

**PROCEEDINGS OF
THE 2013 INTERNATIONAL CONFERENCE ON
ARTIFICIAL INTELLIGENCE**

ICAI 2013

Volume I

Editors

**Hamid R. Arabnia, David de la Fuente
Elena B. Kozerenko, Peter M. LaMonica
Raymond A. Liuzzi, Jose A. Olivas
Todd Waskiewicz**

Associate Editors

**George Jandieri, Ashu M. G. Solo
Ivan Nunes da Silva, Fernando G. Tinetti
Fadi Thabtah**



WORLDCOMP'13

July 22-25, 2013

Las Vegas Nevada, USA

www.world-academy-of-science.org

©CSREA Press

This set of volumes contain papers presented at The 2013 International Conference on Artificial Intelligence (ICAI'13). Their inclusion in this publication does not necessarily constitute endorsements by editors or by the publisher.

Copyright and Reprint Permission

Copying without a fee is permitted provided that the copies are not made or distributed for direct commercial advantage, and credit to source is given. Abstracting is permitted with credit to the source. Please contact the publisher for other copying, reprint, or republication permission.

Copyright © 2013 CSREA Press
ISBN: 1-60132-246-1, 1-60132-248-8 (1-60132-247-X)
Printed in the United States of America

CSREA Press
U. S. A.

Foreword

It gives us great pleasure to introduce this collection of papers to be presented at the 2013 International Conference on Artificial Intelligence (ICAI'13), July 22 through 25, 2013, at The New Tropicana Hotel, Las Vegas, USA.

An important mission of the World Congress in Computer Science, Computer Engineering, and Applied Computing (a federated congress to which this conference is affiliated with) includes *"Providing a unique platform for a diverse community of constituents composed of scholars, researchers, developers, educators, and practitioners. The Congress makes concerted effort to reach out to participants affiliated with diverse entities (such as: universities, institutions, corporations, government agencies, and research centers/labs) from all over the world. The congress also attempts to connect participants from institutions that have **teaching** as their main mission with those who are affiliated with institutions that have **research** as their main mission. The congress uses a quota system to achieve its institution and geography diversity objectives."* By any definition of diversity, this congress is among the most diverse scientific meeting in USA. We are proud to report that this federated congress has authors and participants from 82 different nations representing variety of personal and scientific experiences that arise from differences in culture and values. As can be seen (see below), the program committee of this conference as well as the program committee of all other tracks of the federated congress are as diverse as its authors and participants.

The program committee would like to thank all those who submitted papers for consideration. About 67% of the submissions were from outside the United States. Each submitted paper was peer-reviewed by two experts in the field for originality, significance, clarity, impact, and soundness. In cases of contradictory recommendations, a member of the conference program committee was charged to make the final decision; often, this involved seeking help from additional referees. In addition, papers whose authors included a member of the conference program committee were evaluated using the double-blinded review process. One exception to the above evaluation process was for papers that were submitted directly to chairs/organizers of pre-approved sessions/workshops; in these cases, the chairs/organizers were responsible for the evaluation of such submissions. The overall paper acceptance rate for regular papers was 27%; 14% of the remaining papers were accepted as poster and/or short papers (at the time of this writing, we had not yet received the acceptance rate for a few individual tracks.)

We are very grateful to the many colleagues who offered their services in organizing the conference. In particular, we would like to thank the members of the Program Committee of ICAI'13, members of the congress Steering Committee, and members of the committees of federated congress tracks that have topics within the scope of ICAI. Many individuals listed below, will be requested after the conference to provide their expertise and services for selecting papers for publication (extended versions) in journal special issues as well as for publication in a set of research books (to be prepared for publishers including: Springer, Elsevier, BMC, and others).

- *Dr. Alireza Abbasi; University of New South Wales (UNSW), Canberra, Australia*
- *Dr. Selim Aissi (World Congress Steering Committee); formerly, Chief Strategist - Security, Intel Corp., USA; Senior Business Leader & Head of Global Enterprise Security Architecture, Visa Corporation, USA*
- *Prof. Babak Akhgar (World Congress Steering Committee); Fellow of the British Computer Society, CITP; Professor of Informatics; Co-Director of CENTRIC (Centre of Excellence in Terrorism, Resilience, Intelligence & organised Crime research), Sheffield Hallam University, Sheffield, UK*
- *Dr. Fahad Al-Harby (EEE); The National Centre for Financial & Economic Information, Ministry of Finance, Riyadh, Saudi Arabia*
- *Prof. Nizar Al-Holou (World Congress Steering Committee); Professor and Chair, ECE Department; Vice Chair, IEEE/SEM-Computer Chapter; University of Detroit Mercy, Detroit, Michigan, USA*
- *Dr. Haider M. AlSabbagh; University of Basra, Iraq*
- *Prof. Hamid R. Arabnia (World Congress Steering Committee); Professor, Computer Science; Editor-in-Chief, The Journal of Supercomputing (Springer); Elected Fellow, Int'l Society of Intelligent Biological Medicine (ISIBM); The University of Georgia, Department of Computer Science, USA*
- *Peyman Arebi; Assistant Professor, Technical and Vocational University, Bushehr, Iran*

