ..... 838  
*Xu-Cheng Yin, Qian Liu, Hong-Wei Hao, Zhi-Bin Wang, and Kaizhu Huang*

## Financial Applications

Analyzing Price Data to Determine Positive and Negative Product Associations . . . . .	846
<i>Ayhan Demiriz, Ahmet Cihan, and Ufuk Kula</i>	
Production Planning Algorithm and Software for Sofa Factory . . . . .	856
<i>Cholticha Sangngam and Chantana Phongpensri (Chantrapornchai)</i>	
Ensemble Learning for Imbalanced E-commerce Transaction Anomaly Classification . . . . .	866
<i>Haiqin Yang and Irwin King</i>	
Exploring Early Classification Strategies of Streaming Data with Delayed Attributes . . . . .	875
<i>Mónica Millán-Giraldo, J. Salvador Sánchez, and V. Javier Traver</i>	
Exchange Rate Forecasting Using Classifier Ensemble . . . . .	884
<i>Zhi-Bin Wang, Hong-Wei Hao, Xu-Cheng Yin, Qian Liu, and Kaizhu Huang</i>	

## Erratum

Backpropagation Learning Algorithm for Multilayer Phasor Neural Networks . . . . .	E1
<i>Gouhei Tanaka and Kazuyuki Aihara</i>	

Author Index . . . . .	893
------------------------	-----

## Table of Contents – Part II

### Computer Vision

Obstacle Categorization Based on Hybridizing Global and Local Features .....	1
<i>Jeong-Woo Woo, Young-Chul Lim, and Minho Lee</i>	
Defect Detection and Classification in Citrus Using Computer Vision .....	11
<i>Jose J. Lopez, Emanuel Aguilera, and Maximo Cobos</i>	
Superresolution from Occluded Scenes .....	19
<i>Wataru Fukuda, Atsunori Kanemura, Shin-ichi Maeda, and Shin Ishii</i>	
Generating Self-organized Saliency Map Based on Color and Motion .....	28
<i>Satoru Morita</i>	
Co-occurrence of Intensity and Gradient Features for Object Detection .....	38
<i>Akinori Hidaka and Takio Kurita</i>	

### Control and Robotics

Adaptive Sensor-Driven Neural Control for Learning in Walking Machines .....	47
<i>Poramate Manoonpong and Florentin Wörgötter</i>	
A Method to Switch Multiple CAN2s for Variable Initial Temperature in Temperature Control of RCA Cleaning Solutions .....	56
<i>Shuichi Kurogi, Hiroshi Yuno, and Yohei Koshiyama</i>	
Vision-Motor Abstraction toward Robot Cognition .....	65
<i>Fady Alnajjar, Abdul Rahman Hafiz, Indra Bin Mohd. Zin, and Kazuyuki Murase</i>	
Adaptively Coordinating Heterogeneous Robot Teams through Asynchronous Situated Coevolution .....	75
<i>Abraham Prieto, Francisco Bellas, and Richard J. Duro</i>	
RL-Based Memory Controller for Scalable Autonomous Systems .....	83
<i>Osman Hassab Elgawi</i>	

A Semantic SLAM Model for Autonomous Mobile Robots Using Content Based Image Retrieval Techniques .....	93
<i>Choon Ling Tan, Simon Egerton, and Velappa Ganapathy</i>	

## **Evolutionary Computation**

Parameter Estimation Using a SCE Strategy .....	107
<i>Pengfei Li, Hesheng Tang, and Zhaoliang Wang</i>	
A Novel Evolving Clustering Algorithm with Polynomial Regression for Chaotic Time-Series Prediction .....	114
<i>Harya Widiputra, Henry Kho, Lukas, Russel Pears, and Nikola Kasabov</i>	
A Multi-strategy Differential Evolution Algorithm for Financial Prediction with Single Multiplicative Neuron .....	122
<i>Chukiat Worasutheep and Prabhas Chongstitvatana</i>	
Boosted Neural Networks in Evolutionary Computation .....	131
<i>Martin Holeňa, David Linke, and Norbert Steinfeldt</i>	
Improving Prediction Interval Quality: A Genetic Algorithm-Based Method Applied to Neural Networks .....	141
<i>Abbas Khosravi, Saeid Nahavandi, and Doug Creighton</i>	
Involving New Local Search in Hybrid Genetic Algorithm for Feature Selection .....	150
<i>Md. Monirul Kabir, Md. Shahjahan, and Kazuyuki Murase</i>	
Pareto Optimal Based Evolutionary Approach for Solving Multi-Objective Facility Layout Problem .....	159
<i>Kazi Shah Nawaz Ripon, Kyrre Glette, Omid Mirmotahari, Mats Høvin, and Jim Tørresen</i>	

