Preface

We present in this volume the collection of finally accepted papers to the ninth edition of IWANN conference ("International Work-Conference on Artificial Neural Networks"). This biennial meeting focuses on the foundations, theory, models and applications of systems inspired by nature (neural networks, fuzzy logic and evolutionary systems).

Since the first edition of IWANN in Granada (LNCS 540, 1991), the Computational Intelligence community, and the domain itself, have matured and evolved. Under the Computational Intelligent banner we find a very heterogeneous scenario with a main interest and objective: to better understand nature and natural entities for the correct elaboration of theories, models and new algorithms. For scientists, engineers and professionals working in the area, this is a very good way to get real, solid and competitive applications.

More and more, these new computational techniques are used in applications that try to bring a new situation of well-being to the user. The conjunction of a more and more miniaturized hardware together with the growing computational intelligence embodied in this hardware lead us towards fully integrated embedded systems-on-a-chip and opens the door for truly ubiquitous electronics.

In this IWANN edition we have tried to bring near the computational intelligence to the ambient one, looking for environments that are sensitive, adaptive and responsive to the presence of people and objects, where technology is embedded, hidden in the background, environments that augment activities through smart nonexplicit assistance. Anyway, environments that preserve security, privacy and trustworthiness while utilizing information when needed and appropriate (Fred Boekhorst, Philips, ISSCC02).

The above concepts were the main reason for the subtitle of the IWANN 2007 edition: "Computational and Ambient Intelligence". The call for papers was lunched several months ago, addressing the following topics:


6. **Applications.** Adaptive interfaces. Ambient intelligent. Biomimetic applications. Data analysis and pre-processing. Data mining. Economy and
After a careful review process of the more than 260 submissions, 145 papers were accepted for publication, including the contribution of three invited speakers. In this edition a special emphasis was put on the organization of special sessions. A total of 7 special sessions containing 51 papers have been accepted for presentation, covering specific aspects like neural inspired architectures for nanoelectronics, kernel methods, nature-inspired intelligent methods and applications, assistive technologies and e-health, etc. The review and selection process was done with the help and cooperation of the Special Session organizers. We would like to thank them the effort and good work done.

The organization of this book does not follow the scheme and the order of the above main mentioned topics, but is organized in a rational way according to the contents of the accepted papers, going from the more abstract concepts to the concrete and applicable questions and considerations. The result is a 20 chapters’ volume with the following main parts:

1. Theoretical concepts and neurocomputational formulations.
2. Improving models and learning procedures.
5. Evolutionary and genetic algorithms.
7. Fuzzy systems.
8. Neuroengineering and Hardware Implementations.
9. Data analysis.
10. Signal processing.
11. Speech processing.
12. Images processing.
13. Time series and prediction.
14. Robotics and planning motor control.
15. Power system applications.
16. Internet and web applications.
17. Biomedical applications.
20. Other Applications.

IWANN 2007 edition have been organized by the Spanish Chapter of the IEEE Computational Intelligence Society, the Universidad de Granada, the Universidad de Málaga, and the Universidad Politécnica de Catalunya. The Universidad del País Vasco has been mainly engaged in the local organization. Sponsorship was obtained from the Spanish Ministerio de Educación y Ciencia, Universidad del País Vasco grants, the City Council of San Sebastián and Basc Government support.

We would like to express our gratitude to the members of the IWANN Organizing Committee, and to all the people who participated in the event (delegates, invited speakers, special session organizers). The editors would to address a special mention to the people who helped in the review process as special or additional reviewers.
Finally, we would like to thanks Springer-Verlag, and especially Alfred Hoffman and Anna Kramer, for their continuous support and cooperative work from the very beginning of the IWANN conferences.

