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We present in this volume the collection of the IWANN conference ("The Networks"). This biennial meeting applications of systems inspired by stationary systems).

Since the first edition of IWANN, the intelligence community and the development of computational intelligent banner with interest and objective: to better understand the elaboration of theories, models and professional applications working in the area, and competitive applications.

More and more, these new concepts try to bring a new situation of well more miniaturized hardware together embodied in this hardware leads us to chip and opens the door for truly ubiquitous.

In this IWANN edition we have the ambient one, looking for environments to the presence of people and objects background; environments that allow us to obtain information when needed and when necessary.

The above concepts were the main theme of the 2007 edition: "Computational Intelligence and Ambient Intelligence" addressed the following topics:

1. **Mathematical and theoretical models.** Complex and social systems, logic. Mathematics for networks and methods. Supervisory control.
2. **Neurocomputational for modelling.** System-level models, logical learning.
3. **Learning and adaptation of figurative systems.** Supervisory algorithms.
4. **Emulation of cognitive functions.** Sensor mesh. Natural language function (visual, auditory, motor control).
5. **Bio-inspired systems and applications.** Evolvable computing systems.

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Table of Contents

Theoretical Concepts and Neuro Computational Formulations

Generating Random Deviates Consistent with the Long Term Behavior of Stochastic Search Processes in Global Optimization 1
Arturo Berrones

Dynamics of Neural Networks - Some Qualitative Properties 8
Daniela Dancu and Vladimir Rásvan

A Comparative Study of PCA, ICA and Class-Conditional ICA for Naïve Bayes Classifier 16
Liwei Fan and Kim Leng Poh

Effect of Increasing Inhibitory Inputs on Information Processing Within a Small Network of Spiking Neurons 23
Roberta Sirovich, Laura Sacerdote, and Alessandro E.P. Villa

An Efficient VAD Based on a Hang-Over Scheme and a Likelihood Ratio Test 31
O. Pernía, J.M. Górriz, J. Ramirez, C.G. Puntonet, and I. Turias

Analysis of Hebbian Models with Lateral Weight Connections 39
Pedro J. Zufiria and J. Andrés Berzal

Power Quality Event Identification Using Higher-Order Statistics and Neural Classifiers 47
Juan-José González de-la-Rosa, Carlos G. Puntonet, and Antonio Moreno Muñoz

Bio-inspired Memory Generation by Recurrent Neural Networks 55
Manuel G. Bedía, Juan M. Corchado, and Luis F. Castillo

Non-parametric Residual Variance Estimation in Supervised Learning 63
Eliia Liitinen, Amaury Lendasse, and Francesco Corona

A Study on the Use of Statistical Tests for Experimentation with Neural Networks 72
Julían Luengo, Salvador García, and Francisco Herrera

Improving Models and Learning Procedures

- Unified Analysis and Design of ART/SOM Neural Networks and Fuzzy Inference Systems Based on Lattice Theory 80
Vassilias G. Kaburlasos
- A Comparison Between ANN Generation and Training Methods and Their Development by Means of Graph Evolution: 2 Sample Problems 94
Daniel Rivero, Julián Dorado, Juan R. Rabuñal, and Marcos Gestal
- Robust LTS Backpropagation Learning Algorithm 102
Andrzej Rusiecki
- Heuristic Search Based Exploration in Reinforcement Learning 110
Ngo Anh Vien, Nguyen Hoang Viet, SeungGwan Lee, and TaeChoong Chung
- Improving Adaptive Boosting with a Relaxed Equation to Update the Sampling Distribution 119
Joaquín Torres-Sospedra, Carlos Hernández-Espinosa, and Mercedes Fernández-Redondo
- Automatic Model Selection for Probabilistic PCA 127
Ezequiel López-Rubio, Juan Miguel Ortiz-de-Lazcano-Lobato, Domingo López-Rodríguez, and María del Carmen Vargas-González
- Probabilistic Aggregation of Classifiers for Incremental Learning 135
Patricia Trejo, Ricardo Nanculef, Héctor Allende, and Claudio Moraga
- Behaviour-Based Clustering of Neural Networks Applied to Document Enhancement 144
F. Zamora-Martínez, S. España-Boquera, and M.J. Castro-Bleda
- Building Automated Negotiation Strategies Enhanced by MLP and GR Neural Networks for Opponent Agent Behaviour Prognosis 152
Ioanna Roussaki, Ioannis Papaioannou, and Miltiades Anagnostou
- Improving the Performance of the RBF Neural Networks Trained with Imbalanced Samples 162
R. Alejo, V. García, J.M. Sotoca, R.A. Mollineda, and J.S. Sánchez
- Surface Modelling with Radial Basis Functions Neural Networks Using Virtual Environments 170
Miguel Angel López, Héctor Pomares, Miguel Damas, Antonio Díaz-Estrella, Alberto Prieto, Francisco Pelayo, and Eva María de la Plaza Hernández

