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Artificial Neural Networks – ICANN 2008

18th International Conference
Prague, Czech Republic, September 3-6, 2008
Proceedings, Part I
This volume is the first part of the two-volume proceedings of the 18th International Conference on Artificial Neural Networks (ICANN 2008) held September 3–6, 2008 in Prague, Czech Republic. The ICANN conferences are annual meetings supervised by the European Neural Network Society, in cooperation with the International Neural Network Society and the Japanese Neural Network Society. This series of conferences has been held since 1991 in various European countries and covers the field of neurocomputing and related areas. In 2008, the ICANN conference was organized by the Institute of Computer Science, Academy of Sciences of the Czech Republic together with the Department of Computer Science and Engineering from the Faculty of Electrical Engineering of the Czech Technical University in Prague. Over 300 papers were submitted to the regular sessions, two special sessions and two workshops. The Program Committee selected about 200 papers after a thorough peer-review process; they are published in the two volumes of these proceedings. The large number, variety of topics and high quality of submitted papers reflect the vitality of the field of artificial neural networks.

The first volume contains papers on the mathematical theory of neurocomputing, learning algorithms, kernel methods, statistical learning and ensemble techniques, support vector machines, reinforcement learning, evolutionary computing, hybrid systems, self-organization, control and robotics, signal and time series processing and image processing.

The second volume is devoted to pattern recognition and data analysis, hardware and embedded systems, computational neuroscience, connectionistic cognitive science, neuroinformatics and neural dynamics. It also contains papers from two special sessions, “Coupling, Synchronies, and Firing Patterns: From Cognition to Disease,” and “Constructive Neural Networks,” and two workshops, New Trends in Self-Organization and Optimization of Artificial Neural Networks, and Adaptive Mechanisms of the Perception-Action Cycle.

It is our pleasure to express our gratitude to everyone who contributed in any way to the success of the event and the completion of these proceedings. In particular, we thank the members of the Board of the ENNS who uphold the tradition of the series and helped with the organization. With deep gratitude we thank all the members of the Program Committee and the reviewers for their great effort in the reviewing process. We are very grateful to the members of the Organizing Committee whose hard work made the vision of the 18th ICANN reality. Zdeněk Buk and Eva Pospíšilová and the entire Computational Intelligence Group at Czech Technical University in Prague deserve special thanks for preparing the conference proceedings. We thank to Miroslav Čepek for the conference website administration. We thank Milena Zeithamlová and Action M Agency for perfect local arrangements. We also thank Alfred Hofmann, Ursula
Barth, Anna Kramer and Peter Strasser from Springer for their help with this demanding publication project. Last but not least, we thank all authors who contributed to this volume for sharing their new ideas and results with the community of researchers in this rapidly developing field of biologically motivated computer science. We hope that you enjoy reading and find inspiration for your future work in the papers contained in these two volumes.

June 2008

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T. Wennekers
P. Wira
B. Wyns
Z. Yang
F. Železný
# Table of Contents – Part I

## Mathematical Theory of Neurocomputing

- Dimension Reduction for Mixtures of Exponential Families .......... 1  
  *Shotaro Akaho*

- Several Enhancements to Hermite-Based Approximation of One-Variable Functions ........................................... 11  
  *Bartłomiej Bełczyński and Bernardete Ribeiro*

- Multi-category Bayesian Decision by Neural Networks ............... 21  
  *Yoshifusa Ito, Cidambi Srinivasan, and Hiroyuki Izumi*

- Estimates of Network Complexity and Integral Representations ...... 31  
  *Paul C. Kainen and Věra Kůrková*

- Reliability of Cross-Validation for SVMs in High-Dimensional, Low Sample Size Scenarios ........................................ 41  
  *Sascha Klement, Amir Madany Mamlouk, and Thomas Martinetz*

- Generalization of Concave and Convex Decomposition in Kikuchi Free Energy .......................................................... 51  
  *Yu Nishiyama and Sumio Watanabe*

- Analysis of Chaotic Dynamics Using Measures of the Complex Network Theory .............................................................. 61  
  *Yutaka Shimada, Takayuki Kimura, and Tohru Ikeguchi*

- Global Dynamics of Finite Cellular Automata ............................... 71  
  *Martin Schüle, Thomas Ott, and Ruedi Stoop*

## Learning Algorithms

- Semi-supervised Learning of Tree-Structured RBF Networks Using Co-training ................................................................. 79  
  *Mohamed F. Abdel Hady, Friedhelm Schwenker, and Günther Palm*

- A New Type of ART2 Architecture and Application to Color Image Segmentation ......................................................... 89  
  *Jiaoyan Ai, Brian Funt, and Lilong Shi*