June 2007

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Table of Contents

Theoretical concepts and neurocomputational formulations
Generating Random Deviates Consistent with the Long Term Behavior of Stochastic Search Processes in Global Optimization
Arturo Berrones ...................................................................................................... 1
Dynamics of Neural Networks - Some Qualitative Properties
Daniela Danciu, Vladimir Rasvan ................................................................. 9
A Comparative Study of PCA, ICA and Class-conditional ICA for Naive Bayes Classifier
Liwei Fan, Kim Leng Poh .................................................................................. 17
Effect of increasing inhibitory inputs on information processing within a small network of spiking neurons
Roberta Sirovich, Laura Sacerdote, Alessandro E. P. Villa .................................. 24
An efficient VAD based on a hang-over scheme and a likelihood ratio test
Oscar Pernía, J.Manuel Górriz, Javier Ramírez, Carlos G. Puntonet, I. Turias .... 32
Analysis of hebbian models with lateral weight connections
Pedro Zufiria, Andrés Berzal ............................................................................. 40
Power quality event identification using higher-order statistics and neural classifiers
Juan-José González-De-La-Rosa, Carlos G. Puntonet, Antonio Moreno Muñoz .. 48
Bio-inspired memory generation by recurrent neural networks
Manuel G. Bedía, Juan M. Corchado, Luis F. Castillo ....................................... 56
Non-parametric Residual Variance Estimation in Supervised Learning
Elia Liitiäinen, Amaury Lendasse, Francesco Corona ....................................... 64
A Study on the Use of Statistical Tests for Experimentation with Neural Networks
Julián Luengo, Salvador García, Francisco Herrera ........................................... 72
Improving models and learning procedures
Unified analysis and design of ART/SOM neural networks and fuzzy inference systems based on lattice theory

Vassilis G. Kaburlasos .............................................................................................. 80
A comparison between ANN generation and training methods and their development by means of graph evolution: Two sample problems
Daniel Rivero, Julián Dorado, Juan R. Rabuñal, Marcos Gestal ......................................... 94
Robust LTS Backpropagation Learning Algorithm
Andrzej Rusiecki ..................................................................................................... 102
Heuristic Search based Exploration in Reinforcement Learning
Ngo Anh Vien, Nguyen Hoang Viet, Seunggwun Iee, Taechoong Chung .......................... 110
Improving Adaptive boosting with an relaxed equation to update the sampling distribution
Joaquín Torres-Sospedra, Carlos Hernández-Espinosa
Mercedes Fernández-Redondo ................................................................................ 118
Automatic model selection for Probabilistic PCA
Ezequiel López-Rubio, Juan M. Ortiz-De-Lazcano-Lobato
Domingo López-Rodríguez, María C. Vargas-González ............................................. 126
Probabilistic aggregation of classifiers for incremental learning
Patricia Trejo, Ricardo Nanculef, Héctor Allende, Claudio Moraga .................................. 134
Behaviour-based Clustering of Neural Networks applied to Document Enhancement
Francisco Zamora-Martínez, Salvador España-Boquera, María J. Castro-Bleda ................. 142
Building Automated Negotiation Strategies enhanced
Ioanna Roussaki, Ioannis Papaioannou, Mitilades Anagnostou ......................................... 150
Improving the performance of the RBF neural networks trained with imbalanced samples
Roberto Alego, Vicente García, José M. Sotoca, Ramón A. Mollineda, José S. Sánchez ............ 160
Surface Modelling with Radial Basis Functions Neural Networks using Virtual Environments
Miguel A. López, Héctor Pomares, Miguel Damas, Antonio Díaz-Estrella
Alberto Prieto, Francisco Pelayo, Eva M. De La Plaza Hernández .................................. 168
A New Learning Strategy for Classification Problems with Different Training
and Test Distributions
Óscar Pérez, Manuel Sánchez-Montañés ......................................................................... 176
Gaussian fitting based FDA for chemometrics
Tuomas Kärnä, Amaury Lendasse ................................................................................ 184
Two pages Graph Layout via Recurrent Multivalued Neural Networks
Domingo López-Rodríguez, Enrique Mérida-Casemeiro,
Juan M. Ortiz-De-Lazcano-Lobato, Gloria Galán-Martín ........................................... 192
Self-organizing networks
Speeding Up the Dissimilarity Self-Organizing Maps by Branch and Bound
Brieuc Conan-Guez, Fabrice Rossi ........................................................................... 200
Self-organization of Probabilistic PCA models
Ezequiel López-Rubio, Juan M. Ortiz-De-Lazcano-Lobato,
Domingo López-Rodríguez, María C. Vargas-González ............................................. 208
A new adaptation of Self-Organizing Map for dissimilarity data
Tien Ho-Phuc, Anne Guérin-Dugué ........................................................................... 216
Fusion of Self Organizing Maps
Carolina Saavedra, Rodrigo Salas, Sebastián Moreno, Héctor Allende .................................. 225
VISOM Ensembles for Visualization and Classification
Bruno Baruque, Emilio Corchado, Hujun Yin .............................................................. 233
Adaptive Representation of Objects Topology Deformations with Growing Neural Gas
José García-Rodríguez, Francisco Flórez-Revuelta, Juan M. García-Chamizo .................. 241
Kernel methods
Kernel Machines for non-vectorial data
Francisco J. Ruiz, Cecilio Angulo, Nuria Alegel, Andreu Catalá ........................................ 249
An EA multi-model selection for SVM multiclass schemes
Giles Lebrun, Olivier Lezoray, Christophe Charrier, Hubert Cardot .................................. 257
Classifier Complexity Reduction by Support Vector Pruning in Kernel Matrix Learning
V. Vijaya Saradhi, Harish Karnick ............................................................................. 265
Multi-classification with Tri-class Support Vector Machines. A Review
Cecilio Angulo, Luis González, Andreu Catala, Francisco Velasco .................................. 273
Tuning L1-SVM Hyperparameters with Modified Radius Margin Bounds
and Simulated Annealing
Javier Acevedo, Saturnino Maldonado, Philip Siegmann,
Sergio Lafuente, Pedro Gil ................................................................................... 281
Evolutionary and genetic algorithms
Well-distributed Pareto Front by Using the eMOGA Evolutionary Algorithm
Juan M. Herrero, Miguel A. Martínez, Javier Sanchis, Xavier Blasco .............................. 289
The Parallel Single Front Genetic Algorithm (PSFGA) for Dynamic Multi-Objective Optimization

