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Proceedings, Part I

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Preface

This volume constitutes the proceedings of 20th International Conference on Artificial Intelligence and Soft Computing (ICAISC 2021) held in Zakopane, Poland, during June 21–23, 2021, which took place virtually due to the COVID-19 pandemic. The conference was organized by the Polish Neural Network Society in cooperation with the University of Social Sciences in Łódź, the Department of Intelligent Computer Systems at the Częstochowa University of Technology, and the IEEE Computational Intelligence Society, Poland Chapter. Previous conferences took place in Kule (1994), Szczyrk (1996), Kule (1997), and Zakopane (1999, 2000, 2002, 2004, 2006, 2008, 2010, and 2012–2020) and attracted a large number of papers and internationally recognized speakers: Lotfi A. Zadeh, Hojjat Adeli, Rafal Angryk, Igor Aizenberg, Cesare Alippi, Shun-ichi Amari, Daniel Amit, Plamen Angelov, Albert Bifet, Piero P. Bonissone, Jim Bezdek, Zdzisław Bubnicki, Jan Chorowski, Andrzej Cichocki, Swagatam Das, Ewa Dudek-Dyduch, Włodzisław Duch, Adel S. Elmaghraby, Pablo A. Estévez, João Gama, Erol Gelenbe, Jerzy Grzymala-Busse, Martin Hagan, Yoichi Hayashi, Akira Hirose, Kaoru Hirota, Adrian Horzyk, Eyke Hüllermeier, Hisao Ishibuchi, Er Meng Joo, Janusz Kacprzyk, Jim Keller, Laszlo T. Koczy, Tomasz Kopacz, Jacek Koronacki, Zdzisław Kowalczyk, Adam Krzyżak, Rudolf Kruse, James Tin-Yau Kwok, Soo-Young Lee, Derong Liu, Robert Marks, Ujjwal Maulik, Zbigniew Michalewicz, Evangelia Micheli-Tzanakou, Kaisa Miettinen, Krystian Mikołajczyk, Henning Müller, Ngoc Thanh Nguyen, Andrzej Obuchowicz, Erkki Oja, Nikhil R. Pal, Witold Pedrycz, Marios M. Polycarpou, José C. Príncipe, Jagath C. Rajapakse, Šarunas Raudys, Enrique Ruspini, Jörg Siekmann, Andrzej Skowron, Roman Słowiński, Igor Spiridonov, Boris Stilman, Ponnuthurai Nagaratnam Suganthan, Ryszard Tadeusiewicz, Ah-Hwee Tan, Dacheng Tao, Shiro Usui, Thomas Villmann, Fei-Yue Wang, Jun Wang, Bogdan M. Wilamowski, Ronald Y. Yager, Xin Yao, Syozo Yasui, Gary Yen, Ivan Zelinka, and Jacek Zurada. The aim of this conference is to build a bridge between traditional artificial intelligence techniques and so-called soft computing techniques. It was pointed out by Lotfi A. Zadeh that “soft computing (SC) is a coalition of methodologies which are oriented toward the conception and design of information/intelligent systems. The principal members of the coalition are: fuzzy logic (FL), neurocomputing (NC), evolutionary computing (EC), probabilistic computing (PC), chaotic computing (CC), and machine learning (ML). The constituent methodologies of SC are, for the most part, complementary and synergistic rather than competitive”. These proceedings present both traditional artificial intelligence methods and soft computing techniques. Our goal is to bring together scientists representing both areas of research. This volume is divided into four parts:

- Neural Networks and Their Applications
- Fuzzy Systems and Their Applications
- Evolutionary Algorithms and Their Applications
- Artificial Intelligence in Modeling and Simulation

I would like to thank our participants, invited speakers, and reviewers of the papers for their scientific and personal contribution to the conference. Finally, I thank my co-workers, Łukasz Bartczuk, Piotr Dziwiński, Marcin Gabryel, Rafał, Grycuk, Marcin Korytkowski, and Rafał, Scherer, for their enormous efforts to make the conference a very successful event. Moreover, I appreciate the work of Marcin Korytkowski who was responsible for the Internet submission system.