- BICA: A Boolean Independent Component Analysis Approach ........ 99  
  *Bruno Apolloni, Simone Bassis, and Andrea Brega*
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improving the Learning Speed in 2-Layered LSTM Network by Estimating the Configuration of Hidden Units and Optimizing Weights</td>
<td>109</td>
</tr>
<tr>
<td>Débora C. Corrêa, Alexandre L.M. Levada, and José H. Saito</td>
<td></td>
</tr>
<tr>
<td>Manifold Construction Using the Multilayer Perceptron</td>
<td>119</td>
</tr>
<tr>
<td>Wei-Chen Cheng and Cheng-Yuan Liou</td>
<td></td>
</tr>
<tr>
<td>Improving Performance of a Binary Classifier by Training Set</td>
<td>128</td>
</tr>
<tr>
<td>Cezary Dendek and Jacek Mańdziuk</td>
<td></td>
</tr>
<tr>
<td>An Overcomplete ICA Algorithm by InfoMax and InfoMin</td>
<td>136</td>
</tr>
<tr>
<td>Yoshitatsu Matsuda and Kazunori Yamaguchi</td>
<td></td>
</tr>
<tr>
<td>OP-ELM: Theory, Experiments and a Toolbox</td>
<td>145</td>
</tr>
<tr>
<td>Yoan Miche, Antti Sorjamaa, and Amaury Lendasse</td>
<td></td>
</tr>
<tr>
<td>Robust Nonparametric Probability Density Estimation by Soft Clustering</td>
<td>155</td>
</tr>
<tr>
<td>Ezequiel López-Rubio, Juan Miguel Ortiz-de-Lazcano-Lobato, Domingo López-Rodríguez, and María del Carmen Vargas-Gonzalez</td>
<td></td>
</tr>
<tr>
<td>Natural Conjugate Gradient on Complex Flag Manifolds for Complex Independent Subspace Analysis</td>
<td>165</td>
</tr>
<tr>
<td>Yasunori Nishimori, Shotaro Akaho, and Mark D. Plumbley</td>
<td></td>
</tr>
<tr>
<td>Quadratically Constrained Quadratic Programming for Subspace Selection in Kernel Regression Estimation</td>
<td>175</td>
</tr>
<tr>
<td>Marco Signoretto, Kristiaan Pelckmans, and Johan A.K. Suykens</td>
<td></td>
</tr>
<tr>
<td>The Influence of the Risk Functional in Data Classification with MLPs</td>
<td>185</td>
</tr>
<tr>
<td>Luis M. Silva, Mark Embrechts, Jorge M. Santos, and Joaquim Marques de Sá</td>
<td></td>
</tr>
<tr>
<td>Nonnegative Least Squares Learning for the Random Neural Network</td>
<td>195</td>
</tr>
<tr>
<td>Stelios Timotheou</td>
<td></td>
</tr>
</tbody>
</table>

**Kernel Methods, Statistical Learning, and Ensemble Techniques**

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sparse Bayes Machines for Binary Classification</td>
<td>205</td>
</tr>
<tr>
<td>Daniel Hernández-Lobato</td>
<td></td>
</tr>
<tr>
<td>Tikhonov Regularization Parameter in Reproducing Kernel Hilbert Spaces with Respect to the Sensitivity of the Solution</td>
<td>215</td>
</tr>
<tr>
<td>Kateřina Hlaváková-Schindler</td>
<td></td>
</tr>
<tr>
<td>Title</td>
<td>Page</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Mixture of Expert Used to Learn Game Play</td>
<td>225</td>
</tr>
<tr>
<td>Peter Lacko and Vladimír Kvasnička</td>
<td></td>
</tr>
<tr>
<td>Unsupervised Bayesian Network Learning for Object Recognition in Image Sequences</td>
<td>235</td>
</tr>
<tr>
<td>Daniel Oberhoff and Marina Kolesnik</td>
<td></td>
</tr>
<tr>
<td>Using Feature Distribution Methods in Ensemble Systems Combined by Fusion and Selection-Based Methods</td>
<td>245</td>
</tr>
<tr>
<td>Laura E.A. Santana, Anne M.P. Canuto, and João C. Xavier Jr.</td>
<td></td>
</tr>
<tr>
<td>Bayesian Ying-Yang Learning on Orthogonal Binary Factor Analysis</td>
<td>255</td>
</tr>
<tr>
<td>Ke Sun and Lei Xu</td>
<td></td>
</tr>
<tr>
<td>A Comparative Study on Data Smoothing Regularization for Local Factor Analysis</td>
<td>265</td>
</tr>
<tr>
<td>Shikui Tu, Lei Shi, and Lei Xu</td>
<td></td>
</tr>
<tr>
<td>Adding Diversity in Ensembles of Neural Networks by Reordering the Training Set</td>
<td>275</td>
</tr>
<tr>
<td>Joaquín Torres-Sospedra, Carlos Hernández-Espinosa, and Mercedes Fernández-Redondo</td>
<td></td>
</tr>
<tr>
<td>New Results on Combination Methods for Boosting Ensembles</td>
<td>285</td>
</tr>
<tr>
<td>Joaquín Torres-Sospedra, Carlos Hernández-Espinosa, and Mercedes Fernández-Redondo</td>
<td></td>
</tr>
</tbody>
</table>

**Support Vector Machines**

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Batch Support Vector Training Based on Exact Incremental Training</td>
<td>295</td>
</tr>
<tr>
<td>Shigeo Abe</td>
<td></td>
</tr>
<tr>
<td>A Kernel Method for the Optimization of the Margin Distribution</td>
<td>305</td>
</tr>
<tr>
<td>Fabio Aiolli, Giovanni Da San Martino, and Alessandro Sperduti</td>
<td></td>
</tr>
<tr>
<td>A 4–Vector MDM Algorithm for Support Vector Training</td>
<td>315</td>
</tr>
<tr>
<td>Álvaro Barbero, Jorge López, and José R. Dorronsoro</td>
<td></td>
</tr>
<tr>
<td>Implementation Issues of an Incremental and Decremental SVM</td>
<td>325</td>
</tr>
<tr>
<td>Honorius Gâlmeanu and Răzvan Andonie</td>
<td></td>
</tr>
<tr>
<td>Online Clustering of Non-stationary Data Using Incremental and Decremental SVM</td>
<td>336</td>
</tr>
<tr>
<td>Khaled Boukharouba and Stéphane Lecoeuche</td>
<td></td>
</tr>
<tr>
<td>Support Vector Machines for Visualization and Dimensionality</td>
<td>346</td>
</tr>
<tr>
<td>Tomasz Maszczyk and Włodzisław Duch</td>
<td></td>
</tr>
</tbody>
</table>
Reinforcement Learning

