2010 5th IEEE International Conference Intelligent Systems
(IS 2010)

London, United Kingdom
7 – 9 July 2010
TABLE OF CONTENTS

MESSAGE FROM THE CONFERENCE CHAIRS ........................................................................................................................................... xv

2010 IS ORGANIZING COMMITTEE ......................................................................................................................................................... xiv

INTERNATIONAL PROGRAM COMMITTEE ........................................................................................................................................... xivv

TECHNICAL PAPERS .............................................................................................................................................................................. 1

Wednesday, July 7

11:15 AM - 1:00 PM

Data and Knowledge Management
Chair: Janusz Kacprzyk (Polish Academy of Sciences, Poland)

Self-configurable Framework for enabling Context-aware Learning Design .............. 1
Patricia Charlton (Birkbeck Collage, United Kingdom)
George D. Magoulas (Birkbeck College, United Kingdom)

Bibliography Mapping with Semantic Social Bookmarks ........................................... 7
Alex Logvynovskiy (University of East London, United Kingdom)
Mohammad Dastbaz (University of East London, United Kingdom)

Identifying User Strategies in Exploratory Learning with Evolving Task Modelling .... 13
Mihaela Cocea (Birkbeck College, United Kingdom)
George D. Magoulas (Birkbeck College, United Kingdom)

A Generic Framework For Enhancing The Interpretability Of Granular Computing-Based
Information ......................................................................................................................................................................................... 19
George Panoutsos (University of Sheffield, United Kingdom)
Mahdi Mahfouf (University of Sheffield, United Kingdom)
Gary H. Mills (The Royal Hallamshire Hospital, United Kingdom)
Brian H. Brown (The Royal Hallamshire Hospital, United Kingdom)

Intelligent Control and Robotics
Chair: Vassil Sgurev (FSTUB - Sofia, Bulgaria)

Enhancing Functionality of Complex Plant Hybrid Control System Using Case-Based
Reasoning ...................................................................................................................................................................................... 25
M. Hadjiski (Bulgarian Academy of Sciences, Bulgaria)
‘Symbiotic’ Data-Driven Modelling for the Accurate Prediction of Mechanical Properties of Alloy Steels ................................................................. 31
   Sidahmed Gaffour (University of Sheffield, United Kingdom)
   Mahdi Mahfouf (University of Sheffield, United Kingdom)
   Y.Y. Yang (University of Sheffield, United Kingdom)

Adaptive PI Type Iterative Learning Control .......................................................... 37
   Ali Madady (Tafresh University, Iran)
   Hamid-Reza Reza-Alikhani (Tafresh University, Iran)

Inertial Navigation Aided by Simultaneous Localization and Mapping .................. 43
   Vasko Sazdovski (Cranfield University, United Kingdom)
   Peter M G Silson (Cranfield University, United Kingdom)
   Antonios Tsourdos (Cranfield University, United Kingdom)

Attitude Determination from Single Camera Vector Observations ...................... 49
   Vasko Sazdovski (Cranfield University, United Kingdom)
   Peter M G Silson (Cranfield University, United Kingdom)
   Antonios Tsourdos (Cranfield University, United Kingdom)

A Decomposition-Based Approach to Flexible Flow Shop Scheduling under Stochastic Setup Times .......................................................... 55
   Kai Wang (The University of Hong Kong, China)
   Shiu Hong Choi (The University of Hong Kong, China)

2:00 PM - 4:00 PM

Collaborative Ontologies and Agents
   Chair: Ricardo J Goncalves (Universidade Nova de Lisboa, Portugal)

Collaborative Ontology Building using Qualitative Information Collection Methods ...... 61
   Joao Sarraipa (Universidade Nova de Lisboa, Portugal)
   Ricardo J. Goncalves (Universidade Nova de Lisboa, Portugal)
   Tiago Gaspar (Universidade Nova de Lisboa, Portugal)
   Adolfo Steiger-Garcao (Universidade Nova de Lisboa, Portugal)

Self-Learning Strategies in Multiagent Environments ........................................ 67
   Vladimir S. Jotsov (SULSIT-Sofia, Bulgaria)
   Vassil S. Sgurev (FSTUB - Sofia, Bulgaria)