June 2021

Leszek Rutkowski

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ICAISC 2021 was organized by the Polish Neural Network Society in cooperation with the University of Social Sciences in Łódź and the Institute of Computational Intelligence at Częstochowa University of Technology.

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Contents – Part I

Neural Networks and Their Applications

Financial Portfolio Construction for Quantitative Trading Using Deep Learning Technique.	3
<i>Rasha Abdel Kawy, Walid M. Abdelmoez, and Amin Shoukry</i>	
Factor Augmented Artificial Neural Network vs Deep Learning for Forecasting Global Liquidity Dynamics	15
<i>David Alaminos</i>	
Integrate-and-Fire Neurons for Low-Powered Pattern Recognition	29
<i>Florian Bacho and Dominique Chu</i>	
A New Variant of the GQR Algorithm for Feedforward Neural Networks Training	41
<i>Jarosław Bilski and Bartosz Kowalczyk</i>	
Modification of Learning Feedforward Neural Networks with the BP Method	54
<i>Jarosław Bilski, Jacek Smoląg, and Patryk Najgebauer</i>	
Data-Driven Learning of Feedforward Neural Networks with Different Activation Functions	66
<i>Grzegorz Dudek</i>	
Time-Domain Signal Synthesis with Style-Based Generative Adversarial Networks Applied to Guided Waves	78
<i>Mateusz Heesch, Krzysztof Mendrok, and Ziemowit Dworakowski</i>	
A Comparison of Trend Estimators Under Heteroscedasticity	89
<i>Jan Kalina, Petra Vidnerová, and Jan Tichavský</i>	
Canine Behavior Interpretation Framework Using Deep Graph Model	99
<i>Jongmin Lim, Donghee Kim, and Kwangsu Kim</i>	
Artificial Neural Network Based Empty Container Fleet Forecast	111
<i>Joan Meseguer Llopis, Salvador Furio Prunonosa, Miguel Llop Chabrera, and Francisco J. Cubas Rodriguez</i>	
Efficient Recurrent Neural Network Architecture for Musical Style Transfer.	124
<i>Mateusz Modrzejewski, Konrad Bereda, and Przemysław Rokita</i>	

Impact of ELM Parameters and Investment Horizon for Currency Exchange Prediction	133
<i>Jakub Morkowski</i>	
Spectroscopy-Based Prediction of In Vitro Dissolution Profile Using Artificial Neural Networks	145
<i>Mohamed Azouz Mrad, Kristóf Csorba, Dorián László Galata, Zsombor Kristóf Nagy, and Brigitta Nagy</i>	
Possibilistic Classification Learning Based on Contrastive Loss in Learning Vector Quantizer Networks	156
<i>Seyedfakhredin Musavishavazi, Marika Kaden, and Thomas Villmann</i>	
Convolutional Autoencoder Based Textile Defect Detection Under Unconstrained Setting	168
<i>Deepak Nagaraj, Pramod Vadiraja, Oliver Nalbach, and Dirk Werth</i>	
Clustering-Based Adaptive Self-Organizing Map	182
<i>Dominik Olszewski</i>	
Applying Machine Learning Techniques to Identify Damaged Potatoes	193
<i>Aleksey Osipov, Andrey Filimonov, and Stanislav Suvorov</i>	
Quantifying the Severity of Common Rust in Maize Using Mask R-CNN	202
<i>Nelishia Pillay, Mia Gerber, Katerina Holan, Steven A. Whitham, and Dave K. Berger</i>	
Federated Learning Model with Augmentation and Samples Exchange Mechanism	214
<i>Dawid Połap, Gautam Srivastava, Jerry Chun-Wei Lin, and Marcin Woźniak</i>	
Flexible Data Augmentation in Off-Policy Reinforcement Learning	224
<i>Alexandra Rak, Alexey Skrynnik, and Aleksandr I. Panov</i>	
Polynomial Neural Forms Using Feedforward Neural Networks for Solving Differential Equations	236
<i>Toni Schneidereit and Michael Breuß</i>	
Quantum-Hybrid Neural Vector Quantization – A Mathematical Approach	246
<i>Thomas Villmann and Alexander Engelsberger</i>	
A Graphic CNN-LSTM Model for Stock Price Predication	258
<i>Jimmy Ming-Tai Wu, Zhongcui Li, Youcef Djenouri, Dawid Połap, Gautam Srivastava, and Jerry Chun-Wei Lin</i>	