## **Other Emerging Computational Methods**

Swarm Reinforcement Learning Algorithm Based on Particle Swarm Optimization Whose Personal Bests Have Lifespans .....	169
<i>Hitoshi Iima and Yasuaki Kuroe</i>	
Effectiveness of Intrinsically Motivated Adaptive Agent for Sustainable Human-Agent Interaction .....	179
<i>Takayuki Nozawa and Toshiyuki Kondo</i>	
RAST: A Related Abstract Search Tool .....	189
<i>Shiro Usui, Nilton L. Kamiji, Tatsuki Taniguchi, and Naonori Ueda</i>	

An Artificial Bee Colony Algorithm for the Quadratic Knapsack Problem .....	196
<i>Srikanth Pulikanti and Alok Singh</i>	
Universal Learning Machines .....	206
<i>Włodzisław Duch and Tomasz Maszczyk</i>	
Swarm Diversity Based Text Summarization .....	216
<i>Mohammed Salem Binwahlan, Naomie Salim, and Ladda Suanmali</i>	
A Fuzzy Bi-level Pricing Model and a PSO Based Algorithm in Supply Chains .....	226
<i>Ya Gao, Guangquan Zhang, Jie Lu, and Hui-Ming Wee</i>	
Growing Particle Swarm Optimizers with a Population-Dependent Parameter .....	234
<i>Chihiro Kurosu, Toshimichi Saito, and Kenya Jin'no</i>	
An Efficient Feature Selection Using Ant Colony Optimization Algorithm .....	242
<i>Md. Monirul Kabir, Md. Shahjahan, and Kazuyuki Murase</i>	
Stable Training Method for Echo State Networks Running in Closed-Loop Based on Particle Swarm Optimization Algorithm .....	253
<i>Qingsong Song, Zuren Feng, and Yonggang Wang</i>	
<b>Signal, Data and Text Processing</b>	
A Concept Generation Method Based on Mutual Information Quantity among Multiple Self-organizing Maps .....	263
<i>Kunio Kitahara and Akira Hirose</i>	
Decoding Ambisonic Signals to Irregular Loudspeaker Configuration Based on Artificial Neural Networks .....	273
<i>Peter Wai-Ming Tsang, Wai Keung Cheung, and Chi Sing Leung</i>	
Document Clustering with Cluster Refinement and Non-negative Matrix Factorization .....	281
<i>Sun Park, Dong Un An, ByungRea Char, and Chul-Won Kim</i>	
Hierarchical Multi-view Fisher Discriminant Analysis .....	289
<i>Qiaona Chen and Shiliang Sun</i>	
Auditory Temporal Assimilation: A Discriminant Analysis of Electrophysiological Evidence .....	299
<i>Hiroshige Takeichi, Takako Mitsudo, Yoshitaka Nakajima, Gerard B. Remijn, Yoshinobu Goto, and Shozo Tobimatsu</i>	