Multigrid Reinforcement Learning with Reward Shaping .................. 357
  Marek Grzes and Daniel Kudenko

Self-organized Reinforcement Learning Based on Policy Gradient in Nonstationary Environments ................................. 367
  Yu Hiei, Takeshi Mori, and Shin Ishii

Robust Population Coding in Free-Energy-Based Reinforcement Learning ................................................................. 377
  Makoto Otsuka, Junichiro Yoshimoto, and Kenji Doya

Policy Gradients with Parameter-Based Exploration for Control ...... 387
  Frank Sehnke, Christian Osendorfer, Thomas Rücksieß, Alex Graves, Jan Peters, and Jürgen Schmidhuber

A Continuous Internal-State Controller for Partially Observable Markov Decision Processes ........................................... 397
  Yuki Taniguchi, Takeshi Mori, and Shin Ishii

Episodic Reinforcement Learning by Logistic Reward-Weighted Regression ............................................................. 407
  Daan Wierstra, Tom Schaul, Jan Peters, and Juergen Schmidhuber

Error-Entropy Minimization for Dynamical Systems Modeling ....... 417
  Jernej Zupanc

Evolutionary Computing

Hybrid Evolution of Heterogeneous Neural Networks .................... 426
  Zdeněk Buk and Miroslav Šnorek

Ant Colony Optimization with Castes ........................................ 435
  Oleg Kovářík and Miroslav Skrbek

Neural Network Ensembles for Classification Problems Using Multiobjective Genetic Algorithms ...................................... 443
  David Lahoz and Pedro Mateo

Analysis of Vestibular-Ocular Reflex by Evolutionary Framework ...... 452
  Daniel Novák, Aleš Pilný, Pavel Kordík, Štěfan Holiga, Petr Pošík, R. Černý, and Richard Brzezny

Fetal Weight Prediction Models: Standard Techniques or Computational Intelligence Methods? ........................................ 462
  Tomáš Siegl, Pavel Kordík, Miroslav Šnorek, and Pavel Calda
Evolutionary Canonical Particle Swarm Optimizer – A Proposal of Meta-optimization in Model Selection ................................. 472
   Hong Zhang and Masumi Ishikawa

Hybrid Systems

Building Localized Basis Function Networks Using Context Dependent Clustering ................................................................. 482
   Marcin Blachnik and Włodzisław Duch

Adaptation of Connectionist Weighted Fuzzy Logic Programs with Kripke-Kleene Semantics ...................................................... 492
   Alexandros Chortaras, Giorgos Stamou, Andreas Stafylopatis, and Stefanos Kollias

Neuro-fuzzy System for Road Signs Recognition ........................................ 503
   Bogusław Cyganek

Neuro-inspired Speech Recognition with Recurrent Spiking Neurons ....... 513
   Arfan Ghani, T. Martin McGinnity, Liam P. Maguire, and Jim Harkin

Predicting the Performance of Learning Algorithms Using Support Vector Machines as Meta-regressors ........................................ 523
   Silvio B. Guerra, Ricardo B.C. Prudêncio, and Teresa B. Ludermir

Municipal Creditworthiness Modelling by Kohonen’s Self-organizing Feature Maps and Fuzzy Logic Neural Networks .................... 533
   Petr Hajek and Vladimir Olej

Implementing Boolean Matrix Factorization ...................................... 543
   Roman Neruda, Václav Snášel, Jan Platoš, Pavel Krömer, Dušan Hůšek, and Alexander A. Frolov

Application of Potts-Model Perceptron for Binary Patterns Identification ................................................................. 553
   Vladimir Kryzhanovsky, Boris Kryzhanovsky, and Anatoly Fonarev

Using ARTMAP-Based Ensemble Systems Designed by Three Variants of Boosting .............................................................. 562
   Araken de Medeiros Santos and Anne Magaly de Paula Canuto