Applying Convolutional Neural Networks for Stock Market Trends Identification	269
<i>Ekaterina Zolotareva</i>	

Fuzzy Systems and Their Applications

The Extreme Value Evolving Predictor in Multiple Time Series Learning . . .	285
<i>Amanda O. C. Ayres and Fernando J. Von Zuben</i>	
Towards Synthetic Multivariate Time Series Generation for Flare Forecasting.	296
<i>Yang Chen, Dustin J. Kempton, Azim Ahmadzadeh, and Rafal A. Angryk</i>	
The Streaming Approach to Training Restricted Boltzmann Machines	308
<i>Piotr Duda, Leszek Rutkowski, Piotr Woldan, and Patryk Najgebauer</i>	
Abrupt Change Detection by the Nonparametric Approach Based on Orthogonal Series Estimates.	318
<i>Tomasz Galkowski and Adam Krzyżak</i>	
Recommendation System for Signal Processing in SHM	328
<i>Jakub Gorski, Michal Dziendzikowski, and Ziemowit Dworakowski</i>	
Monitoring of Changes in Data Stream Distribution Using Convolutional Restricted Boltzmann Machines	338
<i>Maciej Jaworski, Leszek Rutkowski, Paweł Staszewski, and Patryk Najgebauer</i>	
A Proposal for Hybrid Memories Management Exploring Fuzzy-Based Page Migration Policy	347
<i>Lizandro de Souza Oliveira, Rodrigo Costa de Moura, Guilherme Bayer Schneider, Adenauer Correa Yamin, and Renata Hax Sander Reiser</i>	
A Novel Approach to Determining the Radius of the Neighborhood Required for the DBSCAN Algorithm	358
<i>Artur Starczewski</i>	

Evolutionary Algorithms and Their Applications

A Learning Automata-Based Approach to Lifetime Optimization in Wireless Sensor Networks	371
<i>Jakub Gąsior and Franciszek Seredyński</i>	
Genetic Algorithms in Data Masking: Towards Privacy as a Service	381
<i>Noel Hendrick and Vicenç Torra</i>	

Transmission of Genetic Properties in Permutation Problems: Study of Lehmer Code and Inversion Table Encoding	392
<i>Carine Khalil and Wahabou Abdou</i>	
Population Management Approaches in the OPn Algorithm	402
<i>Krystian Łapa, Krzysztof Cpałka, and Adam Słowik</i>	
Harris Hawks Optimisation: Using of an Archive	415
<i>Petr Bujok</i>	
Multiobjective Evolutionary Algorithm for Classifying Cosmic Particles	424
<i>Krzysztof Pytel</i>	
A New Genetic Improvement Operator Based on Frequency Analysis for Genetic Algorithms Applied to Job Shop Scheduling Problem	434
<i>Monique Simplicio Viana, Rodrigo Colnago Contreras, and Orides Morandin Junior</i>	
Artificial Intelligence in Modeling and Simulation	
Decision-Making Problems with Local Extremes: Comparative Study Case	453
<i>Bartłomiej Kizielewicz, Andrii Shekhovtsov, Wojciech Sałabun, and Andrzej Piegat</i>	
Intelligent Virtual Environments with Assessment of User Experiences	463
<i>Ahmet Köse, Aleksei Tepljakov, and Eduard Petlenkov</i>	
Intelligent Performance Prediction for Powerlifting	475
<i>Wojciech Rafajłowicz and Joanna Marszałek</i>	
Learning Shape Sensitive Descriptors for Classifying Functional Data	485
<i>Wojciech Rafajłowicz and Ewaryst Rafajłowicz</i>	
An Approach to Contextual Time Series Analysis	496
<i>Anton Romanov, Aleksey Filippov, and Nadezhda Yarushkina</i>	
Simulation Analysis of Tunnel Vision Effect in Crowd Evacuation	506
<i>Akira Tsurushima</i>	
Author Index	519