Mario Cámara, Julio Ortega, Francisco De Toro ........................................................... 297

Exploring Macroevolutionary Algorithms: Some Extensions and Improvements

José A. Becerra, Vicente Díaz, Richard J. Duro ............................................................ 305

Optimal Scheduling of Multiple Dam System Using Harmony Search Algorithm

Zong Woo Geem ........................................................................................................... 313

Evolutionary learning

CoEvRBFN: first approach to solve the classification problem with a hybrid cooperative-coevolutionary algorithm

M. Dolores Pérez, Antonio Jesús, M. José Del Jesus, Ignacio Rojas .................................. 321

Particle Swarm Optimisation in Generation of Multiple Classifier Systems

Martin Macas, Bogdan Gabrys, Dymitr Ruta, Lenka Lhotska ........................................... 329

Parallel Multi-objective Memetic RBFNNs Design and Feature Selection for Function

Alberto Guillen, Ignacio Rojas, Jesus Gonzalez, Hector Pomares, Luis Javier Herrera, Alberto Prieto ................................................................. 337

Hybrid Evolutionary Algorithm with Product-Unit Neural Networks for Classification

Francisco J. Martínez-Estudillo, César Hervás-Martínez, Alfonso C. Martínez-Estudillo, Pedro A. Gutiérrez-Peña ............................................................. 345

Topology optimization and training of Recurrent Neural Networks with Pareto-based Multi-objective algorithms: An experimental study

Manuel-Pegalajar Cuéllar, Miguel Delgado, María C. Pegalajar .......................................... 353

Fuzzy systems

Multiresolutive Adaptive PN Acquisition Scheme with a Fuzzy Logic Estimator in Non Selective Fast SNR Variation Environments

Rosa M. Alsina, Claudia Mateo, Joan C. Socoró ................................................................ 361

A study on the Use of the Fuzzy Reasoning Method based on the Winning Rule vs. Voting Procedure for Classification with Imbalanced Data Sets

Alberto Fernández, Salvador García, María J. Del Jesús, Francisco Herrera ........................ 369

Assessing Students’ Teamwork Performance by means of Fuzzy Logic

José A. Montero, Francesc Alias, Carles Garriga, Luís Vicent, Ignasi Iriondo ....................... 377