Self-organization

Matrix Learning for Topographic Neural Maps ..................................... 572
   Banchar Arnonkijpanich, Barbara Hammer, Alexander Hasenfuss, and Chidchanok Lursinsap
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clustering Quality and Topology Preservation in Fast Learning SOMs</td>
<td>583</td>
</tr>
<tr>
<td><em>Antonino Fiannaca, Giuseppe Di Fatta, Salvatore Gaglio, Riccardo Rizzo, and Alfonso Urso</em></td>
<td></td>
</tr>
<tr>
<td>Enhancing Topology Preservation during Neural Field Development</td>
<td>593</td>
</tr>
<tr>
<td><em>Claudius Gläser, Frank Joublin, and Christian Goerick</em></td>
<td></td>
</tr>
<tr>
<td>Adaptive Translation: Finding Interlingual Mappings Using Self-organizing Maps</td>
<td>603</td>
</tr>
<tr>
<td><em>Timo Honkela, Sami Virpioja, and Jaakko Vääränen</em></td>
<td></td>
</tr>
<tr>
<td>Self-Organizing Neural Grove: Efficient Multiple Classifier System with Pruned Self-Generating Neural Trees</td>
<td>613</td>
</tr>
<tr>
<td><em>Hirotaka Inoue</em></td>
<td></td>
</tr>
<tr>
<td>Self-organized Complex Neural Networks through Nonlinear Temporally Asymmetric Hebbian Plasticity</td>
<td>623</td>
</tr>
<tr>
<td><em>Hideyuki Kato and Tohru Ikeguchi</em></td>
<td></td>
</tr>
<tr>
<td>Temporal Hebbian Self-Organizing Map for Sequences</td>
<td>632</td>
</tr>
<tr>
<td><em>Jan Koutník and Miroslav Šnorek</em></td>
<td></td>
</tr>
<tr>
<td>FLSOM with Different Rates for Classification in Imbalanced Datasets</td>
<td>642</td>
</tr>
<tr>
<td><em>Iván Machón-González and Hilario López-García</em></td>
<td></td>
</tr>
<tr>
<td>A Self-organizing Neural System for Background and Foreground Modeling</td>
<td>652</td>
</tr>
<tr>
<td><em>Lucia Maddalena and Alfredo Petrosino</em></td>
<td></td>
</tr>
<tr>
<td>Analyzing the Behavior of the SOM through Wavelet Decomposition of Time Series Generated during Its Execution</td>
<td>662</td>
</tr>
<tr>
<td><em>Víctor Mireles and Antonio Neme</em></td>
<td></td>
</tr>
<tr>
<td>Decreasing Neighborhood Revisited in Self-Organizing Maps</td>
<td>671</td>
</tr>
<tr>
<td><em>Antonio Neme, Elizabeth Chavez, Alejandra Cervera, and Víctor Mireles</em></td>
<td></td>
</tr>
<tr>
<td>A New GHSOM Model Applied to Network Security</td>
<td>680</td>
</tr>
<tr>
<td><em>Esteban J. Palomo, Enrique Domínguez, Rafael Marcos Luque, and José Muñoz</em></td>
<td></td>
</tr>
<tr>
<td>Reduction of Visual Information in Neural Network Learning Visualization</td>
<td>690</td>
</tr>
<tr>
<td><em>Matúš Užák, Rudolf Jakša, and Peter Sinčák</em></td>
<td></td>
</tr>
</tbody>
</table>
Control and Robotics

Heuristics-Based High-Level Strategy for Multi-agent Systems ........ 700
   Péter Gasztonyi and István Harmatí

Echo State Networks for Online Prediction of Movement
Data – Comparing Investigations ........................................ 710
   Sven Hellbach, Sören Strauss, Julian P. Eggert, Edgar Körner, and
   Horst-Michael Gross

Comparison of RBF Network Learning and Reinforcement Learning on
the Maze Exploration Problem ........................................... 720
   Stanislav Slušný, Roman Neruda, and Petra Vidnerová

Modular Neural Networks for Model-Free Behavioral Learning ........ 730
   Johane Takeuchi, Osamu Shouno, and Hiroshi Tsujino

From Exploration to Planning ............................................ 740
   Cornelius Weber and Jochen Triesch

Signal and Time Series Processing

Sentence-Level Evaluation Using Co-occurrences of N-Grams .......... 750
   Theologos Athanaselis, Stelios Bakamidis,
   Konstantinos Mamouras, and Ioannis Dologlou

Identifying Single Source Data for Mixing Matrix Estimation in
Instantaneous Blind Source Separation .................................. 759
   Pau Bofill

ECG Signal Classification Using GAME Neural Network and Its
Comparison to Other Classifiers .......................................... 768
   Miroslav Čepkov, Miroslav Šnorek, and Václav Chudáček

Predictive Modeling with Echo State Networks ....................... 778
   Michal Čerňanský and Peter Tiňo

Sparse Coding Neural Gas for the Separation of Noisy Overcomplete
Sources ............................................................................. 788
   Kai Labusch, Erhardt Barth, and Thomas Martinetz

Mutual Information Based Input Variable Selection Algorithm and
Wavelet Neural Network for Time Series Prediction ................... 798
   Rashidi Khazaee Parviz, Mozayani Nasser, and M.R. Jahed Motlagh

Stable Output Feedback in Reservoir Computing Using Ridge
Regression ........................................................................... 808
   Francis Wyffels, Benjamin Schrauwen, and Dirk Stroobandt
Image Processing

Spatio-temporal Summarizing Method of Periodic Image Sequences with Kohonen Maps .............................................. 818
Mohamed Berkane, Patrick Clarysse, and Isabelle E. Magnin

Image Classification by Histogram Features Created with Learning Vector Quantization .............................................. 827
Marcin Blachnik and Jorma Laaksonen

A Statistical Model for Histogram Refinement .......................... 837
Nizar Bouguila and Walid ElGuebaly

Efficient Video Shot Summarization Using an Enhanced Spectral Clustering Approach ............................................. 847
Vasileios Chasanis, Aristidis Likas, and Nikolaos Galatsanos

Surface Reconstruction Techniques Using Neural Networks to Recover Noisy 3D Scenes ............................................. 857
David Elizondo, Shang-Ming Zhou, and Charalambos Chrysostomou

A Spatio-temporal Extension of the SUSAN-Filter ................... 867
Benedikt Kaiser and Gunther Heidemann

A Neighborhood-Based Competitive Network for Video Segmentation and Object Detection ........................................... 877
Rafael Marcos Luque Baena, Enrique Dominguez,
Domingo López-Rodríguez, and Esteban J. Palomo