- Prof. Ezendu Ariwa (*Publicity Vice-Chair*); *Chair, IEEE Consumer Electronics Chapter, UK&RI; Visiting Professor, Gulf University, Bahrain and University of Lagos and Kano State Polytechnic, Nigeria*
- Prof. Mehran Asadi; *Lincoln University, Pennsylvania, USA*
- Dr. Azita Bahrami (*Session Chair, EEE*); *President, IT Consult, USA*
- Prof. Juan Jose Martinez Castillo; *Director of The Acantelys Research Group and Coordinator of the Computer Engineering Department, Universidad Gran Mariscal de Ayacucho, Venezuela*
- Prof. Juan Cuadrado-Gallego; *Universidad de Alcala, Edificio Politecnico, Spain*
- Prof. Kevin Daimi (*World Congress Steering Committee*); *Director, Computer Science and Software Engineering Programs; Department of Mathematics, Computer Science and Software Engineering; University of Detroit Mercy, Detroit, Michigan, USA*
- Prof. Leonidas Deligiannidis; *Professor, Wentworth Institute of Technology, MA, USA*
- Dr. David de la Fuente (*Session Chair, ICAI*); *University of Oviedo, Spain*
- Prof. Ray Hashemi (*Session Chair, IKE*); *Armstrong Atlantic State University, Georgia, USA*
- Prof. Houcine Hassan; *Universitat Politecnica de Valencia, Spain*
- Prof. George Jandieri (*World Congress Steering Committee*); *Georgian Technical University, Tbilisi, Georgia; Chief Scientist, The Institute of Cybernetics, Georgian Academy of Science, Georgia; Editorial Board Member: International Journal of Microwaves and Optical Technology, Georgia*
- Prof. Dong Hwa Kim; *Hanbat National University, Korea*
- Prof. Dattatraya V. Kodavade (*World Congress Steering Committee*); *Head of Computer Science and Engineering, D.K.T.E Society's Textile & Engineering Institute, Ichalkaranji, Maharashtra State, India*
- Dr. Elena B. Kozerenko (*Session Chair, ICAI*); *Institute of Informatics Problems of the Russian Academy of Sciences, Moscow, Russia*
- Prof. B. Raja Sarath Kumar; *Principal, Lenora College of Engineering, India*
- Dr. Peter M. LaMonica (*Session Chair, ICAI*); *US Air Force Research Lab, AFRL/RIED, USA*
- Prof. Kun Chang Lee (*World Congress Steering Committee*); *Professor of MIS and WCU Professor of Creativity Science, Business School and Department of Interaction Science, Sungkyunkwan University, Korea*
- Dr. Raymond A. Liuzzi (*Session Chair, ICAI*); *Raymond Technologies, New York, USA*
- Dr. Bala Krishna Maddali (*GEM*); *University School of IT, GGS Indraprastha University, India*
- Dr. Veenu Mangat (*ICAI + GEM + IKE*); *University Institute of Engineering and Technology, Panjab University, Chandigarh, India*
- Muhammad Naufal Bin Mansor; *University Malaysia Perlis, Perlis, Malaysia*
- Dr. Tao Mao (*ICAI + GEM*); *Oracle America, Inc., California, USA*
- Prof. George Markowsky (*World Congress Steering Committee and SAM Session Chair*); *Professor and Associate Director, School of Computing and Information Science; Chair International Advisory Board of IEEE IDAACS; Director 2013 Northeast Collegiate Cyber Defense Competition; Cooperating Professor Math and Statistics Department UMaine and School of Policy & International Affairs UMaine; University of Maine, Orono, Maine, USA*
- Prof. Gonzalo Pajares Martinsanz (*IPCV + ICAI*); *Universidad Complutense de Madrid, Spain*
- Dr. Sara Moein; *Editorial Board, Int'l Journal of Science and Technology; MultiMedia University, Malaysia*
- Dr. Ehab Morsy (*FCS*); *Suez Canal University, Egypt*
- Dr. Ali Mostafaeipour; *Yazd University, Iran*
- Dr. Saurabh Mukherjee; *Banasthali University, Banasthali, India*
- Dr. Josefa Mula; *Deputy Director, Degree programs in Educational Innovation and Quality in the Higher Polytechnic School of Alcoy; Polytechnic University of Valencia, Spain*
- Dr. Jose A. Olivas (*Session Chair, ICAI*); *University of Castilla - La Mancha, Spain*
- Prof. G. N. Pandey (*World Congress Steering Committee*); *Vice-Chancellor, Arunachal University of Studies, Arunachal Pradesh, India; Adjunct Professor, Indian Institute of Information Technology, Allahabad, India*
- Prof. James J. (Jong Hyuk) Park (*World Congress Steering Committee*); *Professor of Computer Science and Engineering, Seoul National University of Science and Technology (SeoulTech), Korea; President, KITCS; President, FTRA; Editor-in-Chiefs: HCIS, JoC and IJITCC Journals*
- Dr. Satish Penmatsa; *University of Maryland - Eastern Shore, Maryland, USA*
- Prof. Raul Poler; *Director, Research Centre on Production Management and Engineering, Polytechnic University of Valencia, Spain*
- Prof. Junfeng Qu; *Clayton State University, Georgia, USA*
- Prof. B. V. A. N. S. Prabhakar Rao (*ICAI + SERP*); *School of Computing Science and Engineering, VIT University, India*
- Dr. Gerald Schaefer (*Session Chair, IPCV*); *Loughborough University, UK*
- Dr. Liang Shi; *Senior Researcher, McAfee, USA*
- Dr. Zhefu Shi; *Microsoft Corporation, Washington, USA*