- A New Learning Strategy for Classification Problems with Different Training and Test Distributions 178
Óscar Pérez and Manuel Sánchez-Montañés
- Gaussian Fitting Based FDA for Chemometrics 186
Tuomas Kärnä and Amaury Lendasse
- Two Pages Graph Layout Via Recurrent Multivalued Neural Networks 194
Domingo López-Rodríguez, Enrique Mérida-Casermeyro, Juan M. Ortiz-de-Lazcano-Lobato, and Gloria Galán-Marín
- Self-organizing Networks**
- Speeding Up the Dissimilarity Self-Organizing Maps by Branch and Bound 203
Brieuc Conan-Guez and Fabrice Rossi
- Self-organization of Probabilistic PCA Models 211
Ezequiel López-Rubio, Juan Miguel Ortiz-de-Lazcano-Lobato, Domingo López-Rodríguez, and María del Carmen Vargas-González
- A New Adaptation of Self-Organizing Map for Dissimilarity Data 219
Tien Ho-Phuoc and Anne Guérin-Dugué
- Fusion of Self Organizing Maps 227
Carolina Saavedra, Rodrigo Salas, Sebastián Moreno, and Héctor Allende
- ViSOM Ensembles for Visualization and Classification 235
Bruno Baruaque, Emilio Corchado, and Hujun Yin
- Adaptive Representation of Objects Topology Deformations with Growing Neural Gas 244
José García-Rodríguez, Francisco Flórez-Revueña, and Juan Manuel García-Chamizo
- Kernel Methods**
- Kernel Machines for Non-vectorial Data 252
F.J. Ruiz, C. Angulo, N. Agell, and A. Català
- An EA Multi-model Selection for SVM Multiclass Schemes 260
G. Lebrun, O. Lezoray, C. Charrier, and H. Cardot
- Classifier Complexity Reduction by Support Vector Pruning in Kernel Matrix Learning 268
V. Vijaya Saradhi and Harish Karnick

Multi-classification with Tri-class Support Vector Machines. A Review	276
<i>C. Angulo, L. González, A. Català, and F. Velasco</i>	
Tuning L1-SVM Hyperparameters with Modified Radius Margin Bounds and Simulated Annealing	284
<i>Javier Acevedo, Saturnino Maldonado, Philip Siegmann, Sergio Lafuente, and Pedro Gil</i>	
Evolutionary and Genetic Algorithms	
Well-Distributed Pareto Front by Using the ϵ^2 -MOGA Evolutionary Algorithm	292
<i>J.M. Herrero, M. Martínez, J. Sanchez, and X. Blasco</i>	
The Parallel Single Front Genetic Algorithm (PSFGA) in Dynamic Multi-objective Optimization	300
<i>Mario Cámara, Julio Ortega, and Francisco de Toro</i>	
Exploring Macroevolutionary Algorithms: Some Extensions and Improvements	308
<i>J.A. Becerra, V. Diaz Casás, and R.J. Durro</i>	
Optimal Scheduling of Multiple Dam System Using Harmony Search Algorithm	316
<i>Zong Woo Geem</i>	
Evolutionary Learning	
CoEvRBFN: An Approach to Solving the Classification Problem with a Hybrid Cooperative-Coevolutionary Algorithm	324
<i>M. Dolores Pérez-Godoy, Antonio J. Rivera, M. José del Jesus, and Ignacio Rojas</i>	
Particle Swarm Optimisation of Multiple Classifier Systems	333
<i>Martin Macas, Bogdan Gabrys, Dymitr Ruta, and Lenka Lhotská</i>	
Parallel Multi-objective Memetic RBFNNs Design and Feature Selection for Function Approximation Problems	341
<i>Alberto Guillén, Héctor Pomares, Jesús González, Ignacio Rojas, L.J. Herrera, and A. Prieto</i>	
Hybrid Evolutionary Algorithm with Product-Unit Neural Networks for Classification	351
<i>Francisco J. Martínez Estudillo, César Hervás-Martínez, Alfonso C. Martínez-Estudillo, and Pedro A. Gutiérrez-Peña</i>	

