

2009 Ninth International Conference on Intelligent Systems Design and Applications

ISDA 2009

Table of Contents

Preface	xxv
Conference Organization	xxvi
Reviewers	xxx
Workshops Organization	xxxiii
Special Sessions Organization	xxxvi
Plenary Talks Abstracts	xxxviii

Evolutionary Algorithms

Valley-Adaptive Clearing Scheme for Multimodal Optimization Evolutionary Search	1
<i>Mostafa M.H. Ellabaan and Yew Soon Ong</i>	
Handling Box, Linear and Quadratic-Convex Constraints for Boundary Optimization with Differential Evolution Algorithms	7
<i>Massimo Spadoni and Luciano Stefanini</i>	
Scaling Genetic Algorithms Using MapReduce	13
<i>Abhishek Verma, Xavier Llorà, David E. Goldberg, and Roy H. Campbell</i>	
Efficiency Enhancement of ECGA Through Population Size Management	19
<i>Vinicius V. Melo, Thyago S.P.C. Duque, and Alexandre C.B. Delbem</i>	
Solving Permutation Problems with Differential Evolution: An Application to the Jobshop Scheduling Problem	25
<i>Antonin Ponsich, Ma. Guadalupe Castillo Tapia, and Carlos A. Coello Coello</i>	
Speeding Up the Genetic Algorithm Convergence Using Sequential Mutation and Circular Gene Methods	31
<i>Mehdi Baradaran Nia and Yousef Alipouri</i>	

Performance Analysis of MADO Dynamic Optimization Algorithm	37
<i>Julien Lepagnot, Amir Nakib, Hamouche Oulhadj, and Patrick Siarry</i>	
Encoding Structures and Operators Used in Facility Layout Problems with Genetic Algorithms	43
<i>L. García-Hernández, A. Araúzo-Azofra, H. Pierreval, and L. Salas-Morera</i>	
Workshop W1: Soft Computing in Intelligent Agents and Web Technologies	
RSS-Generated Contents through Personalizing e-Learning Agents	49
<i>C. De Maio, G. Fenza, M. Gaeta, V. Loia, F. Orciuoli, and S. Senatore</i>	
Combining Agents and Ontologies to Support Task-Centred Interoperability in Ambient Intelligent Environments	55
<i>Gaëtan Pruvost, Achilles Kameas, Tobias Heinroth, Lambrini Seremeti, and Wolfgang Minker</i>	
A Web-Based Fuzzy Linguistic Tool to Filter Information in a Biomedical Domain	61
<i>José Manuel Morales-del-Castillo, Eduardo Peis, and E. Herrera-Viedma</i>	
Agent-Based Web Content Engagement Time (WCET) Analyzer on e-Publication System	67
<i>Raymond S.T. Lee, James N.K. Liu, Karo S.Y. Yeung, Alan H.L. Sin, and Dennis T.F. Shum</i>	
CASTALIA: Architecture of a Fuzzy Metasearch Engine for Question Answering Systems	73
<i>Jesus Serrano-Guerrero, Jose A. Olivas, Jesus A. Gallego, Francisco P. Romero, and Andres Soto</i>	
An Experiment About Using Copulative and Comparative Sentences as Constraining Relations	79
<i>Andrés Soto, José A. Olivas, Francisco P. Romero, and Jesús Serrano-Guerrero</i>	
An Automat for the Semantic Processing of Structured Information	85
<i>Amed Leiva-Mederos, Jose A. Senso, Sandor Dominguez-Velasco, and Pedro Hipola</i>	
Using Incomplete Fuzzy Linguistic Preference Relations to Characterize User Profiles in Recommender Systems	90
<i>E. Herrera-Viedma and C. Porcel</i>	
Workshop W2: Genetic Fuzzy Systems: Design and Applications	
Effects of Data Reduction on the Generalization Ability of Parallel Distributed Genetic Fuzzy Rule Selection	96
<i>Yusuke Nojima and Hisao Ishibuchi</i>	
Obtaining a Linguistically Understandable Random Sets-Based Classifier from Interval-Valued Data with Genetic Algorithms	102
<i>Luciano Sánchez and Inés Couso</i>	
Handling High-Dimensional Regression Problems by Means of an Efficient Multi-Objective Evolutionary Algorithm	109
<i>María José Gacto, Rafael Alcalá, and Francisco Herrera</i>	

Exploiting a New Interpretability Index in the Multi-Objective Evolutionary Learning of Mamdani Fuzzy Rule-Based Systems	115
<i>Michela Antonelli, Pietro Ducange, Beatrice Lazznerini, and Francesco Marcelloni</i>	
On the Combination of Accuracy and Diversity Measures for Genetic Selection of Bagging Fuzzy Rule-Based Multiclassification Systems	121
<i>Krzysztof Trawiński, Arnaud Quirin, and Oscar Cordón</i>	
Linguistic Modifiers to Improve the Accuracy-Interpretability Trade-Off in Multi-Objective Genetic Design of Fuzzy Rule Based Classifier Systems	128
<i>Alessandro G. Di Nuovo and Vincenzo Catania</i>	
Parallel Distributed Two-Level Evolutionary Multiobjective Methodology for Granularity Learning and Membership Functions Tuning in Linguistic Fuzzy Systems	134
<i>Miguel A. De Vega, Juan M. Bardallo, Francisco A. Márquez, and Antonio Peregrín</i>	
Workshop W3: Intelligent Image Processing and Artificial Vision	
Natural Scene Image Recognition by Fusing Weighted Colour Moments with Bag of Visual Patches on Spatial Pyramid Layout	140
<i>Yousef Alqasrawi, Daniel Neagu, and Peter Cowling</i>	
A Fuzzy System for Impact Analysis of Advertisement Billboards in Soccer Telecast	146
<i>Suprio Das, Shamik Sural, and Arun K. Majumdar</i>	
GPU-Based Road Sign Detection Using Particle Swarm Optimization	152
<i>Luca Mussi, Stefano Cagnoni, and Fabio Daolio</i>	
Improved Fuzzy Snakes Applied to Biometric Verification Problems	158
<i>J. Vélez, A. Sánchez, and F. Fernández</i>	
Multiple Neural Networks System for Dynamic Environments	164
<i>Aldo Franco Dragoni, Paola Baldassarri, Germano Vallesi, and Mauro Mazzieri</i>	
A Comparative Study of Clustering Methods for Urban Areas Segmentation from High Resolution Remote Sensing Image	169
<i>Safaa M. Bedawi and Mohamed S. Kamel</i>	
A New Scheme for Vision Based Flying Vehicle Detection Using Motion Flow Vectors Classification	175
<i>Ali Taimori, Alireza Behrad, and Samira Sabouri</i>	
Image Contrast Control Based on Łukasiewicz's Operators and Fuzzy Logic	181
<i>N.M. Hussein Hassan and A. Barriga</i>	