- *Dr. Marek Sikora (IKE); Silesian University of Technology, Poland*
- *Prof. Ivan Nunes da Silva (Session Chair, ICAI); University of Sao Paulo - USP/EESC/SEL, Department of Electrical and Computer Engineering, Sao Paulo, Brazil*
- *Ashu M. G. Solo, (Publicity Chair); Fellow of British Computer Society, Principal/R&D Engineer, Maverick Technologies America Inc., USA*
- *Dr. Jiao Tao; Oracle USA*
- *Prof. Fernando G. Tinetti (World Congress Steering Committee); School of Computer Science, Universidad Nacional de La Plata, La Plata, Argentina; Co-editor, Journal of CS and Technology (JCS&T)*
- *Dr. Fadi Thabtah (Session Chair, ICAI); Huddersfield University, United Kingdom*
- *Dr. Predrag Tomic (World Congress Steering Committee); Microsoft, Washington, USA*
- *Prof. Vladimir Volkov (World Congress Steering Committee); The Bonch-Bruевич State University of Telecommunications, Saint-Petersburg, Russia*
- *Dr. Todd Waskiewicz (Session Chair, ICAI); US Air Force Research Lab, AFRL/RIED, USA*
- *Dr. Alexander Wohrer (ICOMP + GCA); Program Manager ICT at Vienna Science and Technology Fund, Vienna, Austria*
- *Prof. Jongwook Woo; Director, High-Performance Information Computing Center (HiPiC), California State University, California, USA*
- *Prof. Jane You (Vice-Chair of IPCV); The Hong Kong Polytechnic University, Hong Kong*

As Sponsors-at-large, partners, and/or organizers each of the followings (separated by semicolons) provided help for at least one track of the World Congress: Aldebaran Robotics Inc., USA (<http://www.aldebaran-robotics.com>); Altera Corporation, USA (<http://www.altera.com/>); Computer Science Research, Education, and Applications Press (CSREA); Impulse Accelerated Technologies, Inc., USA (<http://www.impulseaccelerated.com/>); NVIDIA Corporation, USA (<http://www.nvidia.com/object/about-nvidia.html>); Parallella Community, Supercomputing for Everyone, USA (<http://forums.parallella.org/>); Pico Computing, Inc., USA (<http://picocomputing.com/>); SemiWiki.com, The Semiconductor Wiki Project, USA (<http://www.semiwiki.com/>); Solarflare Communications, Inc., USA (<http://www.solarflare.com/>); Stream Computing, Performance Engineers, The Netherlands (<http://streamcomputing.eu/>); Taylor & Francis, UK (<http://www.taylorandfrancis.com/>); US Chapter of World Academy of Science (<http://www.world-academy-of-science.org/>); and WEBestSOL & Webest Solutions Ltd, UK (<http://webestsol.com/>). In addition, a number of university faculty members and their staff (names appear on the cover of the set of proceedings), several publishers of computer science and computer engineering books and journals, chapters and/or task forces of computer science associations/organizations from 5 countries, and developers of high-performance machines and systems provided significant help in organizing the conference as well as providing some resources. We are grateful to them all.

We express our gratitude to keynote, invited, and individual conference/tracks and tutorial speakers - the list of speakers appears on the conference web site. We would also like to thank the followings: UCMSS (Universal Conference Management Systems & Support, California, USA) for managing all aspects of the conference; Dr. Tim Field of APC for managing the printing of the proceedings; and the staff of the New Tropicana Hotel in Las Vegas for the professional service they provided. Last but not least, we would like to thank the Co-Editors and Associate Co-Editors of ICAI'13: Prof. Hamid R. Arabnia, Prof. David de la Fuente, Prof. George Jandieri, Dr. Elena B. Kozerenko, Prof. Peter M. LaMonica, Dr. Raymond A. Liuzzi, Prof. Jose A. Olivas, Prof. Ivan Nunes da Silva, Ashu M. G. Solo, Dr. Fadi Thabtah, Prof. Fernando G. Tinetti, and Prof. Todd Waskiewicz.

We present the proceedings of ICAI'13.

