

Table of Contents

Keynote Talks

Emergent Dynamics of Information Propagation in Large Networks	1
<i>Katia Sycara</i>	
New Applications and Theoretical Foundations of the Dominance-based Rough Set Approach	2
<i>Roman Słowiński</i>	

RSCTC 2010 Discovery Challenge

RSCTC'2010 Discovery Challenge: Mining DNA Microarray Data for Medical Diagnosis and Treatment	4
<i>Marcin Wojnarski, Andrzej Janusz, Hung Son Nguyen, Jan Bazan, ChuanJiang Luo, Ze Chen, Feng Hu, Guoyin Wang, Lihe Guan, Huan Luo, Juan Gao, Yuanxia Shen, Vladimir Nikulin, Tian-Hsiang Huang, Geoffrey J. McLachlan, Matko Bošnjak, and Dragan Gamberger</i>	
TunedIT.org: System for Automated Evaluation of Algorithms in Repeatable Experiments	20
<i>Marcin Wojnarski, Sebastian Stawicki, and Piotr Wojnarowski</i>	

Clustering

Consensus Multiobjective Differential Crisp Clustering for Categorical Data Analysis	30
<i>Indrajit Saha, Dariusz Plewczyński, Ujjwal Maulik, and Sanghamitra Bandyopadhyay</i>	
Probabilistic Rough Entropy Measures in Image Segmentation	40
<i>Dariusz Małyszko and Jarosław Stepaniuk</i>	
Distance Based Fast Hierarchical Clustering Method for Large Datasets	50
<i>Bidyut Kr. Patra, Neminath Hubballi, Santosh Biswas, and Sukumar Nandi</i>	
TI-DBSCAN: Clustering with DBSCAN by Means of the Triangle Inequality	60
<i>Marzena Kryszkiewicz and Piotr Lasek</i>	

Multimedia and Telemedicine: Soft Computing Applications

Vehicle Classification Based on Soft Computing Algorithms	70
<i>Piotr Dalka and Andrzej Czyżewski</i>	
Controlling Computer by Lip Gestures Employing Neural Networks	80
<i>Piotr Dalka and Andrzej Czyżewski</i>	
Computer Animation System Based on Rough Sets and Fuzzy Logic	90
<i>Piotr Szczuko</i>	
Adaptive Phoneme Alignment Based on Rough Set Theory	100
<i>Konstantinos Avdelidis, Charalampos Dimoulas,</i> <i>George Kalliris, and George Papanikolaou</i>	
Monitoring Parkinson's Disease Patients Employing Biometric Sensors and Rule-Based Data Processing	110
<i>Paweł Żwan, Katarzyna Kaszuba, and Bożena Kostek</i>	
Content-Based Scene Detection and Analysis Method for Automatic Classification of TV Sports News	120
<i>Kazimierz Choroś and Piotr Pawlaczyk</i>	

Combined Learning Methods and Mining Complex Data

Combining Multiple Classification or Regression Models Using Genetic Algorithms	130
<i>Andrzej Janusz</i>	
Argument Based Generalization of MODLEM Rule Induction Algorithm	138
<i>Krystyna Napierała and Jerzy Stefanowski</i>	
Integrating Selective Pre-processing of Imbalanced Data with Ivotes Ensemble	148
<i>Jerzy Błaszczyński, Magdalena Deckert, Jerzy Stefanowski, and</i> <i>Szymon Wilk</i>	
Learning from Imbalanced Data in Presence of Noisy and Borderline Examples	158
<i>Krystyna Napierała, Jerzy Stefanowski, and Szymon Wilk</i>	
Tracking Recurrent Concepts Using Context	168
<i>João Bártolo Gomes, Ernestina Menasalvas, and Pedro A.C. Sousa</i>	
Support Feature Machine for DNA Microarray Data	178
<i>Tomasz Maszczyk and Włodzisław Duch</i>	

Is It Important Which Rough-Set-Based Classifier Extraction and Voting Criteria Are Applied Together?	187
<i>Dominik Ślęzak and Sebastian Widz</i>	
Improving Co-training with Agreement-Based Sampling	197
<i>Jin Huang, Jelber Sayyad Shirabad, Stan Matwin, and Jiang Su</i>	
Experienced Physicians and Automatic Generation of Decision Rules from Clinical Data	207
<i>William Klement, Szymon Wilk, Martin Michalowski, and Ken Farion</i>	
Gene-Pair Representation and Incorporation of GO-based Semantic Similarity into Classification of Gene Expression Data	217
<i>Torsten Schön, Alexey Tsymbal, and Martin Huber</i>	