Workshop W4: Hybrid Learning for Artificial Neural Networks: Architectures and Applications

A Sensitivity Clustering Method for Memetic Training of Radial Basis Function Neural Networks	187
<i>F. Fernández-Navarro, P.A. Gutiérrez, and C. Hervás-Martínez</i>	
Hyperbolic Tangent Basis Function Neural Networks Training by Hybrid Evolutionary Programming for Accurate Short-Term Wind Speed Prediction	193
<i>C. Hervás-Martínez, P.A. Gutiérrez, J.C. Fernández, S. Salcedo-Sanz, A. Portilla-Figueras, A. Pérez-Bellido, and L. Prieto</i>	
Hybridizing Ensemble Classifiers with Individual Classifiers	199
<i>Gonzalo Ramos-Jiménez, José del Campo-Ávila, and Rafael Morales-Bueno</i>	
Classification by Evolutionary Generalized Radial Basis Functions	203
<i>A. Castaño, C. Hervás-Martínez, P.A. Gutierrez, F. Fernández-Navarro, and M.M. García</i>	
Optimization of Neural Networks Weights and Architecture: A Multimodal Methodology	209
<i>Antonio Miguel F. Zarth and Teresa B. Ludermir</i>	
Modeling Environmental Noise Using Artificial Neural Networks	215
<i>N. Genaro, A. Torija, A. Ramos, I. Requena, D.P. Ruiz, and M. Zamorano</i>	
Combining Uncertainty Sampling Methods for Active Meta-Learning	220
<i>Ricardo B.C. Prudêncio and Teresa B. Ludermir</i>	
Echo State Network for Abrupt Change Detections in Non-stationary Signals	226
<i>Qingsong Song, Zuren Feng, Liangjun Ke, and Min Li</i>	
Swarm Intelligence	
Heuristic Factors in Ant System Algorithm for Course Timetabling Problem	232
<i>Djasli Djamarus and Ku Ruhana Ku-Mahamud</i>	
A Multiple Objective Particle Swarm Optimization Approach Using Crowding Distance and Roulette Wheel	237
<i>R.A. Santana, M.R. Pontes, and C.J.A. Bastos-Filho</i>	
Hardware Architecture for Particle Swarm Optimization Using Floating-Point Arithmetic	243
<i>Daniel M. Muñoz Arboleda, Carlos H. Llanos, Leandro dos S. Coelho, and Mauricio Ayala-Rincón</i>	
Dynamic Clan Particle Swarm Optimization	249
<i>C.J.A. Bastos-Filho, D.F. Carvalho, E.M.N. Figueiredo, and P.B.C. de Miranda</i>	

Workshop W5: Tags and Recommendations in Web 2.0

Content-Based Filtering with Tags: The FIRSt System	255
<i>Pasquale Lops, Marco de Gemmis, Giovanni Semeraro, Paolo Gissi, Cataldo Musto, and Fedelucio Narducci</i>	
Item Recommendation with Veristic and Possibilistic Metadata: A Preliminary Approach	261
<i>Danilo Dell' Agnello, Corrado Mencar, and Anna M. Fanelli</i>	
Neighbor Selection and Recommendations in Social Bookmarking Tools	267
<i>Antonina Dattolo, Felice Ferrara, and Carlo Tasso</i>	
Using Tag Co-occurrence for Recommendation	273
<i>Christian Wartena, Rogier Brussee, and Martin Wibbels</i>	
A Parametric Architecture for Tags Clustering in Folksonomic Search Engines	279
<i>Nicola Raffaele Di Matteo, Silvio Peroni, Fabio Tamburini, and Fabio Vitali</i>	
Evaluation Measures for Ordinal Regression	283
<i>Stefano Baccianella, Andrea Esuli, and Fabrizio Sebastiani</i>	
Improved Search in Tag-Based Systems	288
<i>Ruba Awawdeh and Terry Anderson</i>	
Social and Behavioral Aspects of a Tag-Based Recommender System	294
<i>Frederico Duraó and Peter Dolog</i>	
A JADE-Based ART-Inspired Ontology and Protocols for Handling Trust and Reputation	300
<i>Javier Carbo and Jose M. Molina</i>	

Special Session S1: Representation and Approximation of Fuzzy Numbers and Applications

Fuzzy Option Value with Stochastic Volatility Models	306
<i>Gianna Figà-Talamanca and Maria Letizia Guerra</i>	
Some Parametric Forms for LR Fuzzy Numbers and LR Fuzzy Arithmetic	312
<i>Laerte Sorini and Luciano Stefanini</i>	
Bi-symmetrically Weighted Trapezoidal Approximations of Fuzzy Numbers	318
<i>Przemyslaw Grzegorzewski and Karolina Pasternak-Winiarska</i>	
Value Function Computation in Fuzzy Real Options by Differential Evolution	324
<i>Maria Letizia Guerra, Laerte Sorini, and Luciano Stefanini</i>	

Workshop W6: Intelligent Systems Design and Applications in the Health Domain

Toward Multi-organs Simulations of Immune-Pathogen Interactions	330
<i>F. Castiglione and F. Pappalardo</i>	
An Efficient Combinatorial Approach for Solving the DNA Motif Finding Problem	335
<i>Filippo Geraci, Marco Pellegrini, and M. Elena Renda</i>	