Topology Optimization and Training of Recurrent Neural Networks with Pareto-Based Multi-objective Algorithms: A Experimental Study	359
<i>M.P. Cuéllar, M. Delgado, and M.C. Pegalajar</i>	
Fuzzy Systems	
Multiresolutive Adaptive PN Acquisition Scheme with a Fuzzy Logic Estimator in Non Selective Fast SNR Variation Environments	367
<i>Rosa María Alsina Pagès, Clàudia Mateo Segura, and Joan Claudi Socoró Carrié</i>	
A Study on the Use of the Fuzzy Reasoning Method Based on the Winning Rule vs. Voting Procedure for Classification with Imbalanced Data Sets	375
<i>Alberto Fernández, Salvador García, María José del Jesús, and Francisco Herrera</i>	
Assessing Students' Teamwork Performance by Means of Fuzzy Logic	383
<i>José A. Monitero, Francesc Alías, Carles Garriga, Lluís Vicent, and Ignasi Iriundo</i>	
Networked Control Based on Fuzzy Logic. An Application to a High-Performance Milling Process	391
<i>Rodolfo E. Haber, Michael Schmittziel, Angel Alique, Andrés Bustillo, and Ramón Galán</i>	
Efficient Parametric Adjustment of Fuzzy Inference System Using Unconstrained Optimization	399
<i>Ivan Nunes da Silva and Rogério Andrade Flauzino</i>	
Automatic Selection of Input Variables and Initialization Parameters in an Adaptive Neuro Fuzzy Inference System. Application for Modeling Visual Textures in Digital Images	407
<i>A. Mejías, O. Sánchez, and S. Romero</i>	
Neuroengineering and Hardware Implementations	
Neural Inspired Architectures for Nanoelectronics	414
<i>Ralf Eickhoff, Tim Kautmann, and Ulrich Rückert</i>	
Defects Tolerant Logic Gates for Unreliable Future Nanotechnologies	422
<i>L. Anghel and M. Nicolaidis</i>	
A Programmable Time Event Coded Circuit Block for Reconfigurable Neuromorphic Computing	430
<i>Thomas Jacob Koickal, Luiz C.P. Goweta, and Abister Hamilton</i>	