Rough Sets: Logical and Mathematical Foundations

A Fuzzy View on Rough Satisfiability	227
<i>Anna Gomolińska</i>	
Rough Sets in Terms of Discrete Dynamical Systems	237
<i>Marcin Wolski</i>	
A Preference-Based Multiple-Source Rough Set Model	247
<i>Md. Aquil Khan and Mohua Banerjee</i>	
Classification of Dynamics in Rough Sets	257
<i>Davide Ciucci</i>	
Relational Granularity for Hypergraphs	267
<i>John G. Stell</i>	
Perceptual Tolerance Intersection	277
<i>Piotr Wasilewski, James F. Peters, and Sheela Ramanna</i>	

Rough Approximations: Foundations and Methodologies

Categories of Diredations and Rough Set Approximation Operators	287
<i>Murat Diker</i>	
Approximations and Classifiers	297
<i>Andrzej Skowron and Jarosław Stepaniuk</i>	
A Note on a Formal Approach to Rough Operators	307
<i>Adam Grabowski and Magdalena Jastrzębska</i>	

Communicative Approximations as Rough Sets 317
*Mohua Banerjee, Abhinav Pathak, Gopal Krishna, and
Amitabha Mukerjee*

On the Correctness of Rough-Set Based Approximate Reasoning 327
Patrick Doherty and Andrzej Szalas

Unit Operations in Approximation Spaces 337
Zbigniew Bonikowski

Machine Learning: Methodologies and Algorithms

Weighted Nearest Neighbor Classification via Maximizing Classification
Consistency 347
Pengfei Zhu, Qinghua Hu, and Yongbin Yang

Rough Set-Based Incremental Learning Approach to Face
Recognition 356
Xuguang Chen and Wojciech Ziarko

A Comparison of Dynamic and Static Belief Rough Set Classifier 366
Salsabil Trabelsi, Zied Elouedi, and Pawan Lingras

Rule Generation in Lipski's Incomplete Information Databases 376
Hiroshi Sakai, Michinori Nakata, and Dominik Ślęzak

A Fast Randomisation Test for Rule Significance 386
Ivo Düntsch and Günther Gediga

Ordinal Classification with Monotonicity Constraints by Variable
Consistency Bagging 392
Jerzy Błaszczyński, Roman Słowiński, and Jerzy Stefanowski

Learnability in Rough Set Approaches 402
Jerzy Błaszczyński, Roman Słowiński, and Marcin Szeląg

Upper Bounds on Minimum Cardinality of Exact and Approximate
Reducts 412
Igor Chikalov, Mikhail Moshkov, and Beata Zielosko

An Extension of Rough Set Approximation to Flow Graph Based Data
Analysis 418
Doungnat Chitcharoen and Puntip Pattaraintakorn

Credibility Coefficients Based on SVM 428
Roman Podraza and Bartosz Janeczek

On Algorithm for Building of Optimal α -Decision Trees 438
Abdulaziz Alkhalid, Igor Chikalov, and Mikhail Moshkov

Layered Approximation Approach to Knowledge Elicitation in Machine Learning	446
<i>Tuan Trung Nguyen</i>	

Multiagent Systems

Configuration Management of Mobile Agents Based on SNMP	456
<i>Michał Komorowski</i>	
Adaptive Immunity-Based Multiagent Systems (AIBMAS) Inspired by the Idiotypic Network	466
<i>Chung-Ming Ou and C.R. Ou</i>	
Distributed Default Logic for Context-Aware Computing in Multi-Agent Systems	476
<i>Dominik Ryżko and Henryk Rybiński</i>	
A Novel Approach to Default Reasoning for MAS	484
<i>Przemysław Więch and Henryk Rybiński</i>	
A Platform for the Evaluation of Automated Argumentation Strategies	494
<i>Piotr S. Kośmicki</i>	