Using Machine Learning Techniques to Improve the Behaviour of a Medical Decision Support System for Prostate Diseases	341
<i>Constantinos Koutsojannis, Eman Nabil, Maria Tsimara, and Ioannis Hatzilygeroudis</i>	
Translating Cancer Research into Clinical Practice: A Framework for Analyzing and Modeling Cancer from Imaging Data	347
<i>Vangelis Sakkalis, Konstantinos Marias, Alexandros Roniotis, and Emmanouil Skounakis</i>	
A Decision Support System for Aiding Heart Failure Management	351
<i>Sara Colantonio, Massimo Martinelli, Davide Moroni, Ovidio Salvetti, Franco Chiarugi, and Dimitra Emmanouilidou</i>	
Knowledge Discovery Approaches for Early Detection of Decompensation Conditions in Heart Failure Patients	357
<i>A. Candeliери, D. Conforti, A. Sciacqua, and F. Perticone</i>	
On Intelligent Procedures in Medication for Patient Safety: The PSIP Approach	363
<i>Vassilis Koutkias, Katerina Lazou, Vassilis Kilintzis, Régis Beuscart, and Nicos Maglaveras</i>	
A Semantic Infrastructure for the Integration of Bioinformatics Services	367
<i>Giorgos Zacharioudakis, Lefteris Koumakis, Stelios Sfakianakis, and Manolis Tsiknakis</i>	
Accuracy Improvement of SOM-Based Data Classification for Hematopoietic Tumor Patients	373
<i>Naotake Kamiura, Ayumu Saitoh, Teijiro Isokawa, and Nobuyuki Matsui</i>	
Special Session S2: From Business Intelligence to Business Artificial Intelligence: New Challenges for Intelligent Systems	
A Genetic Programming-Based Algorithm for Composing Web Services	379
<i>Manuel Mucientes, Manuel Lama, and Miguel I. Couto</i>	
Linguistic Summaries of Time Series Using a Degree of Appropriateness as a Measure of Interestingness	385
<i>Janusz Kacprzyk and Anna Wilbik</i>	
Evaluating an Intelligent Business System with a Fuzzy Multi-criteria Approach	391
<i>Sinan Apak and Özalp Vayvay</i>	
Support Vector Machines for Insolvency Prediction of Irish Companies	397
<i>Anatoli Nachev</i>	

Special Session S3: Evolutionary Multiobjective Optimization-Design and Applications (EMODA)

A Multi-objective Evolutionary Approach to Data Compression in Wireless Sensor Networks	402
<i>Francesco Marcelloni and Massimo Vecchio</i>	
Design of Artificial Neural Networks Using a Memetic Pareto Evolutionary Algorithm Using as Objectives Entropy versus Variation Coefficient	408
<i>J.C. Fernández, C. Hervás, F.J. Martínez, and M. Cruz</i>	
Wavelength Converter Allocation in Optical Networks: An Evolutionary Multi-objective Optimization Approach	414
<i>Diego Pinto Roa, Benjamín Barán, and Carlos A. Brizuela</i>	
Evolutionary Shallow Parsing	420
<i>John Atkinson and Juan Matamala</i>	
Solving Multi-objective Reinforcement Learning Problems by EDA-RL - Acquisition of Various Strategies	426
<i>Hisashi Handa</i>	

Special Session S4: Designing Comprehensible Intelligent Systems

An Interpretability-Guided Modeling Process for Learning Comprehensible Fuzzy Rule-Based Classifiers	432
<i>José M. Alonso and Luis Magdalena</i>	
A Study on Interpretability Conditions for Fuzzy Rule-Based Classifiers	438
<i>Raffaele Cannone, Ciro Castiello, Corrado Mencar, and Anna M. Fanelli</i>	
Qualitative and Task Analytic Methods to Support Comprehensible Intelligent System Design	444
<i>Melanie C. Wright, Noa Segall, Jonathan B. Mark, and Jeffrey M. Taekman</i>	
Comprehensible Model of a Quasi-periodic Signal	450
<i>Alberto Alvarez and Gracian Trivino</i>	
The Impact of Pruning BayesFuzzy Rule Set	456
<i>I-Hsien Yin, Estevam R. Hruschka Jr., and Heloisa de A. Camargo</i>	

Special Session S5: Computational Intelligence in Business Management and Risk Analysis

A Hybrid Fuzzy-Promethee Method for Logistic Service Selection: Design of a Decision Support Tool	462
<i>Davide Aloini, Riccardo Dulmin, and Valeria Mininno</i>	
Optimizing Allocation in Floor Storage Systems for the Shoe Industry by Constraint Logic Programming	467
<i>Antonella Meneghetti</i>	
Dynamic Representation of a Situation: A Step of a Decision Support Process	473
<i>Fahem Kebair and Frédéric Serin</i>	

Method to Select Effective Risk Mitigation Controls Using Fuzzy Outranking	479
<i>Kiyoshi Nagata, Michio Amagasa, Yutaka Kigawa, and Dongmei Cui</i>	
The Fuzzy Probabilistic Weighted Averaging Operator and its Application in Decision Making	485
<i>José M. Merigó</i>	
Special Session S6: Hybrid Metaheuristics and Their Applications	
Improved Accuracy Rates of a Prototype Based Classifier Using Evolutionary Computation	491
<i>Gustavo Recio, Yago Saez, and Pedro Isasi</i>	
Hybrid and Evolutionary Agent-Based Social Simulations Using the PAX Framework	497
<i>Fernando B. de Lima Neto, Marcelo Pita, and Hugo Serrano B. Filho</i>	
Implementing Metaheuristic Optimization Algorithms with JEColi	505
<i>Pedro Evangelista, Paulo Maia, and Miguel Rocha</i>	
Hybrid Evolutionary Algorithms for Sensor Placement on a 3D Terrain	511
<i>Haluk Rahmi Topcuoglu, Murat Ermis, and Mesut Sifyan</i>	
Workshop W7: Intelligent Systems for Data Reduction	
A First Approach to Nearest Hyperrectangle Selection by Evolutionary Algorithms	517
<i>Salvador García, Joaquín Derrac, Julián Luengo, and Francisco Herrera</i>	
Addressing Data-Complexity for Imbalanced Data-Sets: A Preliminary Study on the Use of Preprocessing for C4.5	523
<i>Julián Luengo, Alberto Fernández, Salvador García, and Francisco Herrera</i>	
Context-Based Adaptive Filtering of Interest Points in Image Retrieval	529
<i>Giang P. Nguyen and Hans Jørgen Andersen</i>	
Clustering-Based Feature Selection in Semi-supervised Problems	535
<i>Ianisse Quinzán, José M. Sotoca, and Filiberto Pla</i>	
Empirical Study of Individual Feature Evaluators and Cutting Criteria for Feature Selection in Classification	541
<i>Antonio Arauzo-Azofra, José L. Aznarte M., and José M. Benítez</i>	
Agglomeration and Elimination of Terms for Dimensionality Reduction	547
<i>Patrick Marques Ciarelli and Elias Oliveira</i>	
Automatically Generated Linguistic Summaries of Energy Consumption Data	553
<i>Albert van der Heide and Gracián Triviño</i>	
Measures for Unsupervised Fuzzy-Rough Feature Selection	560
<i>Neil Mac Parthaláin and Richard Jensen</i>	