A Hierarchic Method for Footprint Segmentation Based on SOM..... 887
Marco Mora Cofre, Ruben Valenzuela, and Girma Berhe

Co-occurrence Matrixes for the Quality Assessment of Coded Images ... 897
Judith Redi, Paolo Gastaldo, Rodolfo Zunino, and Ingrid Heynderickx

Semantic Adaptation of Neural Network Classifiers in Image Segmentation .......................................................... 907
Nikolaos Simou, Thanos Athanasiadis, Stefanos Kollias,
Giorgos Stamou, and Andreas Stafylopatis

Partially Monotone Networks Applied to Breast Cancer Detection on Mammograms .................................................. 917
Marina Velikova, Hennie Daniels, and Maurice Samulski

Image Processing – Recognition Systems

A Neuro-fuzzy Approach to User Attention Recognition ............ 927
Stylianos Asteriadis, Kostas Karpouzis, and Stefanos Kollias
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>TriangleVision: A Toy Visual System</td>
<td>937</td>
</tr>
<tr>
<td><em>Thomas Bangert</em></td>
<td></td>
</tr>
<tr>
<td>Face Recognition with VG-RAM Weightless Neural Networks</td>
<td>951</td>
</tr>
<tr>
<td><em>Alberto F. De Souza, Claudine Badue, Felipe Pedroni,</em></td>
<td></td>
</tr>
<tr>
<td><em>Elias Oliveira, Stiven Schwanz Dias, Hallysson Oliveira,</em></td>
<td></td>
</tr>
<tr>
<td><em>Soterio Ferreira de Souza</em></td>
<td></td>
</tr>
<tr>
<td>Invariant Object Recognition with Slow Feature Analysis</td>
<td>961</td>
</tr>
<tr>
<td><em>Mathias Franzius, Niko Wilbert, and Laurenz Wiskott</em></td>
<td></td>
</tr>
<tr>
<td>Analysis-by-Synthesis by Learning to Invert Generative Black Boxes</td>
<td>971</td>
</tr>
<tr>
<td><em>Vinod Nair, Josh Susskind,</em></td>
<td></td>
</tr>
<tr>
<td><em>Geoffrey E. Hinton</em></td>
<td></td>
</tr>
<tr>
<td>A Bio-inspired Connectionist Architecture for Visual Classification</td>
<td>982</td>
</tr>
<tr>
<td>of Moving Objects</td>
<td></td>
</tr>
<tr>
<td><em>Pedro L. Sánchez Orellana and Claudio Castellanos Sánchez</em></td>
<td></td>
</tr>
<tr>
<td>A Visual Object Recognition System Invariant to Scale and Rotation</td>
<td>991</td>
</tr>
<tr>
<td><em>Yasuomi D. Sato, Jenia Jitsev, and Christoph von der Malsburg</em></td>
<td></td>
</tr>
<tr>
<td>Recognizing Facial Expressions: A Comparison of Computational</td>
<td>1001</td>
</tr>
<tr>
<td>Approaches</td>
<td></td>
</tr>
<tr>
<td><em>Aruna Shenoy, Tim M. Gale, Neil Davey, Bruce Christiansen,</em></td>
<td></td>
</tr>
<tr>
<td><em>Ray Frank</em></td>
<td></td>
</tr>
<tr>
<td>A Probabilistic Prediction Method for Object Contour Tracking</td>
<td>1011</td>
</tr>
<tr>
<td><em>Daniel Weiler, Volker Willert, and Julian Eggert</em></td>
<td></td>
</tr>
<tr>
<td><strong>Author Index</strong></td>
<td>1021</td>
</tr>
</tbody>
</table>
Table of Contents – Part II

Pattern Recognition and Data Analysis

Investigating Similarity of Ontology Instances and Its Causes ............ 1
  Anton Andrejko and Mária Bieliková

A Neural Model for Delay Correction in a Distributed Control System ................................................................. 11
  Ana Antunes, Fernando Morgado Dias, and Alexandre Mota

A Model-Based Relevance Estimation Approach for Feature Selection in Microarray Datasets ............................................ 21
  Gianluca Bontempi and Patrick E. Meyer

Non-stationary Data Mining: The Network Security Issue ................. 32
  Sergio Decherchi, Paolo Gastaldo, Judith Redi, and Rodolfo Zunino

Efficient Feature Selection for PTR-MS Fingerprinting of Agroindustrial Products .......................................................... 42
  Pablo M. Granitto, Franco Biasioli, Cesare Furlanello, and Flavia Gasperi

Extraction of Binary Features by Probabilistic Neural Networks ........... 52
  Jiří Grim

Correlation Integral Decomposition for Classification ........................ 62
  Marcel Jiřina and Marcel Jiřina Jr.