Steering Committee, 2013
<http://www.world-academy-of-science.org/>

Contents

SESSION: AGENT TECHNOLOGIES AND APPLICATIONS

An Autonomous Agent with an Evolved, Affect-based Decision System	3
<i>Paul G Joseph, Haim Levkowitz</i>	
A Meta-Heuristic Approach For Energy-Efficient Multi-Agent Path Planning	10
<i>Wenjie Wang, Wooi-Boon Goh</i>	
An Approach for Norm-Based Behavior Modification in Model-Based Reflex Agents	17
<i>Gustavo Campos, Emmanuel Freire, Mariela Cortes, Wamberto Vasconcelos</i>	
Coalition-based Approach for Reach Stackers Routing Problem in Container Terminals	23
<i>Habiba Bouzidi, Meriam Kefi, Khaled Ghedira</i>	
Adjustable Group Behavior of Agents in Action-based Games	30
<i>Keith Westphal, Brian McLaughlan</i>	
An Agent-Based Intentional Multi-Robot Task Allocation Framework	35
<i>Savas Ozturk, Ahmet Emin Kuzucuoglu</i>	
Potential Functions for Voting Dynamics	42
<i>Neelam Gohar, Paul W. Goldberg</i>	
Applying Knowledge Model To Agent Based Systems	50
<i>Khaoula Addakiri, Mohamed Bahaj</i>	
Intelligent Agent-based Framework for Project Integration Management	56
<i>Ogechikanma Linda Ihekweaba, Chukwugoziem Ihekweaba, Height Inyama</i>	

SESSION: INTERNATIONAL WORKSHOP ON INTELLIGENT LINGUISTIC TECHNOLOGIES - ILINTEC'13

Method for Extracting Translation Correspondences from a Parallel Corpus	65
<i>Yuliya Morozova</i>	
Knowledge-based and Vertical-driven Information Retrieval	70
<i>Gavin Matthews, Max Petrenko</i>	
Association-Based Identification of Internet Users Interests	77
<i>Michael Charnine, Alexander Petrov, Igor Kuznetsov</i>	

Automatic Processing and Acoustic Normalization of Vowels	82
<i>Yi-hsiu Lai</i>	
The Information Structure Of The Domain 'Intellectual Technologies and Computational Linguistics': Texts, Corpus, Context	89
<i>Elena Yagunova, Anna Savina</i>	
Optimal Automated Method for Collaborative Development of University Curricula	96
<i>Michael Charnine, Vladislav Protasov</i>	
Database of Equivalent Verbal Forms in a Russian-French Multivariant Parallel Corpus	101
<i>Anna A. Zalizniak, Dmitri V. Sitchinava, Sylvain Loiseau, Mikhail Kruzhdkov, Igor M. Zatsman</i>	
 SESSION: NATURAL LANGUAGE PROCESSING AND RELATED METHODS	
A Knowledge-Based Approach to Word Sense Disambiguation	111
<i>Waleed Faris, Kam-Hoi Cheng</i>	
Computer-based Method for Association Response in Autonomous Conversation	118
<i>Eriko Yoshimura, Misako Imono, Seiji Tsuchiya, Hirokazu Watabe</i>	
Entropy-based Word Sense Disambiguation for Semantic Annotation system	124
<i>Haifeng Sun, Jianxin Liao, Jingyu Wang, Qi Qi, Tong Xu</i>	
Method to Add new Attributes to Concepts by Web and Second-order Attributes	131
<i>Misako Imono, Eriko Yoshimura, Seiji Tsuchiya, Hirokazu Watabe</i>	
Development of Filipino Phonetically-balanced Words and Test using Hidden Markov Model	136
<i>Arnel Fajardo, Yoon-joong Kim</i>	
How to Make NL 'Understanding' Systems Run Orders of Magnitude Faster	141
<i>Steve Richfield</i>	
Meaning Judgment Method for Alphabet Abbreviation Using Wikipedia and Earth Mover's Distance	148
<i>Seiji Tsuchiya, Misako Imono, Eriko Yoshimura, Hirokazu Watabe</i>	
Implementation of Intelligence Robotic Engines Using Ontologies and Process Natural Language	154
<i>Rafael Luiz de Macedo, Elvis Fusco, Fabio Dacencio Pereira</i>	

SESSION: KNOWLEDGE DISCOVERY AND LEARNING

A Framework for Multi-source Semantic Information Extraction and Collaborative Threat Assessment (SIFT) 163

Perakath Benjamin, Karthic Madanagopal, Kalyan Vadakkeveedu, Satheesh Ramachandran, Paul Koola

Cognitive RF Systems and EM Fratricide Part II 172

Gerard Capraro

Sensor Planning with Cloud-Based Predictive Analytics 177

Aaron Wheeler, Jim Dike, Michael Winburn

Association Discovery Framework in WebTAS 182

M. Heidi McClure, Larry Rose, Roger Dziegiel, Jr

Temporally Aligning Clusters of Social Media Reaction to Speech Events 189

Brian Amanatullah, Greg Barish, Matthew Michelson, Steve Minton

A Cloud Computing Framework with Machine Learning Algorithms for Industrial Applications 195

Brian Xu, Dinkar Mylaraswamy, Paul Dietrich

SESSION: SWARM OPTIMIZATION ALGORITHMS AND APPLICATIONS

A Quantitative Approach For Ant-Based Clustering Performance 205

Savas Ozturk, Ahmet Emin Kuzucuoglu

Optimal Placement of Wind Turbines: Improved Honey Bee Mating Optimization 211

Heidar Ali Shayanfar, Oveis Abedinia, Nima Amjady, Akbar Tohidi

Diversity Guided Particle Swarm Optimization Algorithm based on Search Space Awareness Particle Dispersion (DGPSO) 218