Workshop W8: Intelligent Signal and Image Analysis in Remote Sensing

Semi-supervised Kernel Target Detection in Hyperspectral Images	566
<i>Luca Capobianco, Andrea Garzelli, and Gustavo Camps-Valls</i>	
A Contextual Multiscale Unsupervised Method for Change Detection with Multitemporal Remote-Sensing Images	572
<i>Gabriele Moser, Elena Angiati, and Sebastiano B. Serpico</i>	
Texture-Based Segmentation of Very High Resolution Remote-Sensing Images	578
<i>Raffaele Gaetano, Giuseppe Scarpa, and Giovanni Poggi</i>	
Towards Interpretable General Type-2 Fuzzy Classifiers	584
<i>Luis A. Lucas, Tania M. Centeno, and Myriam R. Delgado</i>	
On the Effects of Synthetic-Aperture Length on SAS Seabed Segmentation	590
<i>David P. Williams and Johannes Groen</i>	
Fully Unsupervised Learning of Gaussian Mixtures for Anomaly Detection in Hyperspectral Imagery	596
<i>Tiziana Veracini, Stefania Matteoli, Marco Diani, and Giovanni Corsini</i>	
Performance Assessment of a Mathematical Morphology Ship Detection Algorithm for SAR Images through Comparison with AIS Data	602
<i>R. Grasso, S. Mirra, A. Baldacci, J. Horstmann, M. Coffin, and M. Jarvis</i>	
Intelligent Cooperative Tracking in Multi-camera Systems	608
<i>Yan Lu and Shahram Payandeh</i>	

Workshop W9: Human Monitoring and Machine Learning Strategies

Applications of Soft Computing to Medical Problems	614
<i>Ahmet Yardimci</i>	
An Ontology-Driven Multisensorial Platform to Enable Unobtrusive Human Monitoring and Independent Living	620
<i>G. Pioggia, G. Ricci, S. Bonfiglio, E. Bekiaris, G. Siciliano, and D. De Rossi</i>	
Improved Learning of Bayesian Networks in Biomedicine	624
<i>Antonella Meloni, Andrea Ripoli, Vincenzo Positano, and Luigi Landini</i>	
Extraction and Synchronization of BOLD Spontaneous Oscillations Using Singular Spectrum Analysis	629
<i>Danilo Menicucci, Angelo Gemignani, Andrea Piarulli, Remo Bedini, Claudio Gentili, Giacomo Handjaras, Sabrina Danti, Mario Guazzelli, Marco Laurino, Paolo Piaggi, and Alberto Landi</i>	
Backpropagation-Based Non Linear PCA for Biomedical Applications	635
<i>Alberto Landi, Paolo Piaggi, and Giovanni Pioggia</i>	
Cluster Analytic Detection of Disgust-Arousal	641
<i>Masood Mehmood Khan</i>	

Automatic Detection of Arrhythmias Using Wavelets and Self-Organized Artificial Neural Networks	648
<i>Sérgio Renato Rogal Jr, Alfredo Beckert Neto, Marcus Vinícius, Mazega Figueredo, Emerson Cabrera Paraiso, and Celso Antônio Alves Kaestner</i>	
ENMET: Endothelial Cell Metabolism Mathematical Model	654
<i>Gianni Orsi, Carmelo De Maria, Federico Vozzi, Mariangela Guzzardi, Arti Ahluwalia, and Giovanni Vozzi</i>	
An FPGA Based Arrhythmia Recognition System for Wearable Applications	660
<i>A. Armato, E. Nardini, A. Lanatà, G. Valenza, C. Mancuso, E.P. Scilingo, and D. De Rossi</i>	
Postponed Updates for Temporal-Difference Reinforcement Learning	665
<i>Harm van Seijen and Shimon Whiteson</i>	
Sensor Fusion-Oriented Fall Detection for Assistive Technologies Applications	673
<i>Stefano Cagnoni, Guido Matrella, Monica Mordonini, Federico Sassi, and Luca Ascari</i>	
Event Related Biometrics: Towards an Unobtrusive Sensing Seat System for Continuous Human Authentication	679
<i>Marcello Ferro, Giovanni Pioggia, Alessandro Tognetti, Gabriele Dalle Mura, and Danilo De Rossi</i>	
Innovative Networking and Communication Techniques	
Efficient Scheduling Algorithms on Bandwidth Reservation Service of Internet Using Metaheuristics	683
<i>Tomoyuki Hiroyasu, Kozo Kawasaki, Michihiro Koibuchi, Shigeo Urushidani, Mitsunori Miki, and Masato Yoshimi</i>	
Solving a Realistic Location Area Problem Using SUMATRA Networks with the Scatter Search Algorithm	689
<i>Sónia M. Almeida-Luz, Miguel A. Vega-Rodríguez, Juan A. Gómez-Pulido, and Juan M. Sánchez-Pérez</i>	
Danger Theory and Multi-agents Applied for Addressing the Deny of Service Detection Problem in IEEE 802.11 Networks	695
<i>Moisés Danziger, Marcelo Lacerda, and Fernando B. de Lima Neto</i>	
Design and Implementation of Distributed Intelligent Firewall Based on IPv6	703
<i>Qian Ma, Yingxu Lai, and Guangzhi Jiang</i>	
Intelligent Control and Automation	
Agent-Oriented Intelligent Control Strategies for the Nano-satellite Autonomous Thermal System	708
<i>Liu Jia, Li Yunze, Wang Yuying, and Wang Jun</i>	
Intelligent Lighting Control User Interface through Design of Illuminance Distribution	714
<i>Tomoyuki Hiroyasu, Akiyuki Nakamura, Sho Shinohara, Masato Yoshimi, Mitsunori Miki, and Hisatake Yokouchi</i>	

