

# **2006 3<sup>rd</sup> International IEEE Conference Intelligent Systems**

**London, United Kingdom  
4-6, September 2006**

**Volume 1 of 2**



**IEEE Catalog Number:  
ISBN:**

**06EX1304  
1-4244-0195-X**

**Copyright © 2006 by The Institute of Electrical and Electronics Engineers, Inc.  
All Rights Reserved**

*Copyright and Reprint Permissions:* Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republications permission, write to IEEE Copyrights Manager, IEEE Operations Center, 445 Hoes Lane, Piscataway, New Jersey USA 08854. All rights reserved.

IEEE Catalog Number:                   06EX1304  
ISBN:                                        1-4244-0195-X  
Library of Congress:                    2006920749

**Additional Copies of This Publication Are Available from:**

IEEE Service Center  
445 Hoes Lane  
Piscataway, NJ 08854  
IEEE Service Center  
445 Hoes Lane  
Piscataway, NJ 08854  
Phone:                   (800) 678-IEEE  
                              (732) 981-1393  
Fax:                     (732) 981-9667  
E-mail:                 customer-service@ieee.org

# Table of Contents

|   |     |
|---|-----|
| <b>Web Intelligence, Business Intelligence and Decision Support Systems: A Challenge for Fuzzy Logic and Soft Computing</b> ..... | 1   |
| <i>Janusz Kacprzyk</i>  |     |
| <b>Fuzzy Methods for Intelligent Behavior Modeling</b> .....  | 2   |
| <i>Ronald R Yager</i>   |     |
| <b>A New Frontier in Computations - Computation with Information Described in Natural Language</b> .....                          | 3   |
| <i>L. Zadeh</i>   |     |
| <b>T-detectors Maturation Algorithm with min-Match Range Model</b> .....  | 5   |
| <i>Jungan Chen</i>  |     |
| <b>Density maximisation classification in the lattice machine</b> .....   | 9   |
| <i>Hui Wang, Chang Liu</i>  |     |
| <b>LVOT: The Design of an Intelligent System for Building and Using Learning Virtual Objects</b> .....                            | 14  |
| <i>Ana M. Gonzalez de Miguel</i>  |     |
| <b>Detecting Single and Multiple Faults Using Intelligent DSP and Agents</b> .....  | 20  |
| <i>Osama Zaki, Keith Brown, John Fletcherq, David Lane</i>  |     |
| <b>Automating the Identification of Mechanical Systems' Technical State Using Case-Based Reasoning</b> .....                      | 27  |
| <i>Olga A. Nikolaychuk, Alexander Y. Yurin</i>  |     |
| <b>Applying Ant-based Multi-Agent Systems to Query Routing in Distributed Environments</b> .....                                  | 33  |
| <i>Elke Michlmayr, Arno Pany, Sabine Graf</i>   |     |
| <b>The Fusion Process of Goal Ontologies using Intelligent Agents in Distributed Systems</b> .....                                | 39  |
| <i>Nacima Mellal, Richard Dapoingy, Laurent Foulloy</i>   |     |
| <b>Differential Equations Systems versus Scale Free Networks in Sepsis Modeling</b> .....   | 45  |
| <i>Radu N. Dobrescu, Daniela A. Andone, Matei R. Dobrescu, Stefan Mocanu</i>  |     |
| <b>Multitasking Driver Cognitive Behavior Modeling</b> .....  | 49  |
| <i>Yanfei Liu, Zhaohui Wu</i>   |     |
| <b>Fast Kernel for Calculating Structural</b> .....   | 55  |
| <i>Jin-Mao Wei</i>  |     |
| <b>Multivariate Microaggregation Based Genetic Algorithms</b> .....   | 61  |
| <i>Agusti Solanas, Antoni Martinez-Balleste, Josep M. Mateo-Sanz, Josep Domingo-Ferrer</i>  |     |
| <b>Towards the Practical Use of Qualitative Spatial Reasoning in Geographic Information Retrieval</b> .....                       | 67  |
| <i>Alia I. Abdelmoty, Philip Smart, Baher A. El-Geresy</i>  |     |
| <b>KNOWLEDGE ENGINEERING APPROACH TO CONCURRENTLY COMPETNG CYCLIC PROCESSES CONTROL</b> .....                                     | 73  |
| <i>R. Wójcik, G. Bocewicz, Z. Banaszak</i>  |     |
| <b>Relative Qualification in Database Flexible</b> .....  | 79  |
| <i>Cornelia Tudorie</i>   |     |
| <b>A Query Model with Relevance Feedback for</b> .....  | 85  |
| <i>Sahudy Montenegro Gonzalez</i>   |     |
| <b>Extending the Resource-Constrained Project</b> .....   | 91  |
| <i>Jurgen Kuster</i>  |     |
| <b>Inductive Learning of Dispute Scenarios for</b> .....  | 99  |
| <i>Boris A. Galitsky</i>  |     |
| <b>Reasoning about Situation Similarity</b> .....   | 105 |
| <i>Christos B. Anagnostopoulos</i>  |     |