An Intelligent System for Semi-Automatic Evolution of Ontologies ....................... 73
   Maryam Ramezani (SAP Research, Germany)
   Hans Friedrich Witschel (SAP Research, Germany)
Towards the Development Of Genuine Intelligent Ontology-Based E-Learning Systems ............................................................79
  Lina Tankeleviciene (Siauliai University, Lithuania)
  Robertas Damasevicius (Kaunas University of Technology, Lithuania)

Storage, Degradation and Recall of Agent Memory in Serious Games and Simulations .............................................................85
  David Irvine (De Montfort University, United Kingdom)
  Mario Gongora (De Montfort University, United Kingdom)

Agent-Oriented Middleware for InfoStation-based mLearning Intelligent Systems ..........91
  Stanimir Stoyanov (Plovdiv University, Bulgaria)
  Ivan Ganchev (University of Limerick, Ireland)
  Ivan Popchev (Bulgarian Academy of Sciences, Bulgaria)
  Mairtin O'Droma (University of Limerick, Ireland)
  Veselina Valkanova (Plovdiv University, Bulgaria)

Intelligent Databases and Knowledge Discovery
Chair: Panagiotis Chountas (University of Westminster, United Kingdom)

Estimating the Relevance of a Data Source Using a Fuzzy-Cardinality-Based Summary .................................................................................................96
  Olivier Pivert (ENSSAT, France)
  Allel Hadjali (ENSSAT, France)
  Grégory Smits (ENSSAT, France)

Support driven opportunistic aggregation for generalized itemset extraction ..............102
  Elena Baralis (Politecnico di Torino, Italy)
  Luca Cagliero (Politecnico di Torino, Italy)
  Tania Cerquitelli (Politecnico di Torino, Italy)
  Vincenzo D’Elia (Politecnico di Torino, Italy)
  Paolo Garza (Politenico di Torino, Italy)

Array-Tree: A persistent data structure to compactly store frequent item sets ...............108
  Elena Baralis (Politecnico di Torino, Italy)
  Tania Cerquitelli (Politecnico di Torino, Italy)
  Silvia Chiusano (Politecnico di Torino, Italy)
  Alberto Grand (Politecnico di Torino, Italy)

DB-SMoT: A Direction-Based Spatio-Temporal Clustering Method ..............................114
  Jose Antonio M. R. Rocha (Universidade Federal de Pernambuco, Brazil)
  Valeria C. Times (Universidade Federal de Pernambuco, Brazil)
  Gabriel Oliveira (Universidade Federal do Rio Grande do Sul, Brazil)
  Luis O. Alvares (Universidade Federal do Rio Grande do Sul, Brazil)
  Vania Bogorny (Universidade Federal de Santa Catarina, Brazil)
Detection and Tracking of Multiple Moving Objects with Occlusion in Smart Video Surveillance Systems
Sherin M. Youssef (Arab Academy for Science, Egypt)
Meer A. Hamza (Arab Academy for Science, Egypt)
Areeg F. Fayed (Arab Academy for Science, Egypt)

4:00 PM - 5:30 PM

Foundations of Soft Computing and Decision Support Systems
Chair: Eulalia Szmidt (Systems Research Institute, Polish Academy of Sciences, Poland)

Bayesian Network Inference with Qualitative Expert Knowledge for Group Decision Making
Wichian Premchaiswadi (Siam University, Thailand)
Nipat Jongsawat (Siam University, Thailand)
Walisa Romsaiyud (Siam University, Thailand)

Solutions with Fuzzy-Rational Generalized Lotteries of III Type with a One-Dimensional Parameter
Natalia D. Nikolova (Technical University of Varna, Bulgaria)
Kiril I. Tenekedjiev (Technical University of Varna, Bulgaria)

Expected utility of a one-dimensional classical risky generalized lottery of I and III type with linearly interpolated CDF
N.D. Nikolova (Technical University of Varna, Bulgaria)
D. Toneva (Technical University of Varna, Bulgaria)
I. Ginchev (Technical University of Varna, Bulgaria)
K. Tenekedjiev (Technical University of Varna, Bulgaria)

Impact Assessment Fusion Using Fuzzy Evidence Accrual with a Novel Pattern Recognition Technique
Stephen C. Stubberud (Oakridge Technology, USA)
Kathleen A. Kramer (University of San Diego, USA)

APPrOVE: Application-oriented Validation and Evaluation of Supervised Learners
Niklas Lavesson (Blekinge Institute of Technology, Sweden)
Paul Davidsson (Blekinge Institute of Technology, Sweden)