Adaptive Paralleled DMC-PID Controller Design on System with Uncertainties	720
<i>Ruihua Wei and Lihong Xu</i>	
An Efficient Solver for Scheduling Problems on a Class of Discrete Event Systems Using CELL/B.E. Processor	725
<i>Hiroyuki Goto and Atsushi Kawaminami</i>	
Design Based on a Shared Lookup-Table for an Obstacle Avoidance Fuzzy Controller for Mobile Robots	731
<i>Jinwook Kim, Yoon-Gu Kim, Young-Duk Kim, Won-Seok Kang, and Jinung An</i>	
Acquisition of Image Feature on Collision for Robot Motion Generation	737
<i>Taichi Okamoto, Yuichi Kobayashi, and Masaki Onishi</i>	
Using Fuzzy Techniques for Bounding the Tolerance of GPS-Based Speed and Distance Measurements in Taximeter Verification	743
<i>Adolfo Otero, José Otero, and Luciano Sánchez</i>	
Identification of Petri Net Models Based on an Asymptotic Approach.....	749
<i>M.E. Meda-Campaña, F.J. Lopez-Lopez, Cuauhtemoc Lopez-Martin, and Arturo Chavoya</i>	
Transferring the Progress Control Policy for a Class of Discrete Event Systems	755
<i>Hiroyuki Goto and Takakazu Tsubokawa</i>	
AAFES: An Intelligent Fuzzy Expert System for Realization of Adaptive Autonomy Concept	761
<i>Alireza Fereidunian, Mohammad-Ali Zamani, Caro Lucas, Hamid Lesani, and Matti Lehtonen</i>	
The Bi-objective Problem of Distribution of Oil Products by Pipeline Networks Approached by a Particle Swarm Optimization Algorithm	767
<i>Thatiana C.N. de Souza, Elizabeth F.G. Goldberg, and Marco C. Goldberg</i>	
Detection of Similarity of Trajectory of Center of Gravity in Operating Unicycle Uses Motion Capture System	773
<i>Takahiro Kawasaki, Teruyoshi Sadahiro, Masami Iwase, and Shoshiro Hatakeyama</i>	
Observer Design Using T-S Fuzzy Systems for Pressure Estimation in Hydrostatic Transmissions	779
<i>Horst Schulte and Patrick Gerland</i>	
Intelligent Internet Modeling	
Extending Datatype Restrictions in Fuzzy Description Logics	785
<i>Fernando Bobillo and Umberto Straccia</i>	
A Combined Query Expansion Technique for Retrieving Opinions from Blogs	791
<i>Saeedeh Momtazi, Stefan Kazalski, and Dietrich Klakow</i>	
Novel IPCA-Based Classifiers and Their Application to Spam Filtering	797
<i>Alessandro Rozza, Gabriele Lombardi, and Elena Casiraghi</i>	

A Fuzzy Decision System Using Shoppers' Preferences for Recommendations in E-Commerce Applications	803
<i>Zhengping Wu and Hao Wu</i>	

Workshop W10: Consensus and Decision Making

Consensus with Linguistic Preferences in Web 2.0 Communities	809
<i>Sergio Alonso, Ignacio J. Pérez, E. Herrera-Viedma, and Francisco J. Cabrerizo</i>	
Optimizing the Method for Building an Extended Linguistic Hierarchy	815
<i>M. Espinilla, R.M. Rodríguez, Luis Martínez, F. Mata, and J. Liu</i>	
A Preliminary Study of the Effects of Different Aggregation Operators on Consensus Processes	821
<i>F. Mata, L. Martínez, and J.C. Martínez</i>	
Action Rules in Consensus Reaching Process Support	827
<i>Janusz Kacprzyk, Sławomir Zadrozny, and Zbigniew W. Raś</i>	
Measuring Social Welfare through Location and Consensus Measures	833
<i>José Luis García-Lapresta and Ricardo Alberto Marques Pereira</i>	
Connection Among Some Characterizations of Complete Fuzzy Preorders	839
<i>Susana Díaz, Davide Martinetti, Ignacio Montes, and Susana Montes</i>	
Definition of a Consensual Drug Selection Process in Hospital Universitario Virgen de la Victoria	845
<i>J.M. Doña, I. Moya, and J. López</i>	
Strategic Assessment of Business	851
<i>J.M. Doña, J.I. Peláez, and L.G. Vargas</i>	
On the Use of the Uncertain Induced OWA Operator and the Uncertain Weighted Average and its Application in Tourism Management	856
<i>José M. Merigó, Anna M. Gil-Lafuente, and Onofre Martorell</i>	

Special Session S7: Education and Learning Models, Applications and Solutions

Cognition and Affectivity: Its Influences in Teacher-Student Relation and in the Teaching-Learning Process	862
<i>Ana Leticia Galastri</i>	
Intelligent Reporting System with e-Training Capabilities	867
<i>Maria Murri, Marco Lupinelli, and Luca Onofri</i>	
Analyzing Online Asynchronous Discussion Using Content and Social Network Analysis	872
<i>B. Erlin, Norazah Yusof, and Azizah Abdul Rahman</i>	
Improving Academic Performance Prediction by Dealing with Class Imbalance	878
<i>Nguyen Thai-Nghe, Andre Busche, and Lars Schmidt-Thieme</i>	