Anvar Bahrampour, Omid Mohamad Nezami

Geometric Optimisation using Karva for Graphical Processing Units 225

Alwyn Husselmann, Ken A. Hawick

HybridMiner: Effective Rule Mining Based on a Hybrid Dynamic Swarm Method 232

Veenu Mangat, Renu Vig

Improved Multi-objective PSO for Semi-desirable Facility Location Problem 239

Bing Qi, Fangyang Shen, Heping Liu, Terry House

A New Sequential VB-VB Approach for Economic Dispatch of Thermal Generation Units with Convex/Nonconvex Cost Characteristics 245

Azzam ul Asar, Tahir Nadeem Malik, Intisar Sajjad

**SESSION: KNOWLEDGE AND INFORMATION REPRESENTATION,
PROCESSING, ENGINEERING, ACQUISITION METHODS AND
APPLICATIONS**

Syllogistic Reasoning for Cardinal Direction Relations	255
<i>Ah-Lian Kor, Brandon Bennett</i>	
An Ontology for Semantic Representation of an Urban Virtual Environment	262
<i>Kenza Harkouken Saiah, Nicolas Sabouret, Jean-Yves Donnart</i>	
Extracting and Clustering Blog Texts to Investigate Experiences of Tourists	268
<i>Masato Tokuhisa, Takumi Yamamoto, Takafumi Fukui, Masaki Murata, Jin'ichi Murakami</i>	
Program Completion as Constraint Satisfaction: Tight Logic Programs Revisited	274
<i>Yun Bai, Yan Zhang</i>	
Hierarchical Classification Using FCA and the Cosine Similarity Function	281
<i>Mauri Ferrandin, Julio Cesar Nievola, Fabricio Enembreck, Edson Emilio Scalabrin, Kelvin Vieira Kredens, Braulio Coelho Avila</i>	
MedTrad+: An Expert System for Traditional Medicine	288
<i>Konan Marcellin Brou, Ibrahim Lokpo, BI Tra Goore</i>	
Improve Path Planning Performance by Monitoring Human Decisions	293
<i>CheeChian Cheng, Henry Hexmoor</i>	

**SESSION: PREDICTION AND FORECASTING METHODS + HUMAN
ACTIVITY DISCOVERY**

Can We Predict Speciation and Species Extinction Using an Individual-Based Ecosystem Simulation?	301
<i>Morteza Mashayekhi, Meisam Hosseini Sedehi, Robin Gras</i>	
Using Data Mining Techniques to Predict Product Quality from Physicochemical Data	308
<i>Anatoli Nachev, Mairead Hogan</i>	
Investigation of Cluster Validity Indices for Unsupervised Human Activity Discovery	315
<i>Wee-Hong Ong, Takafumi Koseki, Leon Palafox</i>	
DGLS System: Decision Guidance for Optimal Load Shedding in Electric Power Microgrids	322
<i>Chun-Kit Ngan, Alexander Brodsky</i>	

A MEMS-based Labeling Approach to Punctuation Correction in Chinese Opinionated Text 329
Yanqing Zhao, Guohong Fu

Forecasting Meteorology Models implemented By The Feed-Forward Architecture Of Neural Networks 336
Jorge Moreno, Juan Serrano, John Corredor

Genetic Algorithm with Double Chromosome for Prediction of Protein Concentration on Wheat 341
Kelton de Souza Santiago, Anderson da Silva Soares, Telma Woerle de Lima, Gustavo Teodoro Laureano, Clarimar Jose Coelho, Arlindo Rodrigues Galvao Filho

SESSION: FUZZY LOGIC AND APPLICATIONS + COGNITIVE SCIENCE AND SYSTEMS + QUANTUM LOGIC AND COMPUTING

Microgenetic Critic for Situation Assessment Supporting Abduction and Surprise 349
Ronald Hartung, Kirk Weigand

Cognitive Control of Artificial Life Forms Utilizing Artificial Procedural Memories 353
James Crowder, John Carbone, Roderic Paulk

A New Method for Prediction of School Dropout Risk Group Using Neural Network Fuzzy ARTMAP 359
Valquiria Martinho, Clodoaldo Nunes, Carlos Roberto Minussi

Designing a Hybrid Neuro-Fuzzy System for Classifying the Complex Data, Application on Cornea Transplant 366
Mojtaba Sedigh Fazli, Keykhosrow Keshavarzi, Saeed Setayeshi

An Automated Deduction of a 'Dishkant-Implication-Restricted' Foulis-Holland Theorem from Orthomodular Quantum Logic: Part 1 374
Jack Horner

An Automated Deduction of a 'Dishkant-Implication-Restricted' Foulis-Holland Theorem from Orthomodular Quantum Logic: Part 2 381
Jack Horner

An Automated Deduction of a 'Dishkant-Implication-Restricted' Foulis-Holland Theorem from Orthomodular Quantum Logic: Part 3 388
Jack Horner

An Automated Deduction of a 'Dishkant-Implication-Restricted' Foulis-Holland Theorem from Orthomodular Quantum Logic: Part 4 395
Jack Horner

An Automated deduction of a 'Sasaki-Implication-Restricted' Foulis-Holland Theorem from Orthomodular Quantum Logic: Part 1 402