Web Snippet Clustering Based on Text Enrichment with Concept Hierarchy .....	309
<i>Supakpong Jinarat, Choochart Haruechaiyasak, and Arnon Rungsawang</i>	
Maintaining Footprint-Based Retrieval for Case Deletion .....	318
<i>Ning Lu, Jie Lu, and Guangquan Zhang</i>	
Investigation of Neonatal EEG Time Series Using a Modified Nonlinear Dynamical Analysis .....	326
<i>Suparerk Janjarasjitt, Mark S. Scher, and Kenneth A. Loparo</i>	
Solving Fuzzy Linear Regression with Hybrid Optimization .....	336
<i>M.H. Mashinchi, M.A. Orgun, and M. Mashinchi</i>	
Automatic Document Tagging in Social Semantic Digital Library .....	344
<i>Xiaomei Xu and Zhendong Niu</i>	
Text Mining with an Augmented Version of the Bisecting K-Means Algorithm .....	352
<i>Yutaro Hatagami and Toshihiko Matsuka</i>	
Ontology Based Personalized Modeling for Type 2 Diabetes Risk Analysis: An Integrated Approach .....	360
<i>Anju Verma, Maurizio Fiasché, Maria Cuzzola, Pasquale Iacopino, Francesco C. Morabito, and Nikola Kasabov</i>	
<b>Artificial Spiking Neural Systems: Nonlinear Dynamics and Engineering Applications</b>	
A Pulse-Coupled Network of SOM .....	367
<i>Kai Kinoshita and Hiroyuki Torikai</i>	
A Simple Spiking Neuron with Periodic Input: Basic Bifurcation and Encoding Function .....	376
<i>Shimon Teshima and Toshimichi Saito</i>	
Exploiting Temporal Noises and Device Fluctuations in Enhancing Fidelity of Pulse-Density Modulator Consisting of Single-Electron Neural Circuits .....	384
<i>Andrew Kilinga Kikombo, Tetsuya Asai, and Yoshihito Amemiya</i>	
Bifurcation Analysis of a Resonate-and-Fire-Type Digital Spiking Neuron .....	392
<i>Tetsuya Hishiki and Hiroyuki Torikai</i>	
Strange Responses to Fluctuating Inputs in the Hindmarsh-Rose Neurons .....	401
<i>Ryosuke Hosaka, Yutaka Sakai, and Kazuyuki Aihara</i>	

## Towards Brain-Inspired Systems

Evaluation of Color Constancy Vision Algorithm for Mobile Robots . . . . .	409
<i>Yasunori Takemura and Kazuo Ishii</i>	
Surprise-Driven Exploration with Rao-Blackwellized Particle Filters for Efficiently Constructing Occupancy Grid Maps . . . . .	420
<i>Youbo Cai and Masumi Ishikawa</i>	
Retrieving Emotion from Motion Analysis: In a Real Time Parallel Framework for Robots . . . . .	430
<i>Tino Lourens and Emilia Barakova</i>	
Using Biologically Inspired Visual Features and Mixture of Experts for Face/Nonface Recognition . . . . .	439
<i>Zeinab Farhoudi and Reza Ebrahimpour</i>	
Diagnosis Support System for Mucous Membrane Diseases in Oral Cavity . . . . .	449
<i>Keiichi Horio, Shuhei Matsumoto, Taishi Ohtani, Manabu Habu, Kazuhiro Tominaga, and Takeshi Yamakawa</i>	
Using Long and Short Term Memories in Solving Optimization Problems . . . . .	457
<i>Masahiro Nagamatu and Jagath Weerasinghe</i>	

## Computational Advances in Bioinformatics

Overlap-Based Similarity Metrics for Motif Search in DNA Sequences . . . . .	465
<i>Hai Thanh Do and Dianhui Wang</i>	
An Evolutionary Artificial Neural Network for Medical Pattern Classification . . . . .	475
<i>Shing Chiang Tan, Chee Peng Lim, Kay Sin Tan, and Jose C. Navarro</i>	
Coevolutionary Method for Gene Selection and Parameter Optimization in Microarray Data Analysis . . . . .	483
<i>Yingjie Hu and Nikola Kasabov</i>	
An Omnibus Permutation Test on Ensembles of Two-Locus Analyses for the Detection of Purely Epistatic Multi-locus Interactions . . . . .	493
<i>Waranyu Wongseree, Anunchai Assawamakin, Theera Piroonratana, Saravudh Sinsomros, Chanin Limwongse, and Nachol Chaiyaratana</i>	
Protein Fold Prediction Problem Using Ensemble of Classifiers . . . . .	503
<i>Abdollah Dehzangi, Somnuk Phon Amnuaisuk, Keng Hoong Ng, and Ehsan Mohandes</i>	

Combination of Multiple Features in Support Vector Machine with Principal Component Analysis in Application for Alzheimer's Disease Diagnosis .....	512
---	-----

*Jiann-Der Lee, Shau-Chiuan Su, Chung-Hsien Huang, J.J. Wang,  
Wen-Chuin Xu, You-You Wei, and S.T. Lee*