Workshop W11: Provisioning of Smart Services in Ontology-Based Systems

Using Ontologies to Achieve Semantic Interoperability in the Web: An Approach Based on the Semantic Triangle Model	884
<i>Angelo Chianese, Annarita Fasolino, Vincenzo Moscato, and Porfirio Tramontana</i>	
Ontology-Based System for Enterprise 2.0	890
<i>Giuseppina Rita Mangione, Sergio Miranda, Stefano Paolozzi, Anna Pierri, Pierluigi Ritrovato, and Saverio Salerno</i>	
A Business Intelligence Process to Support Information Retrieval in an Ontology-Based Environment	896
<i>Filippo Sciarrone, Paolo Starace, and Tommaso Federici</i>	
Combining DHTs and SONS for Semantic-Based Service Discovery	902
<i>Giuseppe Pirrò, Paolo Missier, Paolo Trunfio, Domenico Talia, Gabriele Falace, and Carole Goble</i>	
Product Configurator: An Ontological Approach	908
<i>Francesco Colace, Massimo De Santo, and Paolo Napoletano</i>	
WikiArt: An Ontology-Based Information Retrieval System for Arts	913
<i>Roberto Pirrone, Vincenzo Cannella, Orazio Gambino, Arianna Pipitone, and Giuseppe Russo</i>	
An Ontology-Based Method for Integrating Heterogeneous Itembanks	919
<i>Chun-Wei Tsai, Shih-Pang Tseng, Yu-Sheng Yang, Ming-Chao Chiang, and Chu-Sing Yang</i>	
Higher Education in the Twenty-First Century. The Chance of Adaptive Learning Environments	925
<i>Antonella Poce</i>	
A Probabilistic Method for Text Analysis	932
<i>Fabio Clarizia, Massimo De Santo, and Paolo Napoletano</i>	
Special Session S8: Intelligent E-Learning Systems	
Developing Student Model Using Kohonen Network in Adaptive Hypermedia Learning System	938
<i>Bariah Yusob, Siti Mariyam Hj Shamsuddin, and Nor Bahiah Ahmad</i>	
OCEAN Project A Prototype of AIWBES Based on Fuzzy Ontology	944
<i>Francesco Colleoni, Silvia Calegari, Davide Ciucci, and Matteo Dominoni</i>	
LS-LAB: A Framework for Comparing Curriculum Sequencing Algorithms	950
<i>Carla Limongelli, Filippo Sciarrone, and Giulia Vaste</i>	
Concept-Based Classification for Adaptive Course Sequencing Using Artificial Neural Network	956
<i>Norsham Idris, Norazah Yusof, and Puteh Saad</i>	
A Metrics Suite for Measuring Reusability of Learning Objects	961
<i>Siti Fadzilah Mat Noor, Norazah Yusof, and Siti Zaiton Mohd Hashim</i>	

Special Session S9: Intelligent Systems for Industrial Processes

Tutorial: About Industrial Acceptance of Intelligent Systems	964
<i>Leonardo M. Reyneri</i>	
Automatic Diagnosis of Defects of Rolling Element Bearings Based on Computational Intelligence Techniques	970
<i>Marco Cococcioni, Beatrice Lazznerini, and Sara Lioba Volpi</i>	
GA-Based Solutions Comparison for Storage Strategies Optimization for an Automated Warehouse	976
<i>Valentina Colla, Gianluca Nastasi, Nicola Matarese, and Leonardo M. Reyneri</i>	
Profit Forecasting Using Support Vector Regression for Consulting Engineering Firms	982
<i>Victor Yepes, Eugenio Pellicer, and Francesc J. Ferri</i>	
On-Line Neural Network Stator Resistance Estimation in Direct Torque Controlled Induction Motor Drive	988
<i>Yassine Sayouti, Ahmed Abbou, Mohammed Akherraz, and Hassane Mahmoudi</i>	

Intelligent Data Mining

An Experimental Study on Unsupervised Clustering-Based Feature Selection Methods	993
<i>Thiago F. Covões and Eduardo R. Hruschka</i>	
A Penalty Function for Computing Orthogonal Non-negative Matrix Factorizations	1001
<i>Nicoletta Del Buono</i>	
Comparison Among Methods for k Estimation in k-means	1006
<i>Murilo C. Naldi, André Fontana, and Ricardo J.G.B. Campello</i>	
A Possibilistic Approach for Building Statistical Language Models	1014
<i>Saeedeh Momtazi and Hossein Sameti</i>	
A Robust Prediction Method for Interval Symbolic Data	1019
<i>Roberta A.A. Fagundes, Renata M.C.R. de Souza, and Francisco José A. Cysneiros</i>	
Optimizing Linear and Quadratic Data Transformations for Classification Tasks	1025
<i>José M. Valls and Ricardo Aler</i>	

Workshop W12: Computational Intelligence for Personalization in Web Content and Service Delivery

Modeling User Preferences through Adaptive Fuzzy Profiles	1031
<i>Corrado Mencar, Maria A. Torsello, Danilo Dell’Agnello, Giovanna Castellano, and Ciro Castiello</i>	
Situation-Aware Mobile Service Recommendation with Fuzzy Logic and Semantic Web	1037
<i>Alessandro Ciaramella, Mario G.C.A. Cimino, Beatrice Lazzerini, and Francesco Marcelloni</i>	
An Heuristic Approach to Page Recommendation in Web Usage Mining	1043
<i>Antonio Maratea and Alfredo Petrosino</i>	
Recommendations toward Serendipitous Diversions	1049
<i>Leo Iaquina, Marco de Gemmis, Pasquale Lops, and Giovanni Semeraro</i>	
A Preliminary Experience in Optimizing the Layout of Web Pages by Genetic Algorithms to Fit Mobile Devices	1055
<i>Luigi Troiano, Gennaro Cirillo, Roberto Armenise, and Cosimo Birtolo</i>	
A Recommendation Technique for Cultural Heritage Hypermedial Objects	1062
<i>Pierpaolo Di Bitonto, Teresa Roselli, and Veronica Rossano</i>	

Workshop W13: Evolutionary Algorithms and other Metaheuristics for Continuous Optimization Problems - A Scalability Test

Memetic Algorithm with Local Search Chaining for Continuous Optimization Problems: A Scalability Test	1068
<i>Daniel Molina, Manuel Lozano, and Francisco Herrera</i>	
Continuous Variable Neighbourhood Search Algorithm Based on Evolutionary Metaheuristic Components: A Scalability Test	1074
<i>Carlos García-Martínez and Manuel Lozano</i>	
A Memetic Differential Evolution Algorithm for Continuous Optimization	1080
<i>Santiago Muelas, Antonio La Torre, and José-María Peña</i>	
An Adaptive Memory Procedure for Continuous Optimization	1085
<i>Abraham Duarte, Rafael Martí, and Fred Glover</i>	
A Scalability Test for Accelerated DE Using Generalized Opposition-Based Learning	1090
<i>Hui Wang, Zhijian Wu, Shahryar Rahnamayan, and Lishan Kang</i>	
Unidimensional Search for Solving Continuous High-Dimensional Optimization Problems	1096
<i>Vincent Gardeux, Rachid Chelouah, Patrick Siarry, and Fred Glover</i>	