Networked Control Based on Fuzzy Logic. An Application to a High-Performance Milling Process

Rodolfo E. Haber, Michael Schmittdiel, Angel Alique, Andrés Bustillo, Ramón Galán ....... 385

Efficient Parametric Adjustment of Fuzzy Inference System Using Unconstrained Optimization

Ivan Silva, Rogerio Flauzino .......................................................................................... 393

Automatic Selection of Input Variables and Initialization Parameters in an Adaptive Neuro Fuzzy Inference System. Application for Modeling Visual Textures in Digital Images

Andrés Mejías Borrero, Omar Sánchez Pérez, Sixto Romero Sánchez ............................ 401

Neuroingeniering and hardware implementations

Neural inspired architectures for nanoelectronics

Ralf Eickhoff, Tim Kaulmann, Ulrich Rückert ................................................................. 409

Defects Tolerant Logic Gates for Unreliable Future Nanotechnologies

Lorena Anghel, Michael Nicolaidis .................................................................................. 417

A Programmable Time Event Coded Circuit Block for Reconfigurable Neuromorphic Computing

Thomas J. Koickal, Luiz C. Gouveia, Alister Hamilton ...................................................... 425

Integration of Wind Sensors and Analogue VLSI for an Insect-Inspired Robot

Yaxiong Zhang, Alister Hamilton, Rebecca Cheung, Barbara Webb, Petros Argyrakis, Theophile Gonas ................................................................. 433

IAF Neuron Implementation for Mixed-Signal PCNN Hardware

Tim Kaulmann, Sven Lütkemeier, Ulrich Rückert .......................................................... 443

Statistical Simulations for Exploring Defect Tolerance and Power Consumption for 4 Subthreshold 1-bit Addition Circuits

Snorre Aunet, Hans Kristian Ottes Berge ......................................................................... 451

Fuzzy ART Neural Networks on the GPU

Mario Martínez-Zarzuela, Francisco J. Díaz, José F. Diez, Miriam Antón .......................... 459

Interconnecting VLSI Spiking Neural Networks Using Isochronous Connections

Stefan Philipp, Andreas Grubl, Karlheinz Meier, and Johannes Schiemmel ....................... 467

A Software Framework for Tuning the Dynamics of Neuromorphic Silicon towards Biology

Daniel Brüderle, Andreas Grübl, Karlheinz Meier, Eilif Mueller, Johannes Schiemmel ....... 475

What von Neumann Did Not Say about Multiplexing

Valeriu Beiu, Walid Ibrahim, and Sanja Lazaroa-Molnar .................................................. 483

Towards a Platform for FPGA Implementation of the MLP based Back Propagation Algorithm
Nouma Izeboudjen, Ahcene Farah, Hamid Bessalah, Ahmed Bouridene, Nassim Chikhi

Visual Processing Platform based on Artificial Retinas
Sara Granados, Eduardo Ros, Rafael Rodríguez, Javier Díaz

Data analysis
Clustering signals using wavelets
Michel Misiti, Yves Misiti, Georges Oppenheim, Jean-Michel Poggi

Information-theoretic feature selection for the classification of hysteresis curves
Vanessa Gómez-Verdejo, Michel Verleysen, Jérôme Fleury

Consumer Profile Identification and Allocation
Patrick Letrémé, Marie Cottrell, Eric Esposito, Valérie Laffite, Sally Showk

Neural gas clustering for dissimilarity data with continuous prototypes
Alexander Hasenfuss, Barbara Hammer, Frank-Michael Schleif, Thomas Villmann

Mixing Kohonen Algorithm, Markov Switching Model and Detection of Multiple Change-Points: An Application to Monetary History
Marie-Thérèse Boyer-Xambeu, Ghislain Deleplace, Patrice Gaubert, Lucien Gillard, Madalina Olteanu

Some Applications of Interval Analysis to Statistical Problems
Vincent Vigneron

Visualizing High-Dimensional Input Data with Growing Self-Organizing Maps
Soledad Delgado, Consuelo Gonzalo, Estibaliz Martinez, Agueda Arquero