# Table of Contents

|   |            |
|---|------------|
| <b>Ad-Hoc Networking with OWL-S and CSP .....</b>   | <b>111</b> |
| <i>J. I. Rendo Fernandez</i>  |            |
| <b>Learning Concepts, Taxonomic and Nontaxonomic.....</b>                                     | <b>117</b> |
| <i>Mehrnoush Shamsfard</i>  |            |
| <b>Method for Solving Multiple Criteria .....</b>   | <b>121</b> |
| <i>Nikolay Tontchev</i>   |            |
| <b>Case-Based Decision Support for Intelligent.....</b>                                       | <b>125</b> |
| <i>David Wilson</i>   |            |
| <b>Group Decision Process Supported by Web.....</b>   | <b>131</b> |
| <i>Carlos J. Costa</i>  |            |
| <b>Optimizing In-Queue Flight Regimes .....</b>   | <b>138</b> |
| <i>Dimitar D. Dimitrakiev</i>   |            |
| <b>On Planning a Public Pension System .....</b>  | <b>147</b> |
| <i>Daisuke Banjo</i>  |            |
| <b>Field Service Planning as an Enabler for.....</b>  | <b>154</b> |
| <i>George Anim-Ansah</i>  |            |
| <b>Nurse Scheduling by Using Cooperative GA.....</b>  | <b>161</b> |
| <i>Makoto Ohki</i>  |            |
| <b>Forma Analysis of Permutation Random Keys.....</b>   | <b>167</b> |
| <i>Andrew Tuson</i>   |            |
| <b>A New Structure for Particle Swarm Optimization (nPSO).....</b>                            | <b>173</b> |
| <i>Qian Zhang</i>   |            |
| <b>Evolutionary Support Vector Machines for .....</b>   | <b>179</b> |
| <i>Ruxandra Stoean</i>  |            |
| <b>The Combination of Fuzzy Logic and Expert</b>  |            |
| <b>System for Arabic Character Recognition.....</b>   | <b>185</b> |
| <i>O. Hachour</i>   |            |
| <b>An Optimized Fuzzy Control Algorithm for</b>   |            |
| <b>Servodrives. Some Real-Time Experiments. ....</b>  | <b>188</b> |
| <i>Dan Mihai</i>  |            |
| <b>Smart FLC Controller Built Around Programmable Logic Chip for Process Control.....</b>     | <b>194</b> |
| <i>Rupali Patil</i>   |            |
| <b>On the Evolution of Cardinality-based Generalized Yes/No Queries .....</b>                 | <b>198</b> |
| <i>Patrick Bosc</i>   |            |
| <b>A method for constructing V. Young's fuzzy subethood measures and fuzzy entropies.....</b> | <b>204</b> |
| <i>H. Bustince</i>  |            |
| <b>Model identification of 17h Ozone concentration over the Basse-Normandie region.....</b>   | <b>211</b> |
| <i>Elamari Elayan, Fouad Giri, Eric Pigeon, Jean-Francois Massieu</i>                         |            |
| <b>Fuzzy Spatial Relations between Vague Regions .....</b>                                    | <b>217</b> |
| <i>Steven Schockaert, Chris Cornelis, Martine De Cock, Etienne E. Kerre</i>                   |            |
| <b>E-service adaptation using fuzzy cognitive maps.....</b>                                   | <b>223</b> |
| <i>Dimitris Kardaras, Bill Karakostas</i>   |            |
| <b>Mean Value and Variance of Fuzzy Random Variables by Evaluation Measures .....</b>         | <b>227</b> |
| <i>Yuji YOSHIDA</i>   |            |