Workshop W14: Educational Data Mining

Mining Models for Failing Behaviors	1102
<i>Cláudia Antunes</i>	
Checking the Reliability of GeSES: Method for Detecting Symptoms of Low Performance	1108
<i>Javier Bravo, Estefanía Martín, Alvaro Ortigosa, and Rosa M. Carro</i>	
From Local Patterns to Global Models: Towards Domain Driven Educational Process Mining	1114
<i>Nikola Trčka and Mykola Pechenizkiy</i>	
Predicting Academic Achievement Using Multiple Instance Genetic Programming	1120
<i>Amelia Zafra, Cristóbal Romero, and Sebastián Ventura</i>	
Discovering Learning Objects Usability Characteristics	1126
<i>Alfredo Zapata, Victor H. Menendez, and Manuel E. Prieto</i>	
Time Analysis of Forum Evolution as Support Tool for E-Moderating	1131
<i>Carlo Alberto Bentivoglio</i>	

Workshop W15: Data Mining and Ontologies Models, Applications and Solutions

MAHATMA: A Genetic Programming-Based Tool for Protein Classification	1136
<i>Denise F. Tsunoda, Alex A. Freitas, and Heitor S. Lopes</i>	
A Strategy for Biodiversity Knowledge Acquisition Based on Domain Ontology	1143
<i>A.C.F. Albuquerque, J.L. Campos dos Santos, and J.F. de Magalhães Netto</i>	
A Fast Algorithm for Mining Rare Itemsets	1149
<i>Luigi Troiano, Giacomo Scibelli, and Cosimo Birtolo</i>	
Developing an Implementation through a Modeling of the Database for Cardiovascular Monitoring	1156
<i>Hugo Bulegon, Silvio Bortoleto, and Angelmar Constantino Roman</i>	
An FCD Information Processing Model under Traffic Signal Control	1161
<i>Weifeng Lv, Leishi Xu, Tongyu Zhu, Bowen Du, and Dongdong Wu</i>	
Designing a Conceptual Model for Herbal Research Domain Using Ontology Technique	1167
<i>Azlida Mamat and Azizah Abdul Rahman</i>	
Potential Data Mining Classification Techniques for Academic Talent Forecasting	1173
<i>Hamidah Jantan, Abdul Razak Hamdan, and Zulaiha Ali Othman</i>	
Ontology Merging and Data Schema Integration: An Approach to Identify Semantic Similarity and Resolve Schematic Heterogeneity in Interoperable GIS Application	1179
<i>Nanna Suryana, Shahrin Sahib, Ridlwan Habibi, Norayu Abdul Ghani, Zahriah Othman, and Ahmad Tajuddin Samsudin</i>	

Equalizing the Structures of Web Communities in Ontology Development Tools	1184
<i>Francesca Arcelli Fontana, Ferrante Raffaele Formato, and Remo Pareschi</i>	
Searching Common Pattern in Agents Behaviors with Usage of FCA	1190
<i>P. Gajdoš and M. Radecký</i>	
Vertical Mining of Frequent Patterns Using Diffset Groups	1196
<i>Laila A. Abd El-Megid, Mohamed E. El-Sharkawi, Laila M. El-Fangary, and Yehia K. Helmy</i>	

Intelligent Knowledge Management

On the Role of Dialogue and Argumentation In Collaborative Problem Solving	1202
<i>Nadim Obeid and Asma Moubaidin</i>	
Inductive Query Answering and Concept Retrieval Exploiting Local Models	1209
<i>Claudia d'Amato, Nicola Fanizzi, Floriana Esposito, and Thomas Lukasiewicz</i>	
Some Basic Results of Fuzzy Research in the ISI Web of Knowledge	1215
<i>José M. Merigó and Anna M. Gil-Lafuente</i>	
Order Independent Incremental Evolving Fuzzy Grammar Fragment Learner	1221
<i>Nurfadhlina Mohd Sharef, Trevor Martin, and Yun Shen</i>	
Automatic Labeling of Topics	1227
<i>Davide Magatti, Silvia Calegari, Davide Ciucci, and Fabio Stella</i>	

Special Session S10: Intelligent Systems and Data Mining Techniques for Bioinformatics

Optimization of Multi-classifiers for Computational Biology: Application to the Gene Finding Problem	1233
<i>Rocío Romero-Zaliz, Coral del Val, and Igor Zwir</i>	
An Overlapping Control–Biclustering Algorithm from Gene Expression Data	1239
<i>Juan A. Nepomuceno, Alicia Troncoso, and Jesús S. Aguilar-Ruiz</i>	
Similarity Analysis of Protein Binding Sites: A Generalization of the Maximum Common Subgraph Measure Based on Quasi-Clique Detection	1245
<i>Imen Boukhris, Zied Elouedi, Thomas Fober, Marco Mernberger, and Eyke Hüllermeier</i>	
Efficient Construction of Multiple Geometrical Alignments for the Comparison of Protein Binding Sites	1251
<i>Thomas Fober, Gerhard Klebe, and Eyke Hüllermeier</i>	
Optimizing Multiple Sequence Alignment by Improving Mutation Operators of a Genetic Algorithm	1257
<i>Fernando José Mateus da Silva, Juan Manuel Sánchez Pérez, Juan Antonio Gómez Pulido, and Miguel A. Vega Rodríguez</i>	