Contents – Part II

Computer Vision, Image and Speech Analysis

Classification of Dermatological Asymmetry of the Skin Lesions Using Pretrained Convolutional Neural Networks	3
<i>Michał Beczkowski, Norbert Borowski, and Piotr Milczarski</i>	
Contextual Image Classification Through Fine-Tuned Graph Neural Networks	15
<i>Walacy S. Campos, Luis G. Souza, Priscila T. M. Saito, and Pedro H. Bugatti</i>	
Architecture Monitoring and Reliability Estimation Based on DIP Technology	25
<i>Faisal Mehmood Shah, Zohaib Mehmood Shah, Sarmad Maqsood, Robertas Damasevicius, Muhammad Ali Shahzad, Michał Wieczorek, and Marcin Woźniak</i>	
An Efficient Technique for Filtering of 3D Cluttered Surfaces	36
<i>Piyush Joshi, Alireza Rastegarpanah, and Rustam Stolkin</i>	
A Computer Vision Based Approach for Driver Distraction Recognition Using Deep Learning and Genetic Algorithm Based Ensemble	44
<i>Ashlesha Kumar, Kuldeep Singh Sangwan, and Dhiraj</i>	
Multimodal Image Fusion Method Based on Multiscale Image Matting	57
<i>Sarmad Maqsood, Robertas Damasevicius, Jakub Silka, and Marcin Woźniak</i>	
Targeting the Most Important Words Across the Entire Corpus in NLP Adversarial Attacks	69
<i>Reza Marzban, Johnson Thomas , and Christopher Crick</i>	
RGB-D Odometry for Autonomous Lawn Mowing	81
<i>Marcin Ochman, Magda Skoczeń, Damian Krata, Marcin Panek, Krystian Spyra, and Andrzej Pawłowski</i>	
Using PMI to Rank and Filter Edges in Graphs of Words	91
<i>Marcela Ribeiro de Oliveira and Eduardo J. Spinosa</i>	
Development and Research of Quantum Models for Image Conversion	101
<i>Samoylov Alexey, Gushanskyi Sergey, and Potapov Viktor</i>	

Selecting the Optimal Configuration of Swarm Algorithms for an NLP Task.	113
<i>George Tambouratzis</i>	
Active Learning Strategies and Convolutional Neural Networks for Mammogram Classification	126
<i>João Marcelo Tozato, Pedro Henrique Bugatti, and Priscila Tiemi Maeda Saito</i>	
Data Mining	
Exploiting Time Dynamics for One-Class and Open-Set Anomaly Detection	137
<i>Lorenzo Brigato, Riccardo Sarte, Stefano Simonazzi, Alessandro Farinelli, Luca Iocchi, and Christian Napoli</i>	
cgSpan: Pattern Mining in Conceptual Graphs	149
<i>Adam Faci, Marie-Jeanne Lesot, and Claire Laudy</i>	
Constrained Clustering Problems: New Optimization Algorithms.	159
<i>Hatem Ibn-Khedher, Makhlouf Hadji, Mohamed Ibn Khedher, and Selma Khebbache</i>	
Robustness of Supervised Learning Based on Combined Centroids	171
<i>Jan Kalina and Ctirad Matonoha</i>	
Cognitive Consistency Models Applied to Data Clustering	183
<i>Thales Vaz Maciel and Leonardo Ramos Emmendorfer</i>	
Interactive Process Drift Detection Framework	192
<i>Denise Maria Vecino Sato, Jean Paul Barddal, and Edson Emilio Scalabrin</i>	
Mining of High-Utility Patterns in Big IoT Databases	205
<i>Jimmy Ming-Tai Wu, Gautam Srivastava, Jerry Chun-Wei Lin, Youcef Djenouri, Min Wei, and Dawid Polap</i>	
Dynamic Ensemble Selection for Imbalanced Data Stream Classification with Limited Label Access.	217
<i>Paweł Zybiewski and Michał Woźniak</i>	
Various Problems of Artificial Intelligence	
Applying and Comparing Policy Gradient Methods to Multi-echelon Supply Chains with Uncertain Demands and Lead Times.	229
<i>Julio César Alves, Diego Mello da Silva, and Geraldo Robson Mateus</i>	