# Table of Contents

|  |     |
|--|-----|
| <b>Approximation of Derivatives by Fuzzy Systems</b> .....   | 233 |
| <i>Paulo Salgado</i>   |     |
| <b>Multivariable Self-organizing fuzzy logic control (SOFLC) using a switching mode linguistic compensator</b> ..... | 239 |
| <i>Q. Lu, M. Mahfouf</i>   |     |
| <b>Bandwidth Allocation For Wireless Multimedia Traffic By Using Fuzzy Logic</b> .....                               | 246 |
| <i>J.D. Mallapur, S.S. Manvi, D.H. Rao</i>   |     |
| <b>Using Markov Models to Manage High Occupancy Hospital Care</b> .....  | 251 |
| <i>Sally McClean, Peter Millard</i>  |     |
| <b>An OLAP-Enabled Software Environment for Modeling Patient Flow</b> .....  | 256 |
| <i>Christos Vasilakis, Elia El-Darzi, Panagiotis Chountas</i>  |     |
| <b>IGUANA: Individuation of Global Unsafe Anomalies and Alarm activation</b> .....                                   | 262 |
| <i>Daniele Apiletti, Elena Baralis, Giulia Bruno, Tania Cerquitelli</i>  |     |
| <b>Architecting an Event-based Pervasive Sensing Environment in the Hospital</b> .....                               | 268 |
| <i>Bin Wu, Roy George, Khalil Shujaee</i>  |     |
| <b>Agent-based Models for Community Care Systems Analysis and Design</b> .....                                       | 273 |
| <i>Wei Huang, Elia El-Darzi, Panagiotis Chountas, Peng Liu</i>   |     |
| <b>Mining A Primary Biliary Cirrhosis Dataset Using Rough Sets and a Probabilistic Neural Network</b> .....          | 279 |
| <i>Kenneth Revett, Florin Gorunescu, Marina Gorunescu, Marius Ene</i>  |     |
| <b>Data Mining a Prostate Cancer Dataset Using Rough Sets</b> .....  | 285 |
| <i>Kenneth Revett, Sérgio Tenreiro de Magalhães, Henrique M.D. Santos</i>  |     |
| <b>Input Selection for TSK Fuzzy Model based on Modified Mountain Clustering</b> .....                               | 289 |
| <i>Ahmad Banakar</i>   |     |
| <b>A Robust Scheme for Tuning of Fuzzy PI Type Controller</b> .....  | 294 |
| <i>Seema Chopra, R. Mitra, Vijay Kumar</i>   |     |
| <b>Switched Fuzzy Systems: Representation Modelling, Stability Analysis, and Control Design</b> .....                | 300 |
| <i>Hong Yang, Georgi M. Dimirovski, Jun Zhao</i>   |     |
| <b>Intelligent Switching Surface for Variable Structure Adaptive Model Following Control</b> .....                   | 306 |
| <i>Susy Thomas, Harish Reddy</i>   |     |
| <b>A Systematic Methodology for Measuring and Designing C2 Organization</b> .....                                    | 311 |
| <i>Xiaohong Peng, Dongsheng Yang, Zhong Liu, Jincui Huang</i>  |     |
| <b>Load Balancing among Photolithography Machines in Semiconductor Manufacturing</b> .....                           | 314 |
| <i>Arthur M. D. Shr, Alan Liu, Peter P. Chen</i>   |     |
| <b>Control-Oriented Fuzzy Multi-Model Identification of a Highly Nonlinear Missile</b> .....                         | 320 |
| <i>S. Vahid Hashemi</i>  |     |
| <b>Controlling Nonlinear Dynamic Systems with Projection Pursuit Learning</b> .....                                  | 326 |
| <i>Clodoaldo A. M. Lima, Pablo A. D. Castro, André L. V. Coelho, Cynthia Junqueira, Fernando J. Von Zuben</i>        |     |
| <b>Advanced Control of a Steam Generator</b> .....   | 332 |
| <i>Daniela G. Andone, Ioana I. Fagarasan, Matei R. Dobrescu</i>  |     |
| <b>Self-refreshing SOM for dynamic process state monitoring in a circulating fluidized bed energy plant</b> .....    | 338 |
| <i>Teemu Räsänen, Ari Kettunen, Eero Niemitalo, Yrjö Hiltunen</i>  |     |
| <b>Automatic Tuning of Decentralized</b> .....   | 344 |
| <i>Ali Reza Mehrabian</i>  |     |
| <b>Finding Preferred Query Relaxations in Content-based Recommenders</b> .....                                       | 348 |
| <i>Dietmar Jannach</i>   |     |

