

Contents

Invited Paper

Neural Networks – State of Art, Brief History, Basic Models and Architecture	3
<i>Bohdan Macukow</i>	

Rough Set Methods for Big Data Analytics

Complex Adaptive Systems and Interactive Granular Computing.	17
<i>Andrzej Skowron</i>	
Innovation and Big Data	23
<i>H. Jaap van den Herik</i>	
Imbalanced Data Classification: A Novel Re-sampling Approach Combining Versatile Improved SMOTE and Rough Sets	31
<i>Katarzyna Borowska and Jarosław Stepaniuk</i>	
Embedding the V-Detector Algorithm in FPGA.	43
<i>Maciej Brzozowski and Andrzej Chmielewski</i>	
Attribute Reduction Based on MapReduce Model and Discernibility Measure.	55
<i>Michał Czołombitko and Jarosław Stepaniuk</i>	
Mapping Points Back from the Concept Space with Minimum Mean Squared Error	67
<i>Władysław Homenda and Tomasz Penza</i>	
Representatives of Rough Regions for Generating Classification Rules	79
<i>Piotr Hońko</i>	
Hardware Supported Rough Sets Based Rules Generation for Big Datasets. . .	91
<i>Maciej Kopczynski, Tomasz Grzes, and Jarosław Stepaniuk</i>	

Images, Visualization, Classification

Information Density Based Image Binarization for Text Document Containing Graphics	105
<i>Soma Datta, Nabendu Chaki, and Sankhayan Choudhury</i>	

MRI Texture-Based Classification of Dystrophic Muscles. A Search for the Most Discriminative Tissue Descriptors	116
<i>Dorota Duda, Marek Kretowski, Noura Azzabou, and Jacques D. de Certaines</i>	
Detection of Orbital Floor Fractures by Principal Component Analysis	129
<i>Daniel Krpelik, Milan Jaros, Marta Jarosova, Petr Strakos, Tereza Buresova, Alena Vasatova, and Tomas Karasek</i>	
An Approach to Cell Nuclei Counting in Histological Image Analysis	139
<i>Maryna Lukashevich and Valery Starovoitov</i>	
Automatic Segmentation Framework for Fluorescence in Situ Hybridization Cancer Diagnosis	148
<i>Marcin Stachowiak and Lukasz Jelen</i>	
Neural Network Classification of SDR Signal Modulation	160
<i>Jakub Stebel, Michal Krumnikl, Pavel Moravec, Petr Olivka, and David Seidl</i>	
Skull Stripping for MRI Images Using Morphological Operators.	172
<i>Joanna Swiebocka-Wiek</i>	
Empirical Assessment of Performance Measures for Preprocessing Moments in Imbalanced Data Classification Problem.	183
<i>Paweł Szeszko and Magdalena Topczewska</i>	
Optimization, Tuning	
Optimization of Chosen Transport Task by Using Generic Algorithms.	197
<i>Anna Burduk and Kamil Musiał</i>	
Fast Branch and Bound Algorithm for the Travelling Salesman Problem	206
<i>Radosław Grymin and Szymon Jagiello</i>	
Simulations for Tuning a Laser Power Control System of the Cladding Process	218
<i>Piotr Jurewicz, Wojciech Rafajłowicz, Jacek Reiner, and Ewaryst Rafajłowicz</i>	
Automated Application of Inventory Optimization.	230
<i>Tomáš Martinovič, Kateřina Janurová, Kateřina Slaninová, and Jan Martinovič</i>	
Optimal Ellipse Based Algorithm as an Approximate and Robust Solution of Minimum Volume Covering Ellipse Problem	240
<i>Krzysztof Misztal, Jacek Tabor, and Jakub Hyla</i>	

Process of Point Clouds Merging for Mapping of a Robot's Working Environment	251
<i>Petr Olivka, Michal Krumnikl, Pavel Moravec, and David Seidl</i>	
Techniques of Czech Language Lossless Text Compression	265
<i>Jiří Ševčík and Jiří Dvorský</i>	
Optimization of Combining of Self Organizing Maps and Growing Neural Gas.	277
<i>Lukáš Vojáček, Pavla Dráždilová, and Jiří Dvorský</i>	
Scheduling in Manufacturing and Other Applications	
Robust Tabu Search Algorithm for Planning Rail-Truck Intermodal Freight Transport	289
<i>Wojciech Bożejko, Radosław Grymin, Szymon Jagiełło, and Jarosław Pempera</i>	
Multi-machine Scheduling with Setup Times	300
<i>Wojciech Bożejko, Łukasz Kacprzak, Piotr Nadybski, and Mieczysław Wodecki</i>	
Two Step Algorithm for Virtual Machine Distributed Replication with Limited Bandwidth Problem	312
<i>Wojciech Bożejko, Piotr Nadybski, and Mieczysław Wodecki</i>	
An Optimization Based Software Tool for Individual Automated Guideway Transit Systems	322
<i>Ezzeddine Fatmassi</i>	
Determination of the Optimal Routes for Autonomous Unmanned Aerial Vehicle Under Varying Wind with Using of the Traveling Salesman Problem Algorithm	334
<i>Jerzy Greblicki and Maciej Walczyński</i>	
Cyber Security of the Application Layer of Mission Critical Industrial Systems	342
<i>Rafał Kozik, Michał Choraś, Rafał Renk, and Witold Hołubowicz</i>	
Kohonen SOM for Image Slides Sequencing	352
<i>Ewa Skubalska-Rafajłowicz and Aneta Górniak</i>	
An Evolutionary Approach to Cyclic Real World Scheduling	366
<i>Dominik Żelazny</i>	