Time series envelopes for classification
Maciej Krawczak (Polish Academy of Sciences, Poland)
Grazyna Szkatula (Polish Academy of Sciences, Poland)
Intelligent Patient Management
Chair: Elia El-Darzi (University of Westminster, United Kingdom)

Hopfield Neural Network and Fuzzy Hopfield Neural Network for Diagnosis of Liver Disorders .......................................................................................................................162
  Mehdi Neshat (University of Mashhad, Iran)
  Abas E. Zadeh (University of Mashhad, Iran)

A Smart System to Program Body Sensor Networks ..........................................................168
  Talles M. G. de A. Barbosa (Pontificical Catholic University of Goiás, Brazil)
  Adson F. da Rocha (University of Brasilia, Brazil)

Patient grouping optimization using a hybrid Self-Organizing Map and Gaussian Mixture Model for length of stay-based clustering system .................................................................173
  Florin Gorunescu (University of Medicine and Pharmacy of Craiova, Romania)
  Elia El-Darzi (University of Westminster, United Kingdom)
  Smaranda Belciug (University of Craiova, Romania)
  Marina Gorunescu (University of Craiova, Romania)

Clustering Gene Expression Data using Coxian Phase-type Survival ..................................179
  Adele H. Marshall (Queen’s University of Belfast, United Kingdom)
  Laura A. Hill (Queen’s University of Belfast, United Kingdom)

Forecasting hospital bed requirements and cost of care using phase type survival trees ..............................................................................................................................185
  Lalit Garg (University of Ulster, United Kingdom)
  Sally McClean (University of Ulster, United Kingdom)
  Maria Barton (University of Ulster, United Kingdom)
  Brian Meenan (University of Ulster, United Kingdom)
  Ken Fullerton (Queen’s University, of Belfast, United Kingdom)

A partially connected neural network-based approach with application to breast cancer detection and recurrence ......................................................................................................191
  Smaranda Belciug (University of Craiova, Romania)
  Elia El-Darzi (University of Westminster, United Kingdom)
Thursday, July 8

11:00 AM - 1:00 PM

**Foundations of Soft Computing and Applications**  
*Chair: Alexander Gegov (University of Portsmouth, United Kingdom)*

**Advanced Modelling of Complex Processes by Rule Based Networks** .................................................. 197  
Alexander Gegov (University of Portsmouth, United Kingdom)  
Nedyalko Petrov (University of Portsmouth, United Kingdom)  
Boriana Vatchova (Bulgarian Academy of Sciences, Bulgaria)

**Discrete Markov Process Interpretation of Propositional Logic** ................................................................. 203  
Vassil S. Sgurev (FSTUB - Sofia, Bulgaria, Bulgaria)  
Vladimir S. Jotsov (SULSIT-Sofia, Bulgaria)

**Applying Granular Computing Theories to System Modelling with Optimised Development Process** .......................................................... 207  
Wei Huang (University of Westminster, United Kingdom)  
Peng Liu (Shanghai University of Finance and Economics, China)

**A Hybrid Neuro-Fuzzy Approach for Greenhouse Climate Modeling** .......................................................... 212  
Mohammad R. Yousefi (Islamic Azad University, Iran)  
Siamak Hasanzadeh (Iran University of Science and Technology, Iran)  
Hossein Mirinejad (K.N. Toosi University of Technology, Iran)  
Maryam Ghasemian (Islamic Azad University, Iran)

**An Novel Fuzzy Compromise Optimization Method to Evaluating the Strategies of R&D Consortia in Taiwan** .................................................................................................................. 218  
Hua-Kai Chiou (China University of Science and Technology, Taiwan)  
Chia-Chin Wan (Hug Idea International Co., Ltd., Taiwan)

**Intelligent Control and Robotics 2**  
*Chair: Mincho Hadjiski (UCTM-University in Sofia, Bulgaria, Bulgaria)*

**Integrated Polarization Analyzing CMOS Image Sensor For Autonomus Agent Navigation Using Polarized Light** ........................................................................................................ 224  
Mukul Sarkar (IMEC Netherlands)  
David San Segundo Bello (IMEC, Netherlands)  
Chris van Hoof (IMEC, Netherlands)  
Albert Theuwissen (Delft University of Technology, Netherlands)