Consumer Profile Identification and Allocation.....	530
<i>Patrick Letrémy, Marie Cottrell, Eric Esposito, Valérie Laffitte, and Sally Showk</i>	
Neural Gas Clustering for Dissimilarity Data with Continuous Prototypes.....	539
<i>Alexander Hasenfuss, Barbara Hammer, Frank-Michael Schlieff, and Thomas Villmann</i>	
Mixing Kohonen Algorithm, Markov Switching Model and Detection of Multiple Change-Points: An Application to Monetary History.....	547
<i>Marie-Thérèse Boyer-Xambeu, Ghislain Deleplace, Patrice Gaubert, Lucien Gillard, and Madalina Olteanu</i>	
Fuzzy Labeled Self-Organizing Map for Classification of Spectra.....	556
<i>T. Villmann, F.-M. Schlieff, E. Merenyi, and B. Hammer</i>	
Some Applications of Interval Analysis to Statistical Problems.....	564
<i>Vincent Vigneron</i>	
Visualizing High-Dimensional Input Data with Growing Self-Organizing Maps.....	580
<i>Soledad Delgado, Consuelo Gonzalo, Estibaliz Martínez, and Ageda Arquero</i>	
Auto Adjustable ANN-Based Classification System for Optimal High Dimensional Data Analysis.....	588
<i>A. Prieto, F. Bellas, R.J. Duro, and F. Lopez-Peña</i>	
Applying Fuzzy Data Mining for Soaring Area Selection.....	597
<i>A. Salguero, F. Araque, R.A. Carrasco, M.A. Vila, and L. Martínez</i>	
Advantages of Using Feature Selection Techniques on Steganalysis Schemes.....	606
<i>Yoan Miche, Patrick Bas, Amaury Lendasse, Christian Jutten, and Olli Simula</i>	
Signal Processing	
Genetic Algorithm in the Optimization of the Acoustic Attenuation Systems.....	614
<i>V. Romero-García, E. Fuster-García, J.V. Sánchez-Pérez, L.M. García-Raffi, X. Blasco, J.M. Herrero, and J. Sanchis</i>	
Sine Fitting Multiharmonic Algorithms Implemented by Artificial Neural Networks.....	622
<i>J.R. Salinas, F. Garcia-Lagos, G. Joya, and F. Sandoval</i>	
Integration of Wind Sensors and Analogue VLSI for an Insect-Inspired Robot.....	438
<i>Y. Zhang, A. Hamilton, R. Chewng, B. Webb, P. Argyraakis, and T. Gonos</i>	
IAF Neuron Implementation for Mixed-Signal PCNN Hardware.....	447
<i>Tim Kaulmann, Sven Lückemeier, and Ulrich Rückert</i>	
Statistical Simulations for Exploring Defect Tolerance and Power Consumption for 4 Subthreshold 1-Bit Addition Circuits.....	455
<i>Snorre Aunet and Hans Kristian Otmes Berge</i>	
Fuzzy ART Neural Network Parallel Computing on the GPU.....	463
<i>Mario Martínez-Zarzuela, Francisco Javier Díaz Pernas, José Fernando Díez Higuera, and Míriam Antón Rodríguez</i>	
Interconnecting VLSI Spiking Neural Networks Using Isochronous Connections.....	471
<i>Stefan Philipp, Andreas Grübl, Karlheinz Meier, and Johannes Schemmel</i>	
A Software Framework for Tuning the Dynamics of Neuromorphic Silicon Towards Biology.....	479
<i>Daniel Brüderle, Andreas Grübl, Karlheinz Meier, Etilif Mueller, and Johannes Schemmel</i>	
What von Neumann Did Not Say About Multiplexing Beyond Gate Failures—The Gory Details.....	487
<i>Valeriu Beiu, Walid Ibrahim, and Sanja Lazarova-Molnar</i>	
Towards a Platform for FPGA Implementation of the MLP Based Back Propagation Algorithm.....	497
<i>Nourma Izebovdjen, Ahcene Farah, Hamid Bessalah, Ahmed Bouridene, and Nassim Chikhi</i>	
Visual Processing Platform Based on Artificial Retinas.....	506
<i>Sara Gramados, Eduardo Ros, Rafael Rodríguez, and Javier Díaz</i>	
Data Analysis	
Clustering Signals Using Wavelets.....	514
<i>Michel Misiti, Yves Misiti, Georges Oppenheim, and Jean-Michel Poggi</i>	
Information-Theoretic Feature Selection for the Classification of Hysteresis Curves.....	522
<i>Vanessa Gómez-Verdejo, Michel Verleysen, and Jérôme Fleury</i>	