# Table of Contents

|  |            |
|--|------------|
| <b>The SAD System: Deductive Assistance in an Intelligent Linguistic Environment .....</b>                                       | <b>354</b> |
| <i>Alexander Lyaletski, Andrei Paskevich, Konstantin Verchinine</i>  |            |
| <b>An Incremental Learning Structure using Granular</b>  |            |
| <b>Computing and Model Fusion With Application to Materials Processing .....</b>   | <b>360</b> |
| <i>George Panoutsos, Mahdi Mahfouf</i>   |            |
| <b>On some types of linguistic summaries of time series .....</b>  | <b>366</b> |
| <i>Janusz Kacprzyk, Anna Wilbik, Slawomir Zadrozny</i>   |            |
| <b>Improving Business Processes Using Enterprise Modelling and Temporal Information.....</b>                                     | <b>372</b> |
| <i>Dorothy Nan Wang, Ilias Petrounias</i>  |            |
| <b>Intelligent Agents that Span the Process Management Spectrum.....</b>   | <b>378</b> |
| <i>John Debenham, Simeon Simoff</i>  |            |
| <b>Agent based Connectivity Detection and Routing in Mobile Ad-hoc Networks.....</b>   | <b>382</b> |
| <i>J.M. Hurakadi, S.S. Manvi, J.D. Mallapur</i>  |            |
| <b>Using agent-based of driver behavior in the context of car park optimization .....</b>  | <b>387</b> |
| <i>J.M. Boussier, P. Estrailier, D. Sarramia, M. Augeraud</i>  |            |
| <b>Agent Learning to Manage Costs for Event Detection .....</b>  | <b>393</b> |
| <i>Kareem S. Aggour, John Interrante, Christina LaComb</i>   |            |
| <b>Multi-Agent Reinforcement Learning for Strategic Bidding in Power Markets .....</b>   | <b>400</b> |
| <i>Athina C. Tellidou</i>  |            |
| <b>Intelligent Agents Based Non - Square Plants Control.....</b>   | <b>406</b> |
| <i>Mincho B. Hadjiski, Vassil S. Sgurev, Venelina G. Boishina</i>  |            |
| <b>Towards an Agent-Based Framework for Online After-Sale Services .....</b>   | <b>412</b> |
| <i>Lu Zhang, Frans Coenen, Wei Huang, Paul Leng</i>  |            |
| <b>An InfoStation-Based Multi-Agent System for the Provision of Intelligent Mobile Services in a University Campus Area.....</b> | <b>418</b> |
| <i>I. Ganchev</i>  |            |
| <b>A Bayesian Solution to Track Multiple and Dynamic Objects Robustly from Visual Data.....</b>                                  | <b>424</b> |
| <i>Marta Marrón</i>  |            |
| <b>Calculating Likelihoods in Bayesian Networks.....</b>   | <b>430</b> |
| <i>David H. Glass</i>  |            |
| <b>A New Type of Covering Rough Set.....</b>   | <b>436</b> |
| <i>William Zhu, Fei-Yue Wang</i>   |            |
| <b>Specification and Verification of Reconfiguration Protocols in Grid Component Systems.....</b>                                | <b>442</b> |
| <i>Alessandro Basso, Alexander Bolotov, Artie Basukoski, Vladimir Getov, Ludovic Henrio, Mariusz Urbanski</i>                    |            |
| <b>An Approach for Environmental Impacts Assessment using Belief Theory .....</b>  | <b>448</b> |
| <i>H. Omrani, L. Ion-Boussier, P. Trigano</i>  |            |
| <b>Tracking of Multiple Target Types with a Single Neural Extended Kalman Filter .....</b>                                       | <b>454</b> |
| <i>Kathleen A. Kramer</i>  |            |
| <b>Integrative Data Mining for Assessing International Conflict Events .....</b>   | <b>460</b> |
| <i>Francisco Azuaje, Haiying Wang, Huiru Zheng, Chang Liu, Hui Wang, Ruth Rios-Morales</i>                                       |            |
| <b>An Clustering Algorithm Based on Rough Set.....</b>   | <b>466</b> |
| <i>E Xu, Gao Xuedong, Wu Sen, Yu Bin</i>   |            |
| <b>Workflow Quality of Service Management using Data Mining Techniques .....</b>   | <b>470</b> |
| <i>Jorge Cardoso</i>   |            |