Jack Horner

An Automated Deduction of a 'Sasaki-Implication-Restricted' Foulis-Holland Theorem from Orthomodular Quantum Logic: Part 2 409

Jack Horner

An Automated Deduction of a 'Sasaki-Implication-Restricted' Foulis-Holland Theorem from Orthomodular Quantum Logic: Part 3 416

Jack Horner

An Automated Deduction of a 'Sasaki-Implication-Restricted' Foulis-Holland Theorem from Orthomodular Quantum Logic: Part 4 423

Jack Horner

SESSION: HEURISTIC SEARCH + INFORMATION RETRIEVAL + PATTERN AND SIMILARITY ANALYSIS

Model Checking Safety Properties Through Simulation and Heuristic Search 433

Nicoletta De Francesco, Giuseppe Lettieri, Antonella Santone, Gigliola Vaglini

Intelligent Genomic Information Retrieval with Distributed System Resources 440

Wagner Arbex, Leonardo Costa, Leonardo Fonseca, Camillo da Silva

Evaluation of Musical Similarity on the Symbolic Level of the Musical Text 445

Michele Della Ventura

SESSION: ARTIFICIAL INTELLIGENCE, ALGORITHMS, NOVEL APPLICATIONS AND CONCEPTS

Crowd Evacuation Control for Public Spaces 453

Pejman Kamkarian, Henry Hexmoor

Head Movement Artifact Removal in EEG Signals using Empirical Mode Decomposition and Pearson Correlation 461

Gerardo Rosas-Cholula, Juan Manuel Ramirez-Cortes, Jose Rangel-Magdaleno, Pilar Gomez-Gil, Vicente Alarcon-Aquino

A Personal Smart Assistant For Open Environments 467

Ali Hussain, Afshan Samani, Hamada Ghenniwa

Simultaneous Events Handling	476
<i>Nathaniel Taylor, Bo Yang</i>	
Forgetting Classification and Measurement for Decomposition-based Reinforcement Learning	482
<i>Sean Mondesire, R. Paul Wiegand</i>	
An Extraction of Influential Lightings for Illuminance Sensors and Lighting Off Mechanism in An Intelligent Lighting System	489
<i>Miki Mitsunori, Yohei Azuma, Hisanori Ikegami</i>	
Computational Methods for Determining the Similarity between Ancient Greek Manuscripts	496
<i>Eddie Dunn, Curry Guinn, George Zervos</i>	
Two-level Default Theories	503
<i>Liangjun Zang, Cungen Cao, Yuefei Sui</i>	
Research on Bounded Nussbaum Gain Adaptive Method	510
<i>Junwei Lei, Guorong Zhao, Yong Liang, Huali Wu, Shixing Wang, Xiuxia Yang</i>	
Intelligent Sensorless Monitoring Dual System to Detect the Tool Condition in CNC Milling Machines	516
<i>Georgina Mota-Valtierra, Luis-Alfonso Franco-Gasca, Humberto Aguirre-Becerra, Francisco Ruiz-Vazquez</i>	
The Importance and Need for Digital Forensic Investigative Framework	522
<i>Inikpi Ademu, Chris Imafidon</i>	
Methods of Field Theory and Wave Processes in the Models of Multiple Intelligences	529
<i>J. William Brooks, Dmitry Zhukov, Irina Samoylo, Victoria Hodges</i>	
A Behavioral Programming Approach to the Design-Development of Humanoid Robots	532
<i>Alan Rosen, David B. Rosen</i>	
An Artificial Chemical Reaction Optimization Algorithm for Multiple-choice Knapsack Problem	539
<i>Tung Khac Truong, Kenli Li, Yuming Xu, Aijia Ouyang, Xiaoyong Tang</i>	
Generation Expansion Planning base on Modified Shuffled Frog Leaping in Restructured Environment	544
<i>Oveis Abedinia, Nima Amjady, Heidar Ali Shayanfar</i>	
Distribution Planning with Renewable Energy Units based on Modified Shuffled Frog Leaping Algorithm	551
<i>Heidar Ali Shayanfar, Oveis Abedinia, Nima Amjady</i>	

Optimization of Heat Treatment Process Parameters using Neural Networks and Nelder-Mead Algorithm 558

Tarik Cakar, Fatih Keslinkilic

Adaptive Sliding Mode & Nussbaum Gain Hybrid Control of Supersonic Missiles with Unknown Control Direction 565

Junwei Lei, Jinyong Yu, Lingling Wang, Hwei Zhao, Jianhong Shi, Xiaojun Guo

SESSION: EVOLUTIONARY SYSTEMS, GENETIC ALGORITHMS, GENETIC PROGRAMMING AND APPLICATIONS

Artificial Intelligence Approaches to Music Composition 575

Richard Fox, Adil Khan

Artificial Creativity and Self-Evolution: Abductive Reasoning in Artificial Life Forms 582

James Crowder, Shelli Friess

A Parallel Genetic Algorithm to Coevolution of the Strategic Evolutionary Parameters 588

