# Contents

Method for Applying Channels Plan Change to Minimize Message Loss During LoRaWAN Network Reconfiguration - Case Study ..... 1
*Marek A. Bawiec*

Machine Learning-Based Surrogate Models for Noise Level Prediction on Urban Scale Maps ..... 11
*Marek Bazan, Przemysław Lewicki, Michał Piórek, Ewa Skubalska-Rafajłowicz, Kamil Szyc, and Henryk Maciejewski*

Gas Management in Smart Homes: A Multi-agent and Knowledge Graph Approach ..... 21
*Meriem Berkani, Mimoun Malki, Khayra Bencherif, and Samir Ouchani*

Standard and RL-Controled Tabu Search Algorithms Comparison in Capacitated Vehicle Routing Problem Solving ..... 32
*Jan Bronicki and Piotr Nowak*

Using ChatGPT for Converting Sequential Python Programs into Parallel Code ..... 41
*Denny B. Czejdo, Wiktor B. Daszczuk, and Waldemar Grabski*

Multiprocessor Task Scheduling - Comparison of Some Heuristics and Metaheuristics ..... 51
*Dariusz Dorota*

Standardization Processes for the Implementation of AI in Healthcare System: Challenges and Limitations ..... 61
*Barbara Anna Jantos, Michał Paweł Wierzbicki, and Michał Tomaszewski*

Dynamic Infrared Thermography and Machine Learning for Advanced Diagnostic Applications in Biomedical Imaging ..... 75
*Łukasz Jeleń, Krzysztof Krupka, and Andrzej Rusiecki*

Models for Assessing the Dependability of Programmable Devices with Controlled Multi-Level Degradation ..... 85
*Vyacheslav Kharchenko, Yuriy Ponochovnyi, Oleksandr Vdovichenko, and Khanlar Mahmudov*

FPGAs in Reduct Calculation Using Rough Sets ..... 96
*Maciej Kopczynski*

Resilient Software Development of Intelligent Services in Cloud Environments ..... 106
*Henryk Krawczyk and Bogdan Wiszniewski*

Proposal of an Optimised Path Tracing Algorithm for Computer Graphics ..... 117
*Adam Krizar and Marek Woda*

Speech Recognition Using Spectrogram Images and Formant Data with Neural Networks ..... 129
*Mateusz Kucharski and Ewa Skubalska-Rafajłowicz*

Bibliometric Analysis of Research on AI-Based Forecasting in Renewable Energy ..... 138
*Paweł Kut, Katarzyna Pietrucha-Urbanik, Martina Zelenakova, and Hany F. Abd-Elhamid*

Neighbourhood Generation in Session-Based Recommender Systems Using a Density-Based Approach ..... 148
*Urszula Kużelewska and Łukasz Milewski*

Cascading Failure Analysis of Hierarchical IoT Systems ..... 158
*Jerzy Martyna*

Robołapa - Electromyographically Controlled Prosthetic Hand Model ..... 170
*Gabriel Pankowski, Beata Mazurkiewicz, Jacek Mazurkiewicz, and Dominik Cedro*

Analysis of the Impact of Time Window Lengths on Maintenance Vehicle Routing Problem Efficiency ..... 181
*Konrad Pempera and Michał Jaroszczuk*

Preparing a Dataset of Mixers BTC Addresses for Machine Learning Purpose ..... 191
*Przemysław Rodwald*

Technique for Constructing Structural Models of Fault-Tolerant Moore Finite State Machines ..... 199
*Valery Salauyou*

Implementing Cryptographic Algorithms Across Various Generations of FPGA Devices – A Case Study ..... 209
*Jarosław Sugier*

Energy Efficiency in Large Language Models: An Empirical Study ..... 221
*Tomasz Walkowiak*

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-Rafajlowicz, Aleksandra Zgryźniak, and Sławomir Zmonarski*

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