# Table of Contents

|  |            |
|--|------------|
| <b>CLoPAR: Classification based on Predictive Association Rules .....</b>  | <b>474</b> |
| <i>M. Naderi Dehkordi, M. H. Shenassa</i>  |            |
| <b>Achieving Natural Clustering by Validating Results of Iterative Evolutionary Clustering Approach.....</b>             | <b>479</b> |
| <i>Tansel Ozyer, Reda Alhajj</i>   |            |
| <b>Alternative Method for Incentively Constructing the FP-Tree .....</b>   | <b>485</b> |
| <i>Muhaimenul Adnan, Reda Alhajj, Ken Barker</i>   |            |
| <b>Ratio Rule Mining with Support and Confidence Factors .....</b>   | <b>491</b> |
| <i>Masafumi Hamamoto, Hiroyuki Kitagawa</i>  |            |
| <b>Deploying MIB Data Mining for Proactive Network Management .....</b>  | <b>497</b> |
| <i>P. G. Kulkarni, S. I. McClean, G. P. Parr, M. M. Black</i>  |            |
| <b>WSpan: Weighted Sequential pattern mining in large sequence databases .....</b>                                       | <b>503</b> |
| <i>Unil Yun</i>  |            |
| <b>A Tool for Intelligent Customer Analytics .....</b>   | <b>509</b> |
| <i>Detlef D Nauck, Dymitr Ruta, Martin Spott, Ben Azvine</i>   |            |
| <b>Smart Data Analysis Services .....</b>  | <b>513</b> |
| <i>Martin Spott, Henry Abraham, Detlef Nauck</i>   |            |
| <b>Using association rule mining for the QSAR problem .....</b>  | <b>519</b> |
| <i>L. Dumitriu, M-V. Craciun, C. Segal, A. Cocu, L. P. Georgescu</i>   |            |
| <b>Towards Elimination of Well Known Geographic Patterns in Spatial Association Rule Mining .....</b>                    | <b>523</b> |
| <i>Vania Bogorny, Sandro da Silva Camargo, Paulo Martins Engel, Luis Otavio Alvares</i>                                  |            |
| <b>Probabilistic Ant based Clustering for Distributed Databases .....</b>  | <b>529</b> |
| <i>R.Chandrasekar, Vivek Vijaykumar, T.Srinivasan</i>  |            |
| <b>SPEED: Mining Maximal Sequential Patterns over Data Streams.....</b>  | <b>537</b> |
| <i>Chedy Raissi, Pascal Poncelet, Maguelonne Teisseire</i>   |            |
| <b>A Method for Fuzzy Clustering with Ordinal Attributes Replaced by Fuzzy Set Parameters.....</b>                       | <b>544</b> |
| <i>Roelof K. Brouwe</i>  |            |
| <b>Introducing Grammatical Evolution in Fetal Heart Rate Analysis and Classification .....</b>                           | <b>550</b> |
| <i>Ioannis Tsoulos, George Georgoulas, Dimitris Gavrilis, Chrysostomos Stylios, Joao Bernardes, Peter Groumpos</i>       |            |
| <b>Naive Bayes classifier: True and estimated errors for 2-class, 2-features case .....</b>                              | <b>556</b> |
| <i>Zoe Hoare</i>   |            |
| <b>Fault Diagnosis of Blast Furnace Based on DAGSVM.....</b>   | <b>561</b> |
| <i>Anna Wang, Lina Zhang, Nan Gao</i>  |            |
| <b>On the Advantages of Weighted L1-Norm Support Vector Learning for Unbalanced Binary Classification Problems .....</b> | <b>565</b> |
| <i>Tatjana Eitrich, Bruno Lang</i>   |            |
| <b>Testing Attribute Selection Algorithms for Classification Performance on Real Data .....</b>                          | <b>571</b> |
| <i>Mihaescu Marian Cristian, Burdescu Dumitru Dan</i>  |            |
| <b>A Neurofuzzy Adaptive Kalman Filter .....</b>   | <b>577</b> |
| <i>P. J. Escamilla-Ambrosio</i>  |            |
| <b>Artificial Neural Network-based Hybrid Force/Position Control of an Assembly Task.....</b>                            | <b>583</b> |
| <i>Y. Touati, Y. Amirat, N. Saadia</i>   |            |
| <b>Dynamic Neural Observer with Sliding Mode Learning.....</b>   | <b>589</b> |
| <i>Isaac Chairez, Alexander Poznyak, Tatyana Poznyak</i>   |            |