## Data Mining for Cybersecurity

Hierarchical Core Vector Machines for Network Intrusion Detection .....	520
---	-----

*Ye Chen, Shaoning Pang, Nikola Kasabov, Tao Ban, and  
Youki Kadobayashi*

String Kernel Based SVM for Internet Security Implementation .....	530
--	-----

*Zbynek Michlovský, Shaoning Pang, Nikola Kasabov, Tao Ban, and  
Youki Kadobayashi*

Automated Log Analysis of Infected Windows OS Using Mechanized Reasoning .....	540
--	-----

*Ruo Ando*

HumanBoost: Utilization of Users' Past Trust Decision for Identifying Fraudulent Websites .....	548
---	-----

*Daisuke Miyamoto, Hiroaki Hazeyama, and Youki Kadobayashi*

A Methodology for Analyzing Overall Flow of Spam-Based Attacks .....	556
--	-----

*Jungsuk Song, Daisuke Inoue, Masashi Eto, Mio Suzuki,  
Satoshi Hayashi, and Koji Nakao*

A Proposal of Malware Distinction Method Based on Scan Patterns Using Spectrum Analysis .....	565
---	-----

*Masashi Eto, Kotaro Sonoda, Daisuke Inoue,  
Katsunari Yoshioka, and Koji Nakao*

## Evolutionary Neural Networks: Theory and Practice

A Transductive Neuro-Fuzzy Force Control: An Ethernet-Based Application to a Drilling Process .....	573
---	-----

*Agustin Gajate, Rodolfo Haber, and Pastora Vega*

Sentiment Classification with Support Vector Machines and Multiple Kernel Functions .....	583
---	-----

*Tanasanee Phienthrakul, Boonserm Kijsirikul,  
Hiroya Takamura, and Manabu Okumura*

Improving the Performance of Fuzzy ARTMAP with Hybrid Evolutionary Programming: An Experimental Study .....	593
---	-----

*Shing Chiang Tan and Chee Peng Lim*

“Dead” Chromosomes and Their Elimination in the Neuro-Genetic Stock Index Prediction System . . . . .	601
<i>Jacek Mańdziuk and Marcin Jaruszewicz</i>	
String Pattern Recognition Using Evolving Spiking Neural Networks and Quantum Inspired Particle Swarm Optimization . . . . .	611
<i>Haza Nuzly Abdull Hamed, Nikola Kasabov, Zbyněk Michloušký, and Siti Mariyam Shamsuddin</i>	
Fault Condition Recognition Based on PSO and KPCA . . . . .	620
<i>Hongxia Pan, Xiuye Wei, and Xin Xu</i>	
Evaluation of Distance Measures for Speciated Evolutionary Neural Networks in Pattern Classification Problems . . . . .	630
<i>Kyung-Joong Kim and Sung-Bae Cho</i>	
Emergence of Different Mating Strategies in Artificial Embodied Evolution . . . . .	638
<i>Stefan Elfwing, Eiji Uchibe, and Kenji Doya</i>	
<b>Hybrid and Adaptive Systems for Computer Vision and Robot Control</b>	
A Markov Model for Multiagent Patrolling in Continuous Time . . . . .	648
<i>Jean-Samuel Marier, Camille Besse, and Brahim Chaib-draa</i>	
Hybrid Framework to Image Segmentation . . . . .	657
<i>Fernando C. Monteiro</i>	
On the Robustness of Fuzzy-Genetic Colour Contrast Fusion with Variable Colour Depth . . . . .	667
<i>Heesang Shin, Alwyn Husselmann, and Napoleon H. Reyes</i>	
Navel Orange Blemish Identification for Quality Grading System . . . . .	675
<i>MingHui Liu, Gadi Ben-Tal, Napoleon H. Reyes, and Andre L.C. Barczak</i>	
A Cyclostationarity Analysis Applied to Scaled Images . . . . .	683
<i>Babak Mahdian and Stanislav Saic</i>	
<b>Intelligent Data Mining</b>	
Non-segmented Document Clustering Using Self-Organizing Map and Frequent Max Substring Technique . . . . .	691
<i>Todsanai Chumwatana, Kok Wai Wong, and Hong Xie</i>	
A Visual Method for High-Dimensional Data Cluster Exploration . . . . .	699
<i>Ke-Bing Zhang, Mao Lin Huang, Mehmet A. Orgun, and Quang Vinh Nguyen</i>	