Modified q-State Potts Model with Binarized Synaptic Coefficients ...... 72
  Vladimir Kryzhanovsky

Learning Similarity Measures from Pairwise Constraints with Neural Networks ................................................................. 81
  Marco Maggini, Stefano Melacci, and Lorenzo Sarti

Prediction of Binding Sites in the Mouse Genome Using Support Vector Machines .............................................................. 91
  Yi Sun, Mark Robinson, Rod Adams, Alistair Rust, and Neil Davey

Mimicking Go Experts with Convolutional Neural Networks ............... 101
  Ilya Sutskever and Vinod Nair

Associative Memories Applied to Pattern Recognition ...................... 111
  Roberto A. Vazquez and Humberto Sossa
MLP-Based Detection of Targets in Clutter: Robustness with Respect to the Shape Parameter of Weibull-Distributed Clutter

Raul Vicen-Bueno, Eduardo Galán-Fernández, Manuel Rosa-Zurera, and Maria P. Jarabo-Amores

121

Hardware, Embedded Systems

Modeling and Synthesis of Computational Efficient Adaptive Neuro-Fuzzy Systems Based on Matlab

Guillermo Bosque, Javier Echanobe, Inés del Campo, and José M. Tarela

131

Embedded Neural Network for Swarm Learning of Physical Robots

Pitoyo Hartono and Sachiko Kakita

141

Distribution Stream of Tasks in Dual-Processor System

Michael Kryzhanovsky and Magomed Malsagov

150

Efficient Implementation of the THSOM Neural Network

Rudolf Marek and Miroslav Skrbek

159

Reconfigurable MAC-Based Architecture for Parallel Hardware Implementation on FPGAs of Artificial Neural Networks

Nadia Nedjah, Rodrigo Martins da Silva, Luiza de Macedo Mourelle, and Marcus Vinicius Carvalho da Silva

169

Implementation of Central Pattern Generator in an FPGA-Based Embedded System

Cesar Torres-Huitzil and Bernard Girau

179

Biologically-Inspired Digital Architecture for a Cortical Model of Orientation Selectivity

Cesar Torres-Huitzil, Bernard Girau, and Miguel Arias-Estrada

188

Neural Network Training with Extended Kalman Filter Using Graphics Processing Unit

Peter Trebatický and Jiří Pospíchal

198

Blind Source-Separation in Mixed-Signal VLSI Using the InfoMax Algorithm

Waldo Valenzuela, Gonzalo Carvajal, and Miguel Figueroa

208

Computational Neuroscience

Synaptic Rewiring for Topographic Map Formation

Simeon A. Bamford, Alan F. Murray, and David J. Willshaw

218

Implementing Bayes’ Rule with Neural Fields

Raymond H. Cuijpers and Wolfram Erlhagen

228
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Encoding and Retrieval in a CA1 Microcircuit Model of the Hippocampus</td>
<td>238</td>
</tr>
<tr>
<td>Vassilis Cutsuridis, Stuart Cobb, and Bruce P. Graham</td>
<td></td>
</tr>
<tr>
<td>A Bio-inspired Architecture of an Active Visual Search Model</td>
<td>248</td>
</tr>
<tr>
<td>Vassilis Cutsuridis</td>
<td></td>
</tr>
<tr>
<td>Implementing Fuzzy Reasoning on a Spiking Neural Network</td>
<td>258</td>
</tr>
<tr>
<td>Cornelius Glackin, Liam McDaid, Liam Maguire, and Heather Sayers</td>
<td></td>
</tr>
<tr>
<td>Short Term Plasticity Provides Temporal Filtering at Chemical Synapses</td>
<td>268</td>
</tr>
<tr>
<td>Bruce P. Graham and Christian Stricker</td>
<td></td>
</tr>
<tr>
<td>Observational Versus Trial and Error Effects in a Model of an Infant</td>
<td>277</td>
</tr>
<tr>
<td>Matthew Hartley, Jacqueline Fagard, Rana Esseily, and John Taylor</td>
<td></td>
</tr>
<tr>
<td>Modeling the Effects of Dopamine on the Antisaccade Reaction Times (aSRT) of Schizophrenia Patients</td>
<td>290</td>
</tr>
<tr>
<td>Ioannis Kahramanoglou, Stavros Perantonis, Nikolaos Smyrnis, Ioannis Evdokimidis, and Vassilis Cutsuridis</td>
<td></td>
</tr>
<tr>
<td>Fast Multi-command SSVEP Brain Machine Interface without Training</td>
<td>300</td>
</tr>
<tr>
<td>Pablo Martinez Vasquez, Hovagim Bakardjian, Montserrat Vallverdu, and Andrzej Cichocki</td>
<td></td>
</tr>
<tr>
<td>Separating Global Motion Components in Transparent Visual Stimuli – A Phenomenological Analysis</td>
<td>308</td>
</tr>
<tr>
<td>Andrew Meso and Johannes M. Zanker</td>
<td></td>
</tr>
<tr>
<td>Lateral Excitation between Dissimilar Orientation Columns for Ongoing Subthreshold Membrane Oscillations in Primary Visual Cortex</td>
<td>318</td>
</tr>
<tr>
<td>Yuto Nakamura, Kazuhiro Tsuboi, and Osamu Hoshino</td>
<td></td>
</tr>
<tr>
<td>A Computational Model of Cortico-Striato-Thalamic Circuits in Goal-Directed Behaviour</td>
<td>328</td>
</tr>
<tr>
<td>N. Serap Şengör, Özkan Karabacak, and Ulrich Steinmetz</td>
<td></td>
</tr>
<tr>
<td>Firing Pattern Estimation of Synaptically Coupled Hindmarsh-Rose Neurons by Adaptive Observer</td>
<td>338</td>
</tr>
<tr>
<td>Yusuke Totoki, Kouichi Mitsunaga, Haruo Suemitsu, and Takami Matsuo</td>
<td></td>
</tr>
<tr>
<td>Global Oscillations of Neural Fields in CA3</td>
<td>348</td>
</tr>
<tr>
<td>Francesco Ventriglia</td>
<td></td>
</tr>
</tbody>
</table>
#### Connectionistic Cognitive Science