Algorithms

Performance Evaluation of Probabilistic Time-Dependent Travel Time Computation.	377
<i>Martin Golasowski, Radek Tomis, Jan Martinovič, Kateřina Slaninová, and Lukáš Rapant</i>	
Flexible Global Constraint Extension for Dynamic Time Warping.	389
<i>Tomáš Kocyan, Kateřina Slaninová, and Jan Martinovič</i>	
Orthogonal Illuminations in Two Light-Source Photometric Stereo	402
<i>Ryszard Kozera and Alexander Prokopenya</i>	
Graph Clustering Using Early-Stopped Random Walks	416
<i>Małgorzata Lucińska and Sławomir T. Wierchoń</i>	
Methods of Synthesis of Controlled Random Tests	429
<i>Ireneusz Mrozek and Vyacheslav Yarmolik</i>	
Blocking and Deadlocking Phenomena in Two-Server Tandem Configuration with Optional Feedback – Modeling and Parameter Sensitivity Investigation	441
<i>Walenty Oniszczyk</i>	
Mutual Information for Quaternion Time Series	453
<i>Michał Piórek</i>	
Algorithm of Allophone Borders Correction in Automatic Segmentation of Acoustic Units	462
<i>Janusz Rafalko</i>	

Decisions

Ensemble of Classifiers with Modification of Confidence Values	473
<i>Robert Burduk and Paulina Baczyńska</i>	
Fuzzy Random Forest with C-Fuzzy Decision Trees	481
<i>Lukasz Gadomer and Zenon A. Sosnowski</i>	
On Using Speed as the Criteria of State Selection for Minimization of Finite State Machines	493
<i>Adam Klimowicz</i>	
PLACE_SUBST Transformation of P/T Petri Process Nets and Its Properties	504
<i>Ivo Martinik</i>	

Fuzzy Dempster-Shafer Modelling and Decision Rules	516
<i>Zenon A. Sosnowski and Jarosław S. Walijewski</i>	
Classification of Protein Interactions Based on Sparse Discriminant Analysis and Energetic Features	530
<i>Katarzyna Stąpor and Piotr Fabian</i>	
Ensembles of Heterogeneous Concept Drift Detectors - Experimental Study . . .	538
<i>Michał Woźniak, Paweł Ksieniewicz, Bogusław Cyganek, and Krzysztof Walkowiak</i>	

Intelligent Distributed Systems

Harmony Search for Data Mining with Big Data.	553
<i>Jerzy Balicki, Piotr Dryja, and Waldemar Korhub</i>	
Harmony Search for Self-configuration of Fault-Tolerant and Intelligent Grids	566
<i>Jerzy Balicki, Waldemar Korhub, Jacek Paluszak, and Maciej Tysza</i>	
A Study on Fuzzy Cognitive Map Optimization Using Metaheuristics	577
<i>Aleksander Cislak, Władysław Homenda, and Agnieszka Jastrzębska</i>	
Pattern Recognition with Rejection: Combining Standard Classification Methods with Geometrical Rejecting	589
<i>Władysław Homenda, Agnieszka Jastrzębska, Piotr Waszkiewicz, and Anna Zawadzka</i>	
Connecting Household Weather Sensors to IoT World.	603
<i>Pavel Moravec, Michal Krumnikl, Petr Olivka, and David Seidl</i>	
An Electronic Document for Distributed Electronic Services.	617
<i>Gerard Wawrzyniak and Imed El Fray</i>	

Biometrics, Identification, Security

FE8R - A Universal Method for Face Expression Recognition	633
<i>Majida Albakoor, Khalid Saeed, Mariusz Rybnik, and Mohamad Dabash</i>	
A Fault-Tolerant Authenticated Key-Conference Agreement Protocol with Forward Secrecy	647
<i>Tomasz Hyla and Jerzy Pejaś</i>	
Towards Generating a Unique Signature for Remote User by Keystrokes Dynamics	661
<i>Puja Mukherjee and Rituparna Chaki</i>	

A Multimodal Biometric User Identification System Based on Keystroke Dynamics and Mouse Movements	672
<i>Piotr Panasiuk, Maciej Szymkowski, Marcin Dąbrowski, and Khalid Saeed</i>	
An Efficient Three Factor Based Remote User Authentication Protocol for Distributed Networks	682
<i>Ashish Singh and Kakali Chatterjee</i>	
Miscellaneous	
Music Emotion Maps in Arousal-Valence Space	697
<i>Jacek Grekow</i>	
Attribute Grammars for Controlling House Layout Customization	707
<i>Władysław Homenda and Krystian Kwieciński</i>	
The Radio Direction Finding with Advantage of the Software Defined Radio	720
<i>Josef Hrabal, David Seidl, Michal Krumnikl, Pavel Moravec, and Petr Olivka</i>	
A Quality Assessment Framework for Large Datasets of Container-Trips Information	729
<i>Michail Makridis, Raúl Fidalgo-Merino, José-Antonio Cotelo-Lema, Aris Tsois, and Enrico Checchi</i>	
Synthesis of High-Speed Finite State Machines in FPGAs by State Splitting. . .	741
<i>Valery Salauyou</i>	
Author Index	753

Computer Information Systems and Industrial
Management

15th IFIP TC8 International Conference, CISIM 2016,
Vilnius, Lithuania, September 14-16, 2016, Proceedings

Saeed, K.; Homenda, W. (Eds.)

2016, XXIV, 754 p. 367 illus., 131 illus. in color.,

Softcover

ISBN: 978-3-319-45377-4