Auto adjustable ANN-based classification system for optimal high dimensional data analysis
Abraham Prieto, Francisco Bellas, Richard Duro, Fernando Lopez-Peña

Applying Fuzzy Data Mining for soaring area selection
Alberto Saiguer, Francisco Araque, Ramón Carrasco, M. Amparo Vila, Luis Martinez

Advantages of Using Feature Selection Techniques on Steganalysis Schemes
Yoan Miche, Patrick Bas, Amaury Lendasse, Christian Jutten, Olli Simula

Signal processing
Genetic Algorithm in the optimization of the acoustic attenuation systems
Vincent Romero-Garcia, Elies Fuster-Garcia, Juan V. Sánchez-Pérez, Luis M. García-Raffi, Xavier Blasco, Juan M. Herrero, Javier Sanchis

Sine Fitting Multiharmonic Algorithms implemented by Artificial Neural Networks
Jose Salinas, Francisco García-Lagos, Gonzalo Joya, Francisco Sandoval

Auto-associative neural networks for computer vision tasks
Maite García-Sebastián, Ana I. Gonzalez Acuña, Manuel Graña

Incidence Position Estimation in a PET Detector Using a Discretized Positioning Circuit and Neural Networks
Fernando Mateo, Ramón J. Aliaga, Jorge D. Martínez, Jose M. Monzó, Rafael Gadea

Automatic Detection of Filters in Images with Gaussian Noise Using Independent Component Analysis
Salua Nassabay, Ingo R. Keck, Carlos G. Puntonet, Rubén M. Clemente, Elmar W. Lang

Efficient Facial Expression Recognition for Human Robot Interaction
Face Recognition with Facial Mask Application and Neural Networks
Marco Grassi, Marcos Faundez-Zanuy .......................................................... 701

Multitask implementation for image reconstruction of an AER communication
Carlos D. Luján, Alejandro Linares-Barranco, Ángel Jiménez-Fernandez,
Gabriel Jiménez, Anton Civit ................................................................. 709

Road Sign Recognition Using Spatial Dimension Reduction Methods
Based on PCA and SVMs
Sergio LaFuente-Arroyo, Adrián Sánchez-Fernández,
Saturnino Maldonado-Bascón, Pedro Gil-Jiménez
Francisco-Javier Acevedo-Rodriguez ..................................................... 717

Specialized Ensemble of Classifiers for Traffic Sign Recognition
M. Paz Sesmero, Juan M. Alonso-Weber, Germán Gutiérrez,
Agapito Ledezma, Araceli Sanchis ....................................................... 725

Traffic Sign Classification by Image Preprocessing and Neural Networks
Raúl Vicen-Bueno, Antonio García-González, Elena Torrijano-Gordo,
Roberto Gil-Pita, Manuel Rosa-Zurera .................................................. 733

Time series and prediction.
A Novel 2-D Model Approach for the Prediction of Hourly Solar Radiation
Fatih O. Hocaoglu, Ömer N. Gerek, Mehmet Kurban .................................. 741
Classifying qualitative time series with SOM: the typology of career paths in France
Patrick Rousset, Jean-Francois Giret ...................................................... 749
Continuous Ant Colony Optimization in a SVR Urban Traffic Forecasting Model
Wei-Chiang Hong, Ping-Feng Pai, Shun-Lin Yang, Chien-Yuan Lai .................. 757
Predicting Financial Distress: A Case Study Using Self-Organizing Maps
Antonio M. Mora García, Juan L. Jiménez Laredo,
Pedro A. Castillo Valdivieso, Juan J. Merelo Guervós .................................. 765
Kernel Methods Applied to Time Series Forecasting
Ginés Rubio, Héctor Pomares, Luis J. Herrera, Ignacio Rojas ....................... 773