# Table of Contents

|   |            |
|---|------------|
| <b>Artificial intelligence based-modeling for sizing of a Stand-Alone Photovoltaic Power System: Proposition for a New Model using Neuro-Fuzzy System (ANFIS) .....</b> | <b>595</b> |
| <i>Adel Mellit</i>  |            |
| <b>High Performance Associative Memory Models with Low Wiring Costs.....</b>  | <b>601</b> |
| <i>Lee Calcraft, Rod Adams, Neil Davey</i>  |            |
| <b>Identification and Prediction of Nonlinear Dynamical Plants Using TSK and Wavelet Neuro-Fuzzy Models.....</b>  | <b>606</b> |
| <i>Ahmad Banakar, Mohammad Fazle Azeem</i>  |            |
| <b>A New Artificial Neural Network and its Application in Wavelet Neural Network and Wavelet Neuro-Fuzzy Case study: Time Series Prediction.....</b>                    | <b>610</b> |
| <i>Ahmad Banakar, Mohammad Fazle Azeem</i>  |            |
| <b>Support Vector Machines and Neural Networks as Marker Selectors for Cancer Gene Analysis.....</b>  | <b>615</b> |
| <i>M. E. Blazadonakis, M. Zervakis, M.Kounelakis, E.Biganzoli, N. Lama</i>  |            |
| <b>A Hybrid Learning Algorithm Fusing STDP with GA based Explicit Delay Learning for Spiking Neurons.....</b>   | <b>621</b> |
| <i>S. P. Johnston, G. Prasad, L. Maguire, T. M. McGinnity</i>   |            |
| <b>A Computerised Diagnostic Decision Support System in Wireless-Capsule Endoscopy.....</b>   | <b>627</b> |
| <i>Vassilis S. Kodogiannis, John N. Lygouras,</i>   |            |
| <b>Artificial Intelligence Technique for Gene Expression Profiling of Urinary Bladder Cancer.....</b>   | <b>634</b> |
| <i>M.F. Abbod, J.W.F. Catto, D.A. Linkens, P.J. Wild, A. Herr, C. Wissmann, C. Pilarsky, A. Hartmann, F.C. Hamdy</i>  |            |
| <b>Thai Vehicle License Plate Recognition Using the Hierarchical Cross-correlation ARTMAP .....</b>   | <b>640</b> |
| <i>Pruegsa Duangphasuk, Arit Thammano</i>   |            |
| <b>Recognition of Farsi Handwritten Cheque Values Using Neural Networks.....</b>  | <b>644</b> |
| <i>M.S. Ehsani</i>  |            |
| <b>Combining Krawtchouk Moments and HMMs for Offline Handwritten Chinese Character Recognition.....</b>   | <b>649</b> |
| <i>Xianmei Wang, Bin Xie, Yang Yang</i>   |            |
| <b>Implementation of Asset Health Assessment System with Pattern-Oriented Design and Practice .....</b>   | <b>654</b> |
| <i>Liqun Zhang, Avin Mathew, Sheng Zhang, Lin Ma</i>  |            |
| <b>Algorithmic Generation of Path Fragment Covers for Mobile Robot Path Planning .....</b>  | <b>660</b> |
| <i>Jan Willemson, Maarja Kruusmaa</i>   |            |
| <b>A Rough-Fuzzy Controller for Autonomous Mobile Robot Navigation .....</b>  | <b>666</b> |
| <i>Chang Su Lee, Thomas Bräunl, Anthony Zaknich</i>   |            |
| <b>Improving EKF-based solutions for SLAM problems in Mobile Robots employing Neuro-Fuzzy Supervision .....</b>   | <b>670</b> |
| <i>Amitava Chatterjee, Fumitoshi Matsuno</i>  |            |
| <b>Articulated Robot Motion Planning Using Ant Colony Optimisation .....</b>  | <b>677</b> |
| <i>Mohd Murtadha Mohamad, Nicholas K. Taylor, Matthew W. Dunnigan</i>   |            |
| <b>Tracking Extended Moving Objects with a Mobile Robot.....</b>  | <b>683</b> |
| <i>Andreas Kraubling</i>  |            |
| <b>Intuitionistic Truth-knowledge Symmetric Bilattices for Uncertainty in Intelligent Systems.....</b>  | <b>689</b> |
| <i>Zoran Majkic</i>   |            |
| <b>An Intelligent Algorithm For Arabic Soundex Function Using Intuitionistic Fuzzy Logic .....</b>  | <b>697</b> |
| <i>Moawia E. Yahia, Mohamad E. Saeed, Ashwag M. Salih</i>   |            |
| <b>Distances Between Intuitionistic Fuzzy Sets: Straightforward Approaches may not work.....</b>  | <b>702</b> |
| <i>Eulalia Szmidt, Janusz Kacprzyk</i>  |            |