Workshop W16: Neural Networks and Neuro-Fuzzy Systems

Risk Factor Identification and Classification of Macrosomic Newborns by Neural Networks	1263
<i>A. Guillen, A.M. Trujillo, S. Romero, G. Rubio, I. Rojas, H. Pomares, L.J. Herrera, and J.F. Guillen</i>	
A Data Mining Approach Based on a Local-Global Fuzzy Modelling for Prediction of Color Change after Tooth Bleaching Using Vita Classical Shades	1268
<i>L.J. Herrera, M.M. Pérez, J. Santana, R. Pulgar, J. González, H. Pomares, and I. Rojas</i>	
Trajectory Tracking of Complex Dynamical Network for Recurrent Neural Network Via Control V-Stability	1274
<i>José P. Pérez, Joel Pérez, and Jorge A. González</i>	
General Purpose Input Variables Extraction: A Genetic Algorithm Based Procedure GIVE A GAP	1278
<i>Silvia Cateni, Valentina Colla, and Marco Vannucci</i>	
A Fuzzy Wavelet Neural Network Model for System Identification	1284
<i>Sevcan Yilmaz and Yusuf Oysal</i>	
FPGA-Based Recurrent Wavelet Neural Network Control System for Linear Ultrasonic Motor	1290
<i>Ying-Chih Hung and Faa-Jeng Lin</i>	
Fitting Multiple Alpha Peaks Using Neural Network Techniques	1296
<i>Javier Miranda, Antonio Baeza, Javier Guillén, and Rosa Ma Pérez Utrero</i>	
Computer Vision-Based Eyelid Closure Detection: A Comparison of MLP and SVM Classifiers	1301
<i>David González-Ortega, F.J. Díaz-Pernas, M. Antón-Rodríguez, M. Martínez-Zarzuela, J.F. Díez-Higuera, and D. Boto-Giralda</i>	
A Method to Point Out Anomalous Input-Output Patterns in a Database for Training Neuro-Fuzzy System with a Supervised Learning Rule	1307
<i>Valentina Colla, Nicola Matarese, and Leonardo M. Reyneri</i>	
Acquisition of Body and Object Representation Based on Motion Learning and Planning Framework	1312
<i>Takahiro Asamizu and Yuichi Kobayashi</i>	

Workshop W17: Soft Computing and Image Processing

A A-IFSs Based Image Segmentation Methodology for Gait Analysis	1318
<i>Pedro Couto, Vitor Filipe, Pedro Melo-Pinto, Humberto Bustince, and Edurne Barrenechea</i>	
A 3D Lifting Based Method Augmented by Motion Compensation for Video Coding	1324
<i>Sedat Telceken, Sukru Gorgulu, and Omer N. Gerek</i>	

A Structural Approach to Image Segmentation	1329
<i>Daniel Gómez, Javier Montero, and Javier Yáñez</i>	
Noisy Image Edge Detection Using an Uninorm Fuzzy Morphological Gradient	1335
<i>Manuel González-Hidalgo, Arnau Mir Torres, and Joan Torrens Sastre</i>	
Assessment of Asymmetry in Pyramidal Tract by Using Fiber Tracking	1341
<i>Fatima Tensaouti, Jean Albert Lotterie, Perrine Clarisse, and Isabelle Berry</i>	
On the Use of t-Conorms in the Gravity-Based Approach to Edge Detection	1347
<i>C. Lopez-Molina, H. Bustince, M. Galar, J. Fernandez, and B. De Baets</i>	
Ignorance-Based Fuzzy Clustering Algorithm	1353
<i>Aranzazu Jurio, Miguel Pagola, Daniel Paternain, Edurne Barrenechea, Jose Antonio Sanz, and Humberto Bustince</i>	
THREECOND: An Automated and Unsupervised Three Colour Fuzzy-Based Algorithm for Detecting Nuclei in Cervical Pap Smear Images	1359
<i>Fabio Vaschetto, Eduard Montseny, Pilar Sobrevilla, and Enrique Lerma</i>	
Fusion of IKONOS Remote Sensing Filtered Images Using Shadow Information to Improve the Rate of Building Extraction in Urban Images	1365
<i>M.J. Rastegar Fatemi, Seyed Mostafa Mirhassani, and Bardia Yousefi</i>	
Introducing Type-2 Fuzzy Sets for Image Texture Modelling	1371
<i>J. Chamorro-Martínez, Pedro Martínez-Jiménez, and Daniel Sánchez</i>	

Hybrid Systems

Integration of Graphical Modeling with Fuzzy Clustering for Casual Relationship of Electric Load Forecasting	1377
<i>Hiroyuki Mori and Wenjun Jiang</i>	
Testing for Serial Independence of the Residuals in the Framework of Fuzzy Rule-Based Time Series Modeling	1383
<i>José Luis Aznarte M., Antonio Arauzo, and José Manuel Benítez Sánchez</i>	
Efficient Computation Methods for the Kleene Star in Max-Plus Linear Systems	1388
<i>Hiroyuki Goto and Munenori Kasahara</i>	
Using Smart Sampling to Discover Promising Regions and Increase the Efficiency of Differential Evolution	1394
<i>Vinicius V. Melo and Alexandre C.B. Delbem</i>	
EACImpute: An Evolutionary Algorithm for Clustering-Based Imputation	1400
<i>Jonathan de Andrade Silva and Eduardo R. Hruschka</i>	

Intelligent Image and Signal Processing

Intracellular Volume Registration	1407
<i>Shin Yoshizawa, Satoko Takemoto, Miwa Takahashi, Makoto Muroi, Sayaka Kazami, Hiromi Miyoshi, and Hideo Yokota</i>	
Algorithm Selection for Intracellular Image Segmentation Based on Region Similarity	1413
<i>Satoko Takemoto and Hideo Yokota</i>	
Effective Feature Selection for Mars McMurdo Terrain Image Classification	1419
<i>Changjing Shang, Dave Barnes, and Qiang Shen</i>	
View-Independent Face Recognition with Biological Features Based on Mixture of Experts	1425
<i>Alireza Hajiany, Nina Taheri Makhssoos, and Reza Ebrahimpour</i>	
Study on Mapping of Basic Elements in the Chinese Character Intelligent Formation without Character Library System	1430
<i>Mingyou Liu, Wenzhi Liao, and Youguo Pi</i>	

Special Session S11: Bioinspired and Evolutionary Computation Based Data Mining Techniques

Structural Learning of Bayesian Networks by Using Variable Neighbourhood Search Based on the Space of Orderings	1435
<i>Juan I. Alonso-Barba, Luis delaOssa, and Jose M. Puerta</i>	
Binary Representation in Gene Expression Programming: Towards a Better Scalability	1441
<i>Jose G. Moreno-Torres, Xavier Llorà, and David E. Goldberg</i>	
E-tsRBF: Preliminary Results on the Simultaneous Determination of Time-Lags and Parameters of Radial Basis Function Neural Networks for Time Series Forecasting	1445
<i>E. Parras-Gutierrez, V. Rivas, and M.J. del Jesus</i>	
Grammatical Concept Representation for Randomised Optimisation Algorithms in Relational Learning	1450
<i>Petr Buryan, Jiří Kubalík, and Katsumi Inoue</i>	
Fast Evolutionary Algorithms for Relational Clustering	1456
<i>Danilo Horta and Ricardo J.G.B. Campello</i>	
Author Index	1463