Emerging Intelligent Technologies and Net-Centric Applications

Fuzzy Similarity-Based Relative Importance of MPEG-7 Visual Descriptors for Emotional Classification of Images	504
<i>EunJong Park, SungHwan Jeong, and JoonWhoan Lee</i>	
The Impact of Recommendation Sources on the Adoption Intention of Microblogging Based on Dominance-based Rough Set Approach	514
<i>Yang-Chieh Chin, Chaio-Chen Chang, Chiun-Sin Lin, and Gwo-Hshiung Tzeng</i>	
Fault Effects Analysis and Reporting System for Dependability Evaluation	524
<i>Piotr Gawkowski, Monika Anna Kuczyńska, and Agnieszka Komorowska</i>	
Solving the Reporting Cells Problem Using a Scatter Search Based Algorithm	534
<i>Sónia M. Almeida-Luz, Miguel A. Vega-Rodríguez, Juan A. Gómez-Pulido, and Juan M. Sánchez-Pérez</i>	
Learning Age and Gender Using Co-occurrence of Non-dictionary Words from Stylistic Variations	544
<i>R. Rajendra Prasath</i>	

Disturbance Measurement Utilization in Easily Reconfigurable Fuzzy
Predictive Controllers: Sensor Fault Tolerance and Other Benefits 551
Piotr M. Marusak

Classification and Decision Support Applications

Biometric-Based Authentication System Using Rough Set Theory 560
Hala S. Own, Waheeda Al-Mayyan, and Hussein Zedan

Classification of Facial Photograph Sorting Performance Based on
Verbal Descriptions 570
*Daryl H. Hepting, Richard Spring, Timothy Maciag,
Katherine Arbuthnott, and Dominik Ślęzak*

Random Musical Bands Playing in Random Forests 580
*Miron B. Kursa, Elżbieta Kubera, Witold R. Rudnicki, and
Alicja A. Wieczorkowska*

An Empirical Comparison of Rule Sets Induced by LERS and
Probabilistic Rough Classification 590
Jerzy W. Grzymala-Busse, Shantanu R. Marepally, and Yiyu Yao

DRSA Decision Algorithm Analysis in Stylometric Processing of
Literary Texts 600
Urszula Stańczyk

Blind Music Timbre Source Isolation by Multi- resolution Comparison
of Spectrum Signatures 610
Xin Zhang, Wenxin Jiang, Zbigniew W. Raś, and Rory Lewis

Rough Sets for Solving Classification Problems in Computational
Neuroscience 620
Tomasz G. Smolinski and Astrid A. Prinz

Towards Approximate SQL – Infobright’s Approach 630
Dominik Ślęzak and Marcin Kowalski

A Protein Classifier Based on SVM by Using the Voxel Based
Descriptor 640
Georgina Mirceva, Andreja Naumoski, and Danco Davcev

Intelligent Methods in Optimization and Control

Explicit Neural Network-Based Nonlinear Predictive Control with Low
Computational Complexity 649
Maciej Ławryńczuk

Solution of the Inverse Heat Conduction Problem by Using the ABC Algorithm.....	659
<i>Edyta Hetmaniok, Damian Słota, and Adam Zielonka</i>	
Application of Fuzzy Wiener Models in Efficient MPC Algorithms.....	669
<i>Piotr M. Marusak</i>	
Multicriteria Subjective Reputation Management Model	678
<i>Michał Majdan and Włodzimierz Ogryczak</i>	
Application of Fuzzy Preference Based Rough Set Model to Condition Monitoring	688
<i>Xiaomin Zhao, Ming J. Zuo, and Tejas Patel</i>	
Graph-Based Optimization Method for Information Diffusion and Attack Durability in Networks	698
<i>Zbigniew Tarapata and Rafał Kasprzyk</i>	

Granularity and Granular Systems

Paraconsistent and Approximate Semantics for the OWL 2 Web Ontology Language	710
<i>Linh Anh Nguyen</i>	
Representation of Granularity for Non-Euclidian Relational Data by Jaccard Coefficients and Binary Classifications.....	721
<i>Shoji Hirano and Shusaku Tsumoto</i>	
Information Systems in Modeling Interactive Computations on Granules	730
<i>Andrzej Skowron and Piotr Wasilewski</i>	
Distributed Representations to Detect Higher Order Term Correlations in Textual Content	740
<i>Pinar Öztürk, R. Rajendra Prasath, and Hans Moen</i>	
Author Index	751