**Practical Navigation-Aid using Forward-Looking Passive Imaging Information** .............................. 230  
Sangkeun Jeong (Agency for Defense Development, Korea)
Frequency Domain Approach to PI Controller Design for Second Order plus Dead Time Processes ........................................ 236
   Ali Madady (Tafresh University, Iran)

Neural Regulator Design for Parabolic Distributed Parameter Systems with Constraints in Control ........................................ 242
   Peter Petrov (Technical University of Varna, Bulgaria)
   Daniela Toshkova (Technical University of Varna, Bulgaria)
   Todor Filchev (Nottingham University, United Kingdom)

Dynamic Speed Adjustment of a Machine Tool .................................................. 248
   Bernard F. Lamond (Universite Laval, Canada)

A Communication Aware Steering Strategy Avoiding Self-Separation of Flying Robot Swarms .................................................. 254
   Kai Daniel (Dortmund University of Technology, Germany)
   Sebastian Rohde (Dortmund University of Technology, Germany, Germany)
   Niklas Godememeier (Dortmund University of Technology, Germany)
   Christian Wietfeld (Dortmund University of Technology, Germany)

RBPF-SLAM based on Probabilistic Geometric Planar Constraints .................. 260
   Hector Barron-Gonzalez (University of Sheffield, United Kingdom)
   Tony J. Dodd (University of Sheffield, United Kingdom)

2:00 PM - 4:00 PM

Foundations of Soft Computing-Intuitionistic Fuzzy Sets and Generalised Nets
   Chair: Panagiotis Chountas (University of Westminster, United Kingdom)

On Intuitionistic Fuzzy Negations and Law For Excluded Middle ...................... 266
   Krassimir T. Atanassov (Bulgarian Academy of Sciences, Bulgaria)

A-IFSs based Iterative Thresholding in Gait Analysis ........................................ 270
   Pedro Couto (UTAD, Portugal)
   Humberto Bustince (Universidad Publica de Navarra, Spain)
   Aranzazu Jurio (Universidad Publica de Navarra, Spain)
   Georgi Gluhchev (Institute of Information Technologies, Bulgaria)
   Artur Varejao (UTAD, Portugal)
   Pedro Melo-Pinto (UTAD, Portugal)

The Spearman rank correlation coefficient between intuitionistic fuzzy sets ........ 276
   Eulalia Szmidt (Polish Academy of Sciences, Poland)
   Janusz Kacprzyk (Polish Academy of Sciences, Poland)
Generalized Net Model for Parallel Optimization of Multilayer Perceptron with Momentum Backpropagation Algorithm .................................................................281
Sotir Sotirov (Prof. Asen Zlatarov University, Bulgaria)
Maciej Krawczak (Polish Academy of Sciences, Poland)
Krassimir Atanassov (Bulgarian Academy of Sciences, Bulgaria)

Generalized Net Model of Selection Operator of Genetic Algorithms ..................286
Olympia Roeva (Bulgarian Academy of Sciences, Bulgaria)
Tania Pencheva (Bulgarian Academy of Sciences, Bulgaria)
Krassimir Atanassov (Bulgarian Academy of Sciences, Bulgaria)
Anthony Shannon (University of New South Wales, Australia)

Foundations of Soft Computing-Neural Networks and Machine Learning
Chair: George Panoutsos (The University of Sheffield, United Kingdom)

Neural Network Based Approach for Quality Improvement of Orbital Arc Welding Joints .................................................................290
Elena Koleva (Institute of Electronics, Bulgarian Academy of Sciences, Bulgaria)
Nikolinka Christova (University of Chemical Technology and Metallurgy, Bulgaria)
Kamen Velev (University of Chemical Technology and Metallurgy, Bulgaria)

ROC Analysis of a Fatigue Classifier for Vehicular Drivers ..................................296
Mahesh M. Bundele (Babasaheb Naik College of Engineering, India)
Rahul Banerjee (Birla Institute of Technology and Science, India)

Optimal neural control for constrained robotic manipulators ..........................302
Ines Belaïd Dimli (National Institute of Applied Science and of Technology, Tunisia)
Hichem Kallel (National Institute of Applied Science and of Technology, Tunisia)

Attenuating Bullwhip effect using robust-Intelligent Controller .........................309
Mahdi Ghane (K.N.Toosi University of Technology, Iran)
Mohammad Zarvandi (K.N.Toosi University of Technology, Iran)
Mohammad Reza Yousefi (Islamic Azad University, Iran)