Robotics and planning motor control
Embodying cognitive abilities: categorization
Ricardo A. Téllez, Cecilio Angulo ............................................................ 781
Behavioral flexibility: an emotion-based approach
Carlos Herrera, Alberto Montebelli, Tom Ziemke ...................................... 789
Emerging Behaviors by Learning Joint Coordination in Articulated Mobile Robots
Diego E. Pardo, Cecilio A. Bahón .......................................................... 797
Collaborative Emergent Navigation based on Biometric Weighted Shared Control
Blanca Fernández-Espejo, Alberto Poncela,
Cristina Urdiales, Francisco Sandoval ................................................... 805
Bio-inspired control model for object manipulation by humanoid robots
Silvia Tolu, Eduardo Rós, Rodrigo Agís .................................................. 813
Neuronal Architecture for reactive and adaptive navigation of a mobile robot
Francisco García-Córdova, Antonio Guerrero-Gonzalez,
Fulgencio Marín-García ............................................................................ 821
Learning Autonomous Behaviours for Non-Holonomic Vehicles
Tomás Martínez-Martín ............................................................................ 829
Morphological Independence for Landmark Detection in Vision Based SLAM
Ivan Villaverde, Manuel Graña, Alicia D'anjou ......................................... 837

Power system applications
Self Organizing Map (SOM) Approach for Classification of
Mechanical Faults in Induction Motors
Emin Germen, D. Gökhan Ece, Ö. Nezih Gerek ....................................... 845
Method for Power System Topology Verification with use of
Radial Basis Function Networks
Robert Lukomski, Kazimierz Wilkosz .................................................... 852
Intelligent Detection of Voltage Instability in Power Distribution Systems
Adnan Khashman, Kadir Buruncuk, Samir Jabr ........................................ 860
RBF Based Induction Motor Control with A Good Nonlinearity Compensation
Hasan Riza Ozcakil, Ceyhun Yildiz, Mustafa Danaci, Zafer Koca ..................... 868

Internet and Web Applications
Neural Networks for QoS Network Management
Rafael Del Hoyo-Alonso, Pilar Fernández-De-Alarcón,
Juan-José Navamuel-Castillo, Nicolás J. Medrano-Marqués,
Bonifacio Martín-Del-Brio, Julián Fernández-Navajas, David Abadía-Galleyo .... 877
Improvement of Anomaly Intrusion Detection Performance by Indirect Relation
for FTP Service
Byungrae Cha, Jonggeun Jeong ............................................................ 885
Combining SVM classifiers for email anti-spam filtering
Biomedical applications

Soft Computing Applications to Prognostics and Health Management (PHM):
Leveraging Field Data and Domain Knowledge
Piero P. Bonissone, Naresh Iyer ................................................................. 918

Clustering and visualizing HIV quasispecies using Kohonen's Self-Organizing Maps
A.M. Mora, J.J. Merelo, C. Briones, F. Morán, J.L.J. Laredo.................................. 930

Estimation of the rate of detection of infected individuals in an epidemiological model
Miguel Atencia, Gonzalo Joya, Esther García, Héctor De Arazoza, Francisco Sandoval................................................................. 938

Use of ANNs as Classifiers for Selective Attention Brain-Computer Interfaces
Miguel A. López, Héctor Pomares, Miguel Damas, Eduardo Madrid, Alberto Prieto, Francisco Pelayo, Eva M. de la Plaza-Hernández ................................. 946

Neural networks and other machine learning methods in cancer research

Neural networks and other machine learning methods in cancer research
Alfredo Vellido Y Paulo J.G. Lisboa ................................................................. 954

Mixture modeling of DNA copy number amplification patterns in cancer
Jarkko Tikka, Jaakko Hollmén, Samuel Myllykangas........................................ 962

Towards the Integration of a Bioprofile in Ocular Melanoma
Azzam Taktak, Antonio Eleuteri, Christian Setzkorn, Angela Douglas, Sarah Coupland, Bertil Damato, Paul Hiscott ................................................................. 970

Independent Component Analysis Applied to Detection of Early Breast Cancer Signs
Ramón Gallardo-Caballero, Carlos J. García-Orellana, Horacio M. González-Velasco, Miguel Maclas-Macias ................................................................. 978

A Prototype Integrated Decision Support System for Breast Cancer Oncology

Early breast cancer prognosis prediction and rule extraction using a new constructive neural network algorithm
Leonardo Franco, Jose L. Subirats, Ignacio Molina, Emilio Alba, Jose M. Jerez ......................... 994