An Algorithm Based on the Construction of Braun's Cathode Ray Tube as a Novel Technique for Data Classification .....	710
<i>Mariusz Swiecicki</i>	

Fuzzy Decision Tree Induction Approach for Mining Fuzzy Association Rules .....	720
---	-----

*Rolly Intan and Oviliani Yenty Yuliana*

AdaIndex: An Adaptive Index Structure for Fast Similarity Search in Metric Spaces .....	729
---	-----

*Tao Ban, Shangqing Guo, Qiliang Xu, and Youki Kadobayashi*

## **Neural Networks for Data Mining**

The Application of Wavelet Neural Network Optimized by Particle Swarm in Localization of Acoustic Emission Source .....	738
---	-----

*Aidong Deng, Li Zhao, and Xin Wei*

Speaker Recognition Based on GMM with an Embedded TDNN .....	746
--	-----

*Cunbao Chen and Li Zhao*

Finding Appropriate Turning Point for Text Sentiment Polarity .....	754
---	-----

*Haipeng Wang, Lin Shang, Xinyu Dai, and Cunyan Yin*

Research on Natural Disaster Risk Assessment Model Based on Support Vector Machine and Its Application .....	762
--	-----

*Junfei Chen, Shihao Zhao, Weihao Liao, and Yuan Weng*

Identifying Tobacco Control Policy Drivers: A Neural Network Approach .....	770
---	-----

*Xiaojiang Ding, Susan Bedingfield, Chung-Hsing Yeh, Ron Borland, David Young, Sonja Petrovic-Lazarevic, and Ken Coghill*

Intrusion Detection Using Neural Networks: A Grid Computing Based Data Mining Approach .....	777
--	-----

*Marcello Castellano, Giuseppe Mastronardi, and Gianfranco Tarricone*

## **SOM and Related Subjects and Its Applications**

Recurrent Neural Networks as Local Models for Time Series Prediction .....	786
--	-----

*Aymen Cherif, Hubert Cardot, and Romuald Boné*

Construction of the General Physical Condition Judgments System Using Acceleration Plethysmogram Analysis Results .....	794
---	-----

*Heizo Tokutaka, Eikou Gonda, Yoshio Maniwa, Masashi Yamamoto, Toshiyuki Kakihara, Masahumi Kurata, Kikuo Fujimura, Li Shigang, and Masaaki Ohkita*

Decision of Class Borders on Spherical SOM and Its Visualization . . . . .	802
<i>Nobuo Matsuda, Heizo Tokutaka, and Matashige Oyabu</i>	
Quantifying the Path Preservation of SOM-Based Information Landscapes . . . . .	812
<i>Michael Bui and Masahiro Takatsuka</i>	
Self-Organizing Neural Grove and Its Parallel and Distributed Performance . . . . .	820
<i>Hirotaka Inoue</i>	
The Finding of Weak-Ties by Applying Spherical SOM and Association Rules . . . . .	828
<i>Takaichi Ito and Tetsuya Onoda</i>	
Analysis of Robustness of Pareto Learning SOM to Variances of Input Vectors . . . . .	836
<i>Hiroshi Dozono and Masanori Nakakuni</i>	
Interactive Hierarchical SOM for Image Retrieval Visualization . . . . .	845
<i>Yi Liu and Masahiro Takatsuka</i>	
Evaluation Patterns of Japanese Representative Athletes in the 2008 Beijing Olympic Games: Visualization of Social Expectation and Satisfaction by Use of Self-Organizing Maps . . . . .	855
<i>Tetsuya Onoda</i>	
Temporal Signal Processing by Feedback SOM: An Application to On-line Character Recognition Task . . . . .	865
<i>Hiroshi Wakuya and Akira Terada</i>	
A Study on Clustering Method by Self-Organizing Map and Information Criteria . . . . .	874
<i>Satoru Kato, Tadashi Horiuchi, and Yoshio Itoh</i>	
<b>Author Index . . . . .</b>	<b>883</b>