Low Complexity MLP-Based Radar Detector: Influence of the Training Algorithm and the MLP Size	630
<i>R. Vicen-Bueno, M.P. Jarabo-Amores, D. Mata-Moya, M. Rosa-Zurera, and R. Gil-Pita</i>	
Neural Networks for Defect Detection in Non-destructive Evaluation by Sonic Signals	638
<i>Addisson Salazar, Juan M. Unio, Arturo Serrano, and Jorge Gosalbez</i>	
Speech Processing	
Validation of an Expressive Speech Corpus by Mapping Automatic Classification to Subjective Evaluation	646
<i>Ignasi Irioido, Santiago Planet, Francesc Alias, Joan-Claudi Sororó, and Elisa Martínez</i>	
Extracting User Preferences by GTM for aiGA Weight Tuning in Unit Selection Text-to-Speech Synthesis	654
<i>Lluís Formiga and Francesc Alias</i>	
Image Processing	
Modeling Visual Perception for Image Processing	662
<i>Jeanny Héralt and Barthélémy Durette</i>	
Derivation of SOM-Like Rules for Intensity Inhomogeneity Correction in MRI	676
<i>Maite García-Sebastián, Ana I. Gonzalez, and Manuel Graña</i>	
Incidence Position Estimation in a PET Detector Using a Discretized Positioning Circuit and Neural Networks	684
<i>Fernando Mateo, Ramón José Aliaga, Jorge Daniel Martínez, José María Monzó, and Rafael Gadea</i>	
Automatic Detection of Filters in Images with Gaussian Noise Using Independent Component Analysis	692
<i>Salva Nassabay, Ingo R. Keck, Carlos G. Puntonet, Rubén M. Clemente, and Elmar W. Lang</i>	
Efficient Facial Expression Recognition for Human Robot Interaction	700
<i>Fadi Dornika and Bogdan Raducanu</i>	
Face Recognition with Facial Mask Application and Neural Networks	709
<i>Marco Grossi and Marcos Faundez-Zanuy</i>	
Multi-task Implementation for Image Reconstruction of an AER Communication	717
<i>C. Luján-Martínez, A. Linares-Barranco, A. Jiménez-Fernandez, G. Jiménez, and A. Coviá-Balcells</i>	
Road Sign Recognition Using Spatial Dimension Reduction Methods Based on PCA and SVMs	725
<i>S. Lafuente-Arroyo, A. Sánchez-Fernández, S. Maldonado-Bascón, P. Gil-Jiménez, and F.J. Acevedo-Rodríguez</i>	
Specialized Ensemble of Classifiers for Traffic Sign Recognition	733
<i>M.P. Sesmero, J.M. Alonso-Weber, G. Gutiérrez, A. Ledezma, and A. Sanchis</i>	
Traffic Sign Classification by Image Preprocessing and Neural Networks	741
<i>R. Vicen-Bueno, A. García-González, E. Torrijano-Gordo, R. Gil-Pita, and M. Rosa-Zurera</i>	
Time Series and Prediction	
A Novel 2-D Model Approach for the Prediction of Hourly Solar Radiation	749
<i>F. Onur Hocaoglu, Ö. Nezih Gerek, and Mehmet Kurban</i>	
Classifying Qualitative Time Series with SOM: The Typology of Career Paths in France	757
<i>Patrick Rousset and Jean-Francois Giret</i>	
Continuous Ant Colony Optimization in a SVR Urban Traffic Forecasting Model	765
<i>Wei-Chiang Hong, Ping-Feng Pai, Shun-Lin Yang, and Chien-Yuan Lai</i>	
Predicting Financial Distress: A Case Study Using Self-organizing Maps	774
<i>A.M. Mora, J.L.J. Laredo, P.A. Castillo, and J.J. Merelo</i>	
Kernel Methods Applied to Time Series Forecasting	782
<i>Ginés Rubio, Héctor Pomares, Luis J. Herrera, and Ignacio Rojas</i>	
Robotics and Planning Motor Control	
Embodying Cognitive Abilities: Categorization	790
<i>Ricardo A. Téllez and Cecilio Angulo</i>	
Behavioral Flexibility: An Emotion Based Approach	798
<i>Carlos Herrera, Alberto Montebelli, and Tom Ziemke</i>	
Emerging Behaviors by Learning Joint Coordination in Articulated Mobile Robots	806
<i>Diego E. Pardo Ayala and Cecilio Angulo Bahón</i>	

Collaborative Emergent Navigation Based on Biometric Weighted Shared Control	814
<i>B. Fernández-Espejo, A. Poncela, C. Urdiales, and F. Sandoval</i>	
Bio-inspired Control Model for Object Manipulation by Humanoid Robots	822
<i>Silvia Toth, Eduardo Ros, and Rodrigo Agís</i>	
Neuronal Architecture for Reactive and Adaptive Navigation of a Mobile Robot	830
<i>Francisco García-Córdova, Antonio Guerrero-González, and Fulgencio Marín-García</i>	
Learning Autonomous Behaviours for Non-holonomic Vehicles	839
<i>Tomás Martínez-Marín</i>	
Morphological Independence for Landmark Detection in Vision Based SLAM	847
<i>Ivan Villaverde, Manuel Graña, and Alicia d'Anjou</i>	

Power System Applications

Self Organizing Map (SOM) Approach for Classification of Mechanical Faults in Induction Motors	855
<i>Emin Germen, D. Gökhan Ece, and Ömer Nezih Gerek</i>	
Method for Power System Topology Verification with Use of Radial Basis Function Networks	862
<i>Robert Lukomski and Kazimierz Wilkosz</i>	
Intelligent Detection of Voltage Instability in Power Distribution Systems	870
<i>Adnan Khashman, Kadri Burumcuk, and Samir Jabr</i>	
RBF Based Induction Motor Control with a Good Nonlinearity Compensation	878
<i>Hasan Raza Özçalak, Ceyhan Yıldız, Mustafa Danacı, and Zafer Koca</i>	