Genomics and metabolomics research of Brain Tumours based on Machine Learning
Juan M. García-Gomez, Salvador Tortajada, Javier Vicente, Carlos Sáez, Xavier Castells, Jan Luts, Margarida Julia-Sapé, Alfons Juan-Ciscar, Sabine Van Huffel, Anna Barceló, Joaquin Arifo, Carles Arús, Montserrat Robles ................................................................. 1002

Neural Network Based Virtual Reality Spaces for Visual Data Mining of Cancer Data:
An Unsupervised Perspective
Enrique Romero, Julio J. Valdés, Alan Barton ......................................................... 1010

Hybrid Unsupervised/Supervised Virtual Reality Spaces for Visualizing Cancer Databases: An Evolutionary Computation Approach
Julio Valdés, Alan J. Barton ................................................................. 1018

Supervised Neural Gas for Classification of Functional Data and its Application to the Analysis of Clinical Proteomic Spectra
Frank-Michael Schleif, Thomas Villmann, Barbara Hammer ........................................ 1026

Assistive Technologies and e-Health

Intelligent Healthcare Managing: An Assistive Technology approach
Ulises Cortés, Cristina Urdiales, Roberta Annicchiarico ........................................ 1034

Design Improvements for Proportional Control of Autonomous Wheelchairs
Via 3DOF Orientation Tracker
Christian Mandel, Udo Frese, Thomas Röfer ......................................................... 1041

The Impact of Cognitive Navigation Assistance on People with Special Needs
Roberta Annicchiarico, Ulises Cortés, Alessia Federici, Pablo Campana, Cristian Barruè, Antonio B. Martínez, Carlo Caltagirone ......................................................... 1049

Shared Autonomy in Assistive Technologies
Cristian Barruè, Ulises Cortés, Roberta Annicchiarico ........................................ 1057

Augmented Reality visualization interface for Biometric Wireless Sensor Networks
Débora Claros, Mario De Haro, Miguel Dominguez, Carmen De Trazegnies, Cristina Urdiales, Francisco Sandoval ......................................................... 1064

Using the CARREL+ to Increase Availability of Human Organs for Transplantation
Pancho Tolchinsky, Ulises Cortés, Sanjay Modgil, Francisco Caballero, Antonio López-Navidad ................................................................. 1072

Nature-Inspired Planner Agent for Health Care
Javier Bajo, Dante I. Tapia, Sara Rodríguez, Ana De Luis, Juan M. Corchado ................................................................. 1080

Other applications

Neural Classifier Exploiting Invariant Data Representation and Dimensionality
Reduction Ability: Application to Optical Devices Diagnosis.  
Matthieu Voiry, Kurosh Madani, Véronique Amarger, Joël Bernier ................................. 1088

A Connectionist Model of Human Reading  
J. Ignacio Serrano, Ángel Iglesias, M. Dolores Del Castillo  ........................................ 1096

Discovering Stock Market Trading Rules using Multi-Layer Perceptrons  
Piotr Lipinski .................................................................................................................... 1104

Evaluation of supervised versus non supervised databases for hand geometry verification  
Marcos Faundez-Zanuy, Joan Fabregas, Miguel A. Ferrer,  
Carlos M. Travieso, Jesús B. Alonso .................................................................................. 1112

Perceptive Particle Swarm Optimization: A New Learning Method from Birds Seeking  
Xingjuan Cai, Zhihua Cui, Jianchao Zeng, Ying Tan ........................................................... 1120

A Comparison of Neural Projection Techniques Applied to Intrusion Detection Systems  
Álvaro Herrero, Emilio Corchado, Paolo Gastaldo, Rodolfo Zunino ..................................... 1128

Consequences of Data Uncertainty and Data Precision in Artificial Neural Network  
Sugar Cane Yield Prediction  
Hector F. Satizabal, Daniel R. Jiménez, Andres Pérez-Uribe .......................................... 1136

Using Simulated Annealing for Optimal Tuning of a PID controller for  
Time-Delay Systems. An Application to a High-Performance Drilling Process  
Rodolfo E. Haber, Rodolfo Haber-Haber, Raúl M. Del Toro, José R. Alique ..................... 1144