

# Contents

Method for Applying Channels Plan Change to Minimize Message Loss During LoRaWAN Network Reconfiguration - Case Study .....	1
<i>Marek A. Bawiec</i>	
Machine Learning-Based Surrogate Models for Noise Level Prediction on Urban Scale Maps .....	11
<i>Marek Bazan, Przemysław Lewicki, Michał Piórek, Ewa Skubalska-Rafajłowicz, Kamil Szyc, and Henryk Maciejewski</i>	
Gas Management in Smart Homes: A Multi-agent and Knowledge Graph Approach .....	21
<i>Meriem Berkani, Mimoun Malki, Khayra Bencherif, and Samir Ouchani</i>	
Standard and RL-Controlled Tabu Search Algorithms Comparison in Capacitated Vehicle Routing Problem Solving .....	32
<i>Jan Bronicki and Piotr Nowak</i>	
Using ChatGPT for Converting Sequential Python Programs into Parallel Code .....	41
<i>Denny B. Czejdo, Wiktor B. Daszczuk, and Waldemar Grabski</i>	
Multiprocessor Task Scheduling - Comparison of Some Heuristics and Metaheuristics .....	51
<i>Dariusz Dorota</i>	
Standardization Processes for the Implementation of AI in Healthcare System: Challenges and Limitations .....	61
<i>Barbara Anna Jantos, Michał Paweł Wierzbicki, and Michał Tomaszewski</i>	
Dynamic Infrared Thermography and Machine Learning for Advanced Diagnostic Applications in Biomedical Imaging .....	75
<i>Łukasz Jeleń, Krzysztof Krupka, and Andrzej Rusiecki</i>	
Models for Assessing the Dependability of Programmable Devices with Controlled Multi-Level Degradation .....	85
<i>Vyacheslav Kharchenko, Yuriy Ponochovnyi, Oleksandr Vdovichenko, and Khanlar Mahmudov</i>	
FPGAs in Reduct Calculation Using Rough Sets .....	96
<i>Maciej Kopczynski</i>	

Resilient Software Development of Intelligent Services in Cloud Environments .....	106
<i>Henryk Krawczyk and Bogdan Wiszniewski</i>	
Proposal of an Optimised Path Tracing Algorithm for Computer Graphics .....	117
<i>Adam Krizar and Marek Woda</i>	
Speech Recognition Using Spectrogram Images and Formant Data with Neural Networks .....	129
<i>Mateusz Kucharski and Ewa Skubalska-Rafajłowicz</i>	
Bibliometric Analysis of Research on AI-Based Forecasting in Renewable Energy .....	138
<i>Pawel Kut, Katarzyna Pietrucha-Urbanik, Martina Zelenakova, and Hany F. Abd-Elhamid</i>	
Neighbourhood Generation in Session-Based Recommender Systems Using a Density-Based Approach .....	148
<i>Urszula Kuźelewska and Łukasz Milewski</i>	
Cascading Failure Analysis of Hierarchical IoT Systems .....	158
<i>Jerzy Martyna</i>	
RoboŁapa - Electromyographically Controlled Prosthetic Hand Model .....	170
<i>Gabriel Pankowski, Beata Mazurkiewicz, Jacek Mazurkiewicz, and Dominik Cedro</i>	
Analysis of the Impact of Time Window Lengths on Maintenance Vehicle Routing Problem Efficiency .....	181
<i>Konrad Pempera and Michał Jaroszczyk</i>	
Preparing a Dataset of Mixers BTC Addresses for Machine Learning Purpose .....	191
<i>Przemysław Rodwald</i>	
Technique for Constructing Structural Models of Fault-Tolerant Moore Finite State Machines .....	199
<i>Valery Salauyou</i>	
Implementing Cryptographic Algorithms Across Various Generations of FPGA Devices – A Case Study .....	209
<i>Jarosław Sugier</i>	
Energy Efficiency in Large Language Models: An Empirical Study .....	221
<i>Tomasz Walkowiak</i>	

Enhancing Cervical Cell Classification with DenseNet201 and Spatial Attention Mechanism ..... 229  
*Betelhem Zewdu Wubineh, Andrzej Rusiecki, and Krzysztof Halawa*

Integration of Uncertainty Modeling for the Detection of Pedestrian Intention ..... 237  
*Yusuf Yesilyurt and Marek Woda*

Creating an Automatic Classifier for Detecting Diabetic Retinopathy Based on the Combining a New 7-Class Dataset Fundus Images and a Collection of Images from Another Source ..... 246  
*Michał Zmonarski, Ewa Skubalska-Rafajłowicz, Aleksandra Zgryźniak, and Sławomir Zmonarski*

**Author Index** ..... 257

*Jacek Małykiewicz* is a postdoctoral fellow at the Institute of Informatics and Computing Science Technology at Wrocław University of Technology (WUT), Poland. He received M.Sc. and Ph.D. degrees in computer science from WUT in 1999 and 2004, respectively. He is a member of the Polish Association of Software Engineers (PASP) and Polish Safety and Reliability Association. He is an author of several scientific papers in international journals, books, chapters and proceedings. His main research interests include computer networks, wireless systems, distributed systems, functional analysis and modelling of systems.

*Jacek Słupka* received M.Sc. and Ph.D. degrees in computer science from Wrocław University of Science and Technology and is currently an assistant professor at the Faculty of Informatics and Control Systems Technology. His research interests include programming, digital signal processing, computer models of cryptographic algorithms and modelling of human behaviour in emergency situations. He is an editor of the journal of the Polish Society for Knowledge Engineering and has been an editor of 20 proceedings and conference proceedings.

*Tomasz Wójcicki* is engaged in working at the field of machine learning. He is one of the leading designers of the content and architecture of the CLARIN PL Language Technology Centre, which is based upon parallel, distributed and efficient text processing. He processes scientific journals of text research each year. He consistently serves as a member of program committees and as a reviewer for machine learning and NLP-related interests of journals and scientific conferences. Additionally, he is an editor of 10 magazines and has published over 200 papers.

*Justyna Wójcicka* is a professor of Computer Science at the Systems Research Institute of Polish Academy of Sciences, and also at the Wrocław School of Information Technology, PAF—Institute of Automatics and Measurement and Cracow University of Technology. She has been a visiting associate at many universities in the