Internet and Web Applications

Neural Networks for QoS Network Management	887
<i>Rafael del-Hoyo-Alonso, Pilar Fernández-de-Atarón, Juan-José Navamuel-Castillo, Nicolás J. Medrano-Marqués, Bonifacio Martín-del-Brio, Julián Fernández-Navajas, and David Abadía-Gallego</i>	
Improvement of Anomaly Intrusion Detection Performance by Indirect Relation for FTP Service	895
<i>ByungRae Cha and JongGeun Jeong</i>	

Combining SVM Classifiers for Email Anti-spam Filtering	903
<i>Ángela Blanco, Alba María Ricket, and Manuel Martín-Merino</i>	
Analyzing a Web-Based Social Network Using Kohonen's SOM	911
<i>Beatriz Prieto, Juan J. Merelo, Alberto Prieto, and Fernando Tricas</i>	
Multiple Instance Learning with Genetic Programming for Web Mining	919
<i>A. Zafra, S. Ventura, E. Herrera-Viedma, and C. Romero</i>	

Biomedical Applications

Soft Computing Applications to Prognostics and Health Management (PHM): Leveraging Field Data and Domain Knowledge	928
<i>Piero P. Bonissone and Naresh Iyer</i>	
Clustering and Visualizing HIV Quasispecies Using Kohonen's Self-Organizing Maps	940
<i>A.M. Mora, J.J. Merelo, C. Briones, F. Morán, and J.L.J. Laredo</i>	
Estimation of the Rate of Detection of Infected Individuals in an Epidemiological Model	948
<i>Miguel Atencia, Gonzalo Joya, Esther García-Garaluz, Hector de Arazosa, and Francisco Sandoval</i>	
Use of ANNs as Classifiers for Selective Attention Brain-Computer Interfaces	956
<i>Miguel Ángel López, Héctor Pomares, Miguel Damas, Eduardo Madrid, Alberto Prieto, Francisco Pelayo, and Eva María de la Plaza Hernández</i>	

Neural Networks and Other Machine Learning Methods in Cancer Research

Neural Networks and Other Machine Learning Methods in Cancer Research	964
<i>Alfredo Vellido and Paulo J.G. Lisboa</i>	
Mixture Modeling of DNA Copy Number Amplification Patterns in Cancer	972
<i>Jarkko Tikka, Jaakko Hollmén, and Samuel Myllykangas</i>	
Towards the Integration of a Bioprofile in Ocular Melanoma	980
<i>Azzam Taktak, Antonio Eleuteri, Christian Setzkorn, Angela Douglas, Sarah Coupland, Paul Hiscott, and Bertil Damato</i>	

Using Simulated Annealing for Optimal Tuning of a PID Controller for Time-Delay Systems. An Application to a High-Performance Drilling Process 1155
Rodolfo E. Haber, Rodolfo Haber-Haber, Raúl M. del Toro, and José R. Alique

Author Index 1163

Other Applications

1019
 Juan M. González, Juan Manuel Martínez, and Juan Carlos Rodríguez: A Connectionist Model for Human Reading, *Journal of Cognitive Neuroscience*, 1994, 6(4), 400-414
 1023
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 1027
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Generating Random Deviates Consistent with the Long Term Behavior of Stochastic Search Processes in Global Optimization

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Abstract. A new stochastic search algorithm is proposed, which in first instance is capable to give a probability density from which populations of points that are consistent with the global properties of the associated optimization problem can be drawn. The procedure is based on the Fokker - Planck equation, which is a linear differential equation for the density. The algorithm is constructed in such a way that only involves linear operations and a relatively small number of evaluations of the given cost function.

Keywords: global optimization, stochastic search, statistical physics.

1 Introduction

The optimization of a cost function which has a number of local minima is a relevant subject in many important fields. For instance, the determination of the weights of learning machines depends in general on the solution of global optimization tasks [1]. A feature shared by almost all of the most common deterministic and stochastic algorithms for continuous nonlinear optimization is that their performance is strongly affected by their starting conditions. Depending on the algorithm, the correct selection of an initial point or set of points have direct consequences on the efficiency, or even on the possibility to find the global minima. In this contribution a novel way to define starting points for search in global optimization is proposed. The procedure is itself a stochastic search algorithm. Stochastic strategies for optimization are essential to most of the heuristic techniques used to deal with complex, unstructured global optimization problems [2]. The roots of such methods can be traced back to the Metropolis algorithm [3], introduced in the early days of scientific computing to simulate the evolution of a physical system to thermal equilibrium. This process is the base of the simulated annealing technique [4], which makes use of the convergence to a global minimum in configurational energy observed in physical systems at thermal equilibrium as the temperature goes to zero.