Eduardo Noronha, Celso G Camilo-Junior

Genetic Algorithms for Management of Taxi Scheduling. 594

Lucas Rosa, Deborah Ferreira, Leonardo Cruciol, Li Weigang, Deng Jun

Air Traffic Flow Reduction Using Genetic Algorithms in Brazilian Airspace 599

Leonardo L. B. V. Cruciol, Li Weigang

Reconfiguration of Distribution Systems to Reduce Voltage Sags by Using Genetic Algorithms 604

Rafael Tapia-Juarez, Elisa Espinosa-Juarez, Mario Graff

Adaptive Diversity of Genetic Algorithm for QoS-based Cloud Service Selection 611

Chengwen Zhang, Zhaoyong Xun, Jian Kuang, Bo Cheng, Lei Zhang

Multiple Determination of Chemical Elements Using a Multi-objective Evolutionary Algorithm and Multiple Linear Regression 618

Anderson da Silva Soares, Telma Woerle de Lima, Daniel Vitor de Lucena, Rogerio Lopes Salvini, Gustavo Teodoro Laureano, Clarimar Jose Coelho

Artificial Systems Evolutionary Learning 624

Iryna Tregubenko

A Solution for Forecasting PET Chips Prices for both Short-Term and Long-Term Price Forecasting, Using Genetic Programming 631
Mojtaba Sedigh Fazli, Jean-Fabrice Lebraty

SESSION: XIII TECHNICAL SESSION ON APPLICATIONS OF ADVANCED AI TECHNIQUES TO INFORMATION MANAGEMENT FOR SOLVING COMPANY-RELATED PROBLEMS

Analysis and Comparison of Candlestick Patterns applied to S&P 500 641
Javier Quintairos, Rafael Rosillo, David De la Fuente, Nazario Garcia-Fernandez

The Quality of E-Service in B2C Websites: An Approximation with Fuzzy Decision Support Systems 646
Adrian Castro, Javier Puente, Alberto Gomez, Isabel Fernandez, Borja Ponte

Real-time Scheduling of Flexible Manufacturing Systems Using Support Vector Machines and Neural Networks 651
Paolo Priore, Raul Pino, Jose Parreno, Jesus Lozano, Manuel Monterrey

Improving Educational Methods by Means of an Intelligent Virtual Agent 657
Celia G. Rospide, Cristina Puente, Jose Angel Olivas Varela

Using Fuzzy Prototypes as a Nucleation Event Classification Method 663
Francisco P. Romero, Maria T. Baeza, Jose Angel Olivas Varela, Emilio Martinez-Torres

Correction Factor Optimization in User Profile Similarities 668
Roberto Seisdedos Armbruster, Cristina Puente Agueda, Jose Angel Olivas Varela

SESSION: LEARNING AND APPLICATIONS - IN PARTICULAR, AS IT RELATES TO MAPREDUCE AND PHISHING DETECTION

Gentle Early Detection Algorithm 675
Hussein Abdel-jaber, Mahmoud Abdeljaber, Hussein Abu Mansour, Malak El-Ami

Predicting Phishing Websites Using Neural Network Trained with Back-Propagation 682
Rami Mohammad, Fadi Fadi Thabtah, Lee McCluskey

Associative Classification Mining for Website Phishing Classification 687
Neda Abdelhamid, Aladdin Ayesh, Fadi Thabtah

An Associative Classification Algorithm for Categorizing Text 694
Bashar Aburumman, Hussein Abdel-jaber

**SESSION: EXPERT SYSTEMS FOR INTELLIGENT AUTOMATION PURPOSES
IN POWER SYSTEMS**

**Application of Fuzzy System for Analysis of Lightning Overvoltages and Protection of
Distribution Systems by Surge Arresters** 703

Marcel Araujo, Rogerio Flauzino, Oureste Batista, Lucas Moraes

**Development of an Approach for Choosing the Input Variables for a Forecast Fuzzy
Inference System** 709

Lucas Moraes, Rogerio Flauzino, Marcel Araujo, Oureste Batista

**Applying a Fuzzy System for Robust Fault Location in a Distribution System with
Distributed Generation** 715

Oureste Batista, Rogerio Flauzino, Lucas Moraes, Marcel Araujo, Ivan Silva

**Efficient Integration of Intelligent Systems and Experimental Tests for Power Transmission
Transformer Diagnosis** 721

*Carlos Gonzales, Marcelo Carrapato, Thiago Bonfim, Paulo Costa, Danilo Spatti, Rogerio Flauzino,
Ivan Silva*

Expert System for Accurate Diagnosis of Power Transmission Transformer 727

*Carlos Gonzales, Thiago Bonfim, Paulo Costa, Marcelo Carrapato, Ivan Silva, Rogerio Flauzino,
Danilo Spatti*

**Using Computational Vision and Artificial Neural Networks in Electrical Insulator
Preventive Maintenance** 733

Ivan Silva, Rogerio Flauzino, Victor Mustacio, Sergio Vallin, Jose Resende

SESSION: POSTER AND SHORT PAPERS

Association Inference Processing to Extract Knowledge Sentences for Question Answering 741

Hirokazu Watabe, Misako Imono, Eriko Yoshimura, Seiji Tsuchiya

Voting Dynamics 743

Neelam Gohar

Preliminary Screening of Graduate School Applicants Using Fuzzy Inference System 745