Application of Bio-Inspired Data Processing in Intelligent Transportation Systems ......315
Amir Jabbari (University of Bremen, Germany)
Hans-Jorg Kreowski (University of Bremen, Germany)
Walter Lang (University of Bremen, Germany)

Multicriteria Reinforcement Learning Based on a Russian Doll Method for Network Routing .................................................................321
Alain Petrowski (TELECOM-Sud Paris, France)
Farouk Aissanou (TELECOM-Sud Paris, France)
Ilham Benyahia (Université du Québec en Outaouais, Canada)
Sebastien Houcke (TELECOM-Bretagne, France)
4:15 PM - 5:15 PM

**Foundations of Soft Computing-Intuitionistic Fuzzy Sets and Generalised Nets 2**
Chair: Eulalia Szmidt (Systems Research Institute, Polish Academy of Sciences, Poland)

**Design of training tests on generalized nets** .................................................................327
Vassia Atanassova (Bulgarian Academy of Sciences, Bulgaria)

**Intuitionistic Fuzzy Data Warehouse and Some Analytical Operations** ..................331
Diana Boyadzhieva (Bulgarian Academy of Sciences, Bulgaria)
Boyan Kolev (Bulgarian Academy of Sciences, Bulgaria)
Nikolay Netov (Sofia University St. "Kliment Ohridski", Bulgaria)

**A construction method of Atanassov's Intuitionistic Fuzzy Sets for image processing** ..........................................................337
A. Jurio (Universidad Publica de Navarra, Spain)
D. Paternain (Universidad Publica de Navarra, Spain)
H. Bustince (Universidad Publica de Navarra, Spain)
C. Guerra (Universidad Publica de Navarra, Spain)
G. Beliakov (Deakin University, Australia)

**Integrating Analysis Capabilities into the Model Driven Engineering Process** ........343
Evelina Koycheva (Technische Universität Dresden, Germany)
Stefan Hennig (Technische Universität Dresden, Germany)
Annerose Braune (Technische Universität Dresden, Germany)

Friday, July 9

11:00 AM - 1:00 PM

**Data and Knowledge Representation**
Chair: Plamen Angelov (Lancaster University, United Kingdom)

**A Simple Fuzzy Rule-based System through Vector Membership and Kernel-based Granulation** .................................................................349
Plamen Angelov (Lancaster University, United Kingdom)
Ronald Yager (Iona College, United States)

**Building Concepts for AI Agents using Information Theoretic Co-clustering** ..........355
Jason R. Chen (Australian National University, Australia)

**Towards conflict resolution in collaborative clustering** ...........................................361
Germain Forestier (University of Strasbourg, France)
Cedric Wemmert (University of Strasbourg, France)
Pierre Gancarski (University of Strasbourg, France)
24h predictor of the Ozone process for Basse-Normandie region using fuzzy approach
E. Elayan (University of Caen, France)
F. Giri (University of Caen, France)
E. Pigeon (University of Caen, France)
J-F Massieu (University of Caen, France)

Discovery of events with negative behavior against given sequential patterns
Fahad Anwar (University of Manchester, United Kingdom)
Ilias Petrounias (University of Manchester, United Kingdom)
Tim Morris (University of Manchester, United Kingdom)
Vassilis Kodogiannis (University of Westminster, United Kingdom)

Entity appearance model generation for multimedia events in surveillance videos
Fahad Anwar (University of Manchester, United Kingdom)
Ilias Petrounias (University of Manchester, United Kingdom)
Tim Morris (University of Manchester, United Kingdom)
Vassilis Kodogiannis (University of Westminster, United Kingdom)

Intelligent Systems Applications
Chair: Alexander Gegov (University of Portsmouth, United Kingdom)

On-Line Identification of New Coal Type Using Joint Probability Density Arbiter
Lijun Xu (Beihang University, China)
Cheng Tan (Beihang University, China)
Xiaomin Li (Beihang University, China)
Chenfeng Xu (Beijing Huashengjincheng Science & Technology Co. Ltd., China)

A Hybrid Computational Method for the Identification of Cell Cycle-regulated Genes
Veselka Boeva (Technical University of Sofia, Bulgaria)
Petia Ivanova (Technical University of Sofia, Bulgaria)
Niklas Lavesson (Blekinge Institute of Technology, Sweden)