The method presented in this contribution is rooted in similar physical principles as those on which simulated annealing type algorithms [5,6,7] are based.

Nature-Inspired Planner Agent for Health Care

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Abstract. This paper presents an autonomous intelligent agent with a human thinking reasoning model, based on past experiences. The agent is developed to assist medical staff in geriatric residences. The health care process is a vital function, requiring nature-inspired solutions imitating the residence staff behaviours. An autonomous deliberative Case-Based Planner agent, AGALZ (Autonomous aGent for monitoring ALZheimer patients), is developed and integrated into an environment-aware multi-agent system, named ALZ-MAS (ALZheimer Multi-Agent System), to optimize health care in geriatric residences: ALZ-MAS is capable of obtaining information about the environment through RFID technology.

1 Introduction

Agents and multi-agent systems (MAS) have become increasingly relevant for developing distributed and dynamic intelligent environments. The ability of software agents to act somewhat autonomously links them with living animals and humans, so they seem appropriate for discussion under nature-inspired computing [7]. This paper presents AGALZ (Autonomous aGent for monitoring ALZheimer patients), and explains how this deliberative planning agent has been designed and implemented. A case study is then presented, with AGALZ working with complementary agents into a prototype environment-aware multi-agent system (ALZ-MAS: ALZheimer Multi-Agent System). The elderly health care problem is studied, and the possibilities of Radio Frequency Identification (RFID) [10] as a technology for constructing an intelligent environment and ascertaining patient location to generate plans and maximize safety are examined.

This paper focuses in the development of nature-inspired deliberative agents using a Case-Based Reasoning (CBR) [1] architecture, as a way to implement sensitive and adaptive systems to improve assistance and health care support for elderly and people with disabilities, in particular with Alzheimer. Agents in this context must be able to respond to events, take the initiative according to their goals, communicate with other agents, interact with users, and make use of past experiences to find the best plans to achieve goals, so we propose the development of an autonomous deliberative agent that incorporates a Case-Based Planning (CBP) mechanism, derivative from Case-Based Reasoning (CBR) [2], specially designed for planning construction. CBP-BDI

facilitates learning and adaptation, and that found in pure BDI (Believe, Desire, Intention) model [3]. In capabilities of the agents are based on human beliefs, goals and plans, as java objects implemented by using different tools, such as CBP-BDI agent is specialized in generating solutions that have been used to solve a case. A CBP planner is used for AGALZ to

During the last three decades the number of elderly citizens has increased by about 50%. Today they represent nearly 20% of the population, estimated that in 20 years this percentage will reach 30%, meaning 100 millions of citizens [4]. The world is developing new and more reliable ways of providing health care, as underlined by this trend [4], and the creation of intelligent environments for monitoring and optimizing health care. Authors [8] consider that tomorrow's health care will be based on intelligent systems capable of interacting with elderly people in all aspects of daily life, predicting physical and cognitive support.

RFID technology is a wireless technology that allows the move. An RFID system contains basic hardware and software [10]. The configuration used in this paper consists of 125KHZ transponders mounted on bracelets, and several readers installed over protected zones, all connected to a central computer where all the ID numbers are stored.

In the next section the autonomous agent AGALZ, is presented. Then, a case study is presented, showing characteristics of ALZ-MAS architecture and its application with initial results and conclusions obtained in a real scenario.

2 Autonomous Nature-Inspired Agent

We have developed AGALZ, an autonomous intelligent agent (BDI) agent that integrates with other agents into a multi-agent system (MAS), as a proposal to improve the efficiency of health care in geriatric residences. AGALZ presents a Case-Based Reasoning (Belief, Desire, Intention) model [3]. In capabilities of the agents are based on human beliefs, goals and plans, as java objects implemented by using different tools, such as CBP-BDI agent is specialized in generating solutions that have been used to solve a case. A CBP planner is used for AGALZ to

Table 2. Time (minutes) spent on indirect tasks

	Monitoring	Reports	Visits	Other	TOTAL
Before	167	48	73	82	370
After	105	40	45	60	250

In the future, health care will require the use of new technologies that allow medical personnel to carry out their tasks more efficiently [4]. We have shown some potential of deliberative CBP-BDI agents in a distributed multi-agent system focused on health care. In addition, the use of RFID technology [10] on people provided a high level of interaction among users and patients through the system.

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