# Table of Contents

|   |            |
|---|------------|
| <b>Classification of Imbalanced and Overlapping Classes using Intuitionistic Fuzzy Sets.....</b>  | <b>708</b> |
| <i>Eulalia Szmidi, Marta Kukier</i>   |            |
| <b>Outer measure on F-sets.....</b>   | <b>714</b> |
| <i>Alzbeta Michalikova, Veronika Valencakova</i>  |            |
| <b>On the probability theory on the Atanassov sets .....</b>  | <b>716</b> |
| <i>Riecan Beloslav</i>  |            |
| <b>Intuitionistic Fuzzy Approach to Enhance Text Documents .....</b>  | <b>719</b> |
| <i>Jayanthi Kuppannan, Parvathi Rangasamy, Devi Thirupathi, N. Palaniappan</i>  |            |
| <b>On aggregating multiple fuzzy values into a single intuitionistic fuzzy estimate .....</b>   | <b>724</b> |
| <i>Ludmila Todorova, Stefan Dantchev, Krassimir Atanassov, Violeta Tasseva, Peter Georgiev</i>  |            |
| <b>On Eight New Intuitionistic Fuzzy Implications .....</b>   | <b>727</b> |
| <i>Krassimir T. Atanassov</i>   |            |
| <b>Conservative Betting on Sport Games with Intuitionistic Fuzzy Described Uncertainty .....</b>  | <b>733</b> |
| <i>Kiril I. Tenekedjiev, Natalia D. Nikolova, Carlos A. Kobashikawa, Kaoru Hirota</i>   |            |
| <b>Generalized Nets as an Instrument for Description of the Process of Expert System Construction.....</b>  | <b>741</b> |
| <i>Desislava Peneva, Violeta Tasseva, Vassilis Kodogiannis, Evdokia Sotirova, Krassimir Atanassov</i>   |            |
| <b>A Generalized Net Model of the Separate Information Flow Connections within a University .....</b>   | <b>746</b> |
| <i>Anthony Shannon, Daniela Langova-Orozova, Evdokia Sotirova, Ilias Petrounias, Krassimir Atanassov, Maciej Krawszak, Pedro Melo-Pinto, Taekyun Kim, Violeta Tasseva</i> |            |
| <b>Merging Probabilistic &amp; Null Values Utilising an Intuitionistic Fuzzy Relational Mediator .....</b>  | <b>750</b> |
| <i>Boyan Kolev, Krassimir Atanassov, Panagiotis Chountas, Ilias Petrounias</i>  |            |
| <b>(t -t)-Intuitionistic fuzzy sets .....</b>   | <b>757</b> |
| <i>Amitava Samanta, S.K.Samanta</i>   |            |
| <b>Rough Sets on Intuitionistic Fuzzy Approximation Spaces .....</b>  | <b>762</b> |