<table>
<thead>
<tr>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selective Attention Model of Moving Objects</td>
</tr>
<tr>
<td>Roman Borisyuk, David Chik, and Yakov Kazanovich</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tempotron-Like Learning with ReSuMe</td>
</tr>
<tr>
<td>Răzvan V. Florian</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neural Network Capable of Amodal Completion</td>
</tr>
<tr>
<td>Kunihiko Fukushima</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Predictive Coding in Cortical Microcircuits</td>
</tr>
<tr>
<td>Andreea Lazar, Gordon Pipa, and Jochen Triesch</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Biologically Inspired Spiking Neural Network for Sound Localisation by the Inferior Colliculus</td>
</tr>
<tr>
<td>Jindong Liu, Harry Erwin, Stefan Wermter, and Mahmoud Elsaid</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning Structurally Analogous Tasks</td>
</tr>
<tr>
<td>Paul W. Munro</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto-structure of Presynaptic Activity Defines Postsynaptic Firing Statistics and Can Modulate STDP-Based Structure Formation and Learning</td>
</tr>
<tr>
<td>Gordon Pipa, Raul Vicente, and Alexander Tikhonov</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decision Making Logic of Visual Brain</td>
</tr>
<tr>
<td>Andrzej W. Przybyszewski</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Computational Model of Saliency Map Read-Out During Visual Search</td>
</tr>
<tr>
<td>Mia Šetić and Dražen Domijan</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Corpus-Based Computational Model of Metaphor Understanding Incorporating Dynamic Interaction</td>
</tr>
<tr>
<td>Asuka Terai and Masanori Nakagawa</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deterministic Coincidence Detection and Adaptation Via Delayed Inputs</td>
</tr>
<tr>
<td>Zhijun Yang, Alan Murray, and Juan Huo</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synaptic Formation Rate as a Control Parameter in a Model for the Ontogenesis of Retinotopy</td>
</tr>
<tr>
<td>Junmei Zhu</td>
</tr>
</tbody>
</table>

#### Neuroinformatics

<table>
<thead>
<tr>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuzzy Symbolic Dynamics for Neurodynamical Systems</td>
</tr>
<tr>
<td>Krzysztof Dobosz and Włodzisław Duch</td>
</tr>
</tbody>
</table>
Towards Personalized Neural Networks for Epileptic Seizure Prediction .......................... 479
António Dourado, Ricardo Martins, João Duarte, and Bruno Direito

Real and Modeled Spike Trains: Where Do They Meet? ......................... 488
Vasile V. Moca, Danko Nikolić, and Raul C. Mureșan

The InfoPhase Method or How to Read Neurons with Neurons .............. 498
Raul C. Mureșan, Wolf Singer, and Danko Nikolić

Artifact Processor for Neuronal Activity Analysis during Deep Brain Stimulation .................................................... 508
Dimitri V. Nowicki, Brigitte Piallat, Alim-Louis Benabid, and Tatiana I. Aksenova

Analysis of Human Brain NMR Spectra in Vivo Using Artificial Neural Networks .......................................................... 517
Erik Saudek, Daniel Novák, Dita Wagnerová, and Milan Hájek

Multi-stage FCM-Based Intensity Inhomogeneity Correction for MR Brain Image Segmentation ................................................................. 527
László Szilágyi, Sándor M. Szilágyi, László Dávid, and Zoltán Bengó

KCMAC: A Novel Fuzzy Cerebellar Model for Medical Decision Support ........................................................................ 537
S.D. Teddy

Decoding Population Neuronal Responses by Topological Clustering .... 547
Hujun Yin, Stefano Panzeri, Zareen Mehboob, and Mathew Diamond

Neural Dynamics

Learning of Neural Information Routing for Correspondence Finding ... 557
Jan D. Bouecke and Jörg Lücke

A Globally Asymptotically Stable Plasticity Rule for Firing Rate Homeostasis ................................................................. 567
Prashant Joshi and Jochen Triesch

Analysis and Visualization of the Dynamics of Recurrent Neural Networks for Symbolic Sequences Processing .......................... 577
Matej Makula and Lubica Beňušková

Chaotic Search for Traveling Salesman Problems by Using 2-opt and Or-opt Algorithms ................................................................. 587
Takafumi Matsuura and Tohru Ikeguchi

Comparison of Neural Networks Incorporating Partial Monotonicity by Structure ................................................................. 597
Alexey Minin and Bernhard Lang
XXVI Table of Contents – Part II

Special Session: Coupling, Synchronies and Firing Patterns: from Cognition to Disease

Effect of the Background Activity on the Reconstruction of Spike Train by Spike Pattern Detection ........................................ 607
Yoshiyuki Asai and Alessandro E.P. Villa

Assemblies as Phase-Locked Pattern Sets That Collectively Win the Competition for Coherence ................................. 617
Thomas Burwick

A CA$^{2+}$ Dynamics Model of the STDP Symmetry-to-Asymmetry Transition in the CA1 Pyramidal Cell of the Hippocampus .... 627
Vassilis Cutsuridis, Stuart Cobb, and Bruce P. Graham

Improving Associative Memory in a Network of Spiking Neurons .......................................................... 636
Russell Hunter, Stuart Cobb, and Bruce P. Graham

Effect of Feedback Strength in Coupled Spiking Neural Networks .......................................................... 646
Javier Iglesias, Jordi García-Ojalvo, and Alessandro E.P. Villa