Sri Kalyan Thontepu, Devarsh Bhonde, Sai Krishna Kanth Hari, Pushpal Mazumder

**SESSION: NLP, MACHINE LEARNING, TEXT MINING, OCR, INTELLIGENT
SYSTEMS, FUZZY LOGIC, LEARNING AND DECISION MAKING METHODS,
VISUALIZATION, AND APPLICATIONS**

Semantic Processor for Knowledge Extraction from Texts in Russian and English	751
<i>Igor Kuznetsov, Elena Kozerenko, Nikolay Somin</i>	
Social Network Analysis - Network and Link Detection in Overwhelming and Noisy Data Streams	758
<i>Craig Anken, Pete LaMonica, James Schneider, Tod Hagan, Lee Krause, Bruce McQueary</i>	
Robustness of Centrality Measures for Small-World Networks Containing Systematic Error	765
<i>Amanda Lannie</i>	
Arabic Data Analysis using Classification Techniques	771
<i>Malik Abu Odeh, Naser Abudalbouh</i>	
Problems of the Arabic OCR: New Attitudes	777
<i>Oleg Redkin, Olga Bernikova</i>	
A Grey Prediction Based TOPSIS Decision Making for Product Form Design	782
<i>Yang-Cheng Lin</i>	
Expert System Solution for Fault Detection Purposes in Power Distribution Systems	788
<i>Nerivaldo Santos, Danilo Spatti, Lucca Zamboni, Ivan Silva, Leandro Soares, Rogerio Flauzino</i>	
Telecommunication Error Resilient Reinforcement Learning and Adaptive Control Algorithm	794
<i>Nathaniel Taylor, Bo Yang</i>	
Automated Financial Data Extraction - An AI Approach	801
<i>Hassan Alam, Aman Kumar, Cheryl Lee, Yuliya Tarnikova</i>	
Visualizing Logical Representation and Reasoning	808
<i>Sabah Al-Fedaghi</i>	
Performance Analysis of Fuzzy Logic And PID Controller for PM DC Motor Drive	813
<i>Khalid Al-Mutib, N. M. Adamali Shah, Ebrahim Mattar</i>	
A New Approach of Intelligent Control voltage on the Low Side Voltage of Distribution Transformers based on Electrical Equivalent Model of the System	818
<i>Ernesto A. Mertens Jr., Rogerio Flauzino, Carlos H. da Silveira, Ivan N. da Silva, Renne T. M. Portal, Andre Bueno, Ricardo L. Becker, Jose F. R. da Silva</i>	

SESSION: LATE BREAKING PAPERS / POSITION PAPERS: NEURAL NETWORKS, DATABASES, COGNITION AND CLASSIFICATION METHODS, CLUSTERING, INTELLIGENT SYSTEMS, MACHINE LEARNING, AI APPLICATIONS AND ALGORITHMS

A New Method for the Prediction of Carbon Sequestration in Reforested Areas Using a Fuzzy-ART-BP Neural Network	825
<i>Clodoaldo Nunes, Valquiria R. C. Martinho, Carlos Roberto Minussi</i>	
Simulation Results for a Cache Management System used in a Deductive Database	832
<i>Larry Williams, Martin Maskarinec, Kathleen Neumann</i>	
The Cognitive Architecture of the Human Mind	835
<i>Christian Wagner, James Schiiller</i>	
Measuring Divergences among Mass Functions	839
<i>Jianbing Ma</i>	
Vehicle Image Classification Method Using Edge Dimensions, SVM and Prototype	845
<i>Fabrizia Matos, Renata Souza</i>	
Specializing the Logic of Multiple-Valued Argumentation to the Jaina Seven-Valued Logic	852
<i>Shogo Ohta, Hajime Sawamura, Takeshi Hagiwara, Jacques Riche</i>	
Relative Entropy Minimizing-Based Theory of Intelligent Systems	859
<i>Guangcheng Xi</i>	
Machine Learning Approach for Analyzing Health Data	871
<i>Douglas Taggart, Alex Waltz, Gabriela Hristescu</i>	
A Multiobjective Memetic Algorithm for Solving the Carsharing Problem	877
<i>Laurent Moalic, Sid Lamrous, Alexandre Caminada</i>	
Self-Adaptive Feature Selection Strategy for Multi-types Object Classification Problem	884
<i>Namdar Mogharreban, Tianyang Wang</i>	
Syntactic Parameters in the Phrasal Machine Translation	890
<i>Elena Kozerenko, Alexander Khoroshilov, Alexey Khoroshilov</i>	
Functional and Cognitive Aspects in Linguistic Modelling	896
<i>Elena Kozerenko</i>	
New Ensemble Combination Scheme	903
<i>Namhyoung Kim, Youngdoo Son, Jaewook Lee</i>	
Finding Semantic Correlation in Structured Data from Unstructured Notes	908
<i>C. Anantaram, Shailja Khurana, Vuppala Gowri Dev</i>	

Emotion Control of Induction Motor Using Disturbance Acceptance and Bacteria Foraging 915
Dong Hwa Kim

Ontology-based Heuristic Algorithm for Text Classification in Oil Industry Application 919
Nayat Sanchez-Pi, Luis Marti, Ana Cristina Garcia Bicharra