| <i>B.K.Tripathy</i>   |            |
| <b>A framework for STEP-based harmonization of conceptual models.....</b>   | <b>766</b> |
| <i>M. Delgado, C. Agostinho, P. Malo, R. Jardim-Goncalves</i>   |            |
| <b>Adaptive Genetic Hybrids for Order Review and Release into Production .....</b>  | <b>771</b> |
| <i>Alessandra Orsoni</i>  |            |
| <b>Ontological harmonization of enterprise product models: an experimented scenario .....</b>   | <b>777</b> |
| <i>Ricardo Jardim-Goncalves, João P M A Silva, Adolfo Steiger-Garcao, António A C Monteiro</i>  |            |
| <b>Methodologies for Load Forecasting.....</b>  | <b>784</b> |
| <i>Piers R. J. Campbell, Ken Adamson</i>  |            |
| <b>Product Data integration in the demand of interoperability in e-Business .....</b>   | <b>791</b> |
| <i>C. Agostinho, R. Costa, P. Malo, R. Jardim-Goncalves</i>   |            |
| <b>Integrating Simulation into Decision Support Systems .....</b>   | <b>797</b> |
| <i>Javier Otamendi</i>  |            |
| <b>Itemset Mining on Indexed Data Blocks.....</b>   | <b>803</b> |
| <i>Elena Baralis, Tania Cerquitelli, Silvia Chiusano</i>  |            |
| <b>Genetic K-Medoids Spatial Clustering with Obstacles Constraints.....</b>   | <b>809</b> |
| <i>Xueping Zhang, Jiayao Wang, Fang Wu, Zhongshan Fan, Wenbo Xu</i>   |            |
| <b>Healthcare Data Mining: Prediction Inpatient Length of Stay .....</b>  | <b>815</b> |
| <i>Peng Liu, Lei Lei, Junjie Yin, Wei Zhang, Wu Naijun, Elia El-Darzi</i>   |            |
| <b>Forecast Method of Steel Output based on Self-Adaptive Wavelet Neural Network Model .....</b>  | <b>821</b> |
| <i>Liu Lanjuan, Shang Qingchen, Xie Meiping</i>   |            |

# Table of Contents

|  |     |
|--|-----|
| <b>Study on Knowledge Expression and Efficient Attribute Reduction Algorithm Based on Information Granule</b> .....        | 825 |
| <i>CHEN Xi, FU Ming, WANG Xiaoqian</i>   |     |
| <b>An Analysis Model of Financial Statements Based on Data Mining</b> .....  | 830 |
| <i>Li Yanhong, Liu Peng, Qin Zheng</i>   |     |
| <b>Clustering Ontology-enriched Graph Representation for Biomedical Documents based on Scale-Free Network Theory</b> ..... | 834 |
| <i>Illhoi Yoo, Xiaohua Hu</i>  |     |