Bifurcations in Discrete-Time Delayed Hopfield Neural Networks of Two Neurons .................................................. 655
Eva Kaslik and Stefan Balint

EEG Switching: Three Views from Dynamical Systems .......................................................... 665
Carlos Lourenço

Modeling Synchronization Loss in Large-Scale Brain Dynamics .......................................................... 675
Antonio J. Pons Rivero, Jose Luis Cantero, Mercedes Atienza, and Jordi García-Ojalvo

Spatio-temporal Dynamics during Perceptual Processing in an Oscillatory Neural Network ............................................. 685
A. Ravishankar Rao and Guillermo Cecchi

Resonant Spike Propagation in Coupled Neurons with Subthreshold Activity .................................................. 695
Belén Sancristóbal, José M. Sancho, and Jordi García-Ojalvo

Contour Integration and Synchronization in Neuronal Networks of the Visual Cortex .................................................. 703
Ekkehard Ullner, Raúl Vicente, Gordon Pipa, and Jordi García-Ojalvo

Special Session: Constructive Neural Networks

Fuzzy Growing Hierarchical Self-Organizing Networks .................................................. 713
Miguel Barreto-Sanz, Andrés Pérez-Uribe, Carlos-Andres Peña-Reyes, and Marco Tomassini
MBabCoNN – A Multiclass Version of a Constructive Neural Network Algorithm Based on Linear Separability and Convex Hull ................ 723
  João Roberto Bertini Jr. and Maria do Carmo Nicoletti

On the Generalization of the m-Class RDP Neural Network ............ 734
  David A. Elizondo, Juan M. Ortiz-de-Lazcano-Lobato, and Ralph Birkenhead

A Constructive Technique Based on Linear Programming for Training Switching Neural Networks .......................... 744
  Enrico Ferrari and Marco Muselli

Projection Pursuit Constructive Neural Networks Based on Quality of Projected Clusters ........................................ 754
  Marek Grochowski and Włodzisław Duch

Introduction to Constructive and Optimization Aspects of SONN-3 .... 763
  Adrian Horzyk

A Reward-Value Based Constructive Method for the Autonomous Creation of Machine Controllers ............................. 773
  Andreas Huemer, David Elizondo, and Mario Gongora

A Brief Review and Comparison of Feedforward Morphological Neural Networks with Applications to Classification................ 783
  Alexandre Monteiro da Silva and Peter Sussner

Prototype Proliferation in the Growing Neural Gas Algorithm ........ 793
  Héctor F. Satizábal, Andres Pérez-Uribe, and Marco Tomassini

Active Learning Using a Constructive Neural Network Algorithm .... 803
  José Luis Subirats, Leonardo Franco, Ignacio Molina Conde, and José M. Jerez

M-CLANN: Multi-class Concept Lattice-Based Artificial Neural Network for Supervised Classification ................................. 812
  Engelbert Mephu Nguifo, Norbert Tsopzé, and Gilbert Tindo

Workshop: New Trends in Self-organization and Optimization of Artificial Neural Networks

A Classification Method of Children with Developmental Dysphasia Based on Disorder Speech Analysis .............................. 822
  Marek Bárťů and Jana Tučková

Nature Inspired Methods in the Radial Basis Function Network Learning Process .................................................. 829
  Miroslav Burša and Lenka Lhotská
Tree-Based Indirect Encodings for Evolutionary Development of Neural Networks .............................................................. 839
  Jan Drchal and Miroslav Šnorek

Generating Complex Connectivity Structures for Large-Scale Neural Models ................................................................. 849
  Martin Hülse

The GAME Algorithm Applied to Complex Fractionated Atrial Electrograms Data Set .......................................................... 859
  Pavel Kordík, Václav Křemen, and Lenka Lhotská

Geometrical Perspective on Hairy Memory ............................................. 869
  Cheng-Yuan Liou

Neural Network Based BCI by Using Orthogonal Components of Multi-channel Brain Waves and Generalization ...................... 879
  Kenji Nakayama, Hiroki Horita, and Akihiro Hirano

Feature Ranking Derived from Data Mining Process .......................... 889
  Aleš Piňý, Pavel Kordík, and Miroslav Šnorek

A Neural Network Approach for Learning Object Ranking ................. 899
  Leonardo Rigutini, Tiziano Papini, Marco Maggini, and Monica Bianchini

Evolving Efficient Connection for the Design of Artificial Neural Networks ............................................................... 909
  Min Shi and Haifeng Wu

The Extreme Energy Ratio Criterion for EEG Feature Extraction ...... 919
  Shiliang Sun

Workshop: Adaptive Mechanisms of the Perception-Action Cycle

The Schizophrenic Brain: A Broken Hermeneutic Circle ..................... 929
  Péter Érdi, Vaibhav Diwadkar, and Balázs Ujjfalussy

Neural Model for the Visual Recognition of Goal-Directed Movements ............................................................... 939
  Falk Fleischer, Antonino Casile, and Martin A. Giese

Emergent Common Functional Principles in Control Theory and the Vertebrate Brain: A Case Study with Autonomous Vehicle Control ..... 949
  Amir Hussain, Kevin Gurney, Rudwan Abdullah, and Jon Chambers

Organising the Complexity of Behaviour ........................................ 959
  Stathis Kasderidis
Towards a Neural Model of Mental Simulation .......................... 969

Matthew Hartley and John Taylor

Author Index ............................................................. 981