An Adaptive Data Forwarding Scheme for Energy Efficiency in Wireless Sensor Networks
Christos Anagnostopoulos (National and Kapodistrian University of Athens, Greece)
Theodoros Anagnostopoulos (National and Kapodistrian University of Athens, Greece)
Stathes Hadjiefthymiades (National and Kapodistrian University of Athens, Greece)

Zoom Control of Wide Area Tracking System
Yan Gao (Tokyo Institute of Technology, Japan)
XiaoLin Xhang (Tokyo Institute of Technology, Japan)
  Youcef Touati (University of Paris, France)
  Hania Aoudia (University of Paris, France)
  Arab Ali-Chérif (University of Paris, France)

Optimization of Production in an autonomous Robot served Manufacturing Facility ....414
  Evelina Koycheva (Technische Universität Dresden, Germany)
  Annerose Braune (Technische Universität Dresden, Germany)
  Stefan Hennig (Technische Universität Dresden, Germany)

Building a Semi Intelligent Web Cache with Light Weight Machine Learning ....................420
  G. P. Sajeev (Govt. Engineering College, India)
  M.P. Sebastian (Indian Institute of Management Kozhikode, India)

2:00 PM - 4:00 PM

Foundations of Soft Computing and Evolutionary Computing
Chair: Natalia Danailova Nikolova (Technical University - Varna, Bulgaria)

Increasing Crossover Operator Efficiency in Multiobjective Nonlinear Systems Identification .................................................................426
  Alina Patelli ("Gheorghe Asachi" Technical University of Iasi, Romania)
  Lavinia Ferariu ("Gheorghe Asachi“ Technical University of Iasi, Romania)

Transmission Cost Allocation using Power Flow Tracing And Genetic Algorithm ........432
  M. Sailaja Kumari (National Institute of Technology, India)
  B. Naresh (National Institute of Technology, India)
  M. Sydulu (National Institute of Technology, India)

AIPSO: Adaptive Informed Particle Swarm Optimization .................................................................438
  Mehdi Neshat (Azad University Mashhad, Iran)
  Masoud Rezaei (Ferdowsi University of Mashhad, Iran)

Integrating Swarm Intelligence in a Multi-Agent System for Wastewater Discharges Management .................................................................444
  M. Verdaguer (University of Girona, Spain)
  M. Aulinas (University of Girona, Spain)
  N. Clara (University of Girona, Spain)
  M. Poch (University of Girona and Catalan Institute for Water Research, Spain)
An Evolutionary Approach to Library Materials Acquisition Problems .............................................450
Tsu-Feng Ho (Ming Chuan University, Taiwan)
Shyong Jian Shyu (Ming Chuan University, Taiwan)
Bertrand M.T. Lin (National Chiao Tung University, Taiwan)
Yi Ling Wu (National Chiao Tung University, Taiwan)

Intelligent Control and Robotics 3
Chair: Mincho Hadjiski (UCTM-University in Sofia, Bulgaria, Bulgaria)

Fuzzy Model-Based Predictive Control Applied to Multivariable Level Control of Multi Tank System ..............................................................................................................................................456
Sevil Ahmed (Technical University Sofia, Bulgaria)
Michail Petrov (Technical University of Sofia, Bulgaria)
Alexander Ichtev (Technical University of Sofia, Bulgaria)

The Pathway for Agent and Robot Enemy in Strategy Game with High Efficiency Model ..................................................................................................................................................................462
Khammapun Khantanapoka (Burapha University, Thailand)
Suwanna Rasmequan (Burapha University, Thailand)

A Method for Heuristic Fuzzy Modeling in Noisy Environment ...............................................................468
Andri Riid (Tallinn University of Technology, Estonia)
Ennu Rüstern (Tallinn University of Technology, Estonia)

Notes on Intelligence Based Model Predictive Control Scheme: A Case Study ........................................474
A.H. Mazinan (Islamic Azad University, Iran)
M.F. Kazemi (Islamic Azad University, Iran)

PID Type Iterative Learning Control with Optimal Variable Coefficients ............................................479
Hamid-Reza Reza-Alikhani (Tafresh University, Iran)

Support Vector Learning Approaches for Object Localization in Acoustic Wireless Sensor Networks ........................................................................................................................................................................485
Woojin Kim (Seoul National University, Korea)
Jaemann Park (Seoul National University, Korea)
H. Jin Kim (Seoul National University, Korea)

AUTHOR INDEX...............................................................................................................................................490