Formants Analysis of L2 Arabic Short Vowels: The Impact of Gender and Foreign Accent	240
<i>Ghania Droua-Hamdani</i>	
Cluster Analysis of Co-occurring Human Personality Traits and Depression	247
<i>Marta Emirsajłow</i>	
Polynomial Algorithm for Solving Cross-matching Puzzles	257
<i>Josef Hynek</i>	
Credit Risk Assessment in the Banking Sector Based on Neural Network Analysis	267
<i>Vera Ivanyuk, Egor Slovesnov, and Vladimir Soloviev</i>	
Neural Network Model for the Multiple Factor Analysis of Economic Efficiency of an Enterprise	278
<i>Vera Ivanyuk and Vladimir Soloviev</i>	
A Study of Direct and Indirect Encoding in Phenotype-Genotype Relationships	290
<i>Clyde Meli, Vitezslav Nezval, Zuzana Kominkova Oplatkova, Victor Buttigieg, and Anthony Spiteri Staines</i>	
Study of the Influences of Stimuli Characteristics in the Implementation of Steady State Visual Evoked Potentials Based Brain Computer Interface Systems	302
<i>José Luis Murillo López, Johanna Carolina Cerezo Ramírez, and Sang Guun Yoo</i>	
Promises and Challenges of Reinforcement Learning Applications in Motion Planning of Automated Vehicles	318
<i>Nikodem Pankiewicz, Tomasz Wrona, Wojciech Turlej, and Mateusz Orłowski</i>	
The Usage of Possibility Degree in the Multi-criteria Decision-Analysis Problems	330
<i>Andrii Shekhovtsov, Bartłomiej Kizielewicz, Wojciech Salabun, and Andrzej Piegat</i>	
Ant-Based Hyper-Heuristics for the Movie Scene Scheduling Problem.	342
<i>Emilio Singh and Nelishia Pillay</i>	
AI Alignment of Disaster Resilience Management Support Systems	354
<i>Andrzej M. J. Skulimowski and Victor A. Bañuls</i>	
A Generative Design Method Based on a Graph Transformation System	367
<i>Grażyna Ślusarczyk, Barbara Strug, and Ewa Grabska</i>	

Time Dependent Fuel Optimal Satellite Formation Reconfiguration Using Quantum Particle Swarm Optimization.	379
<i>K. Soyinka Olukunle, Nzekwu Nwanze, and E. C. A. Akoma Henry</i>	
The Efficiency of the Stock Exchange - The Case of Stock Indices of IT Companies.	390
<i>Paweł Trippner and Rafał Józwicki</i>	
Simultaneous Contextualization and Interpretation with Keyword Awareness	403
<i>Teppei Yoshino, Shoya Matsumori, Yosuke Fukuchi, and Michita Imai</i>	
Aiding Long-Term Investment Decisions with XGBoost Machine Learning Model	414
<i>Ekaterina Zolotareva</i>	
Bioinformatics, Biometrics and Medical Applications	
A New Statistical Iterative Reconstruction Algorithm for a CT Scanner with Flying Focal Spot	431
<i>Robert Cierniak and Piotr Pluta</i>	
A New Multi-filter Framework with Statistical Dense SIFT Descriptor for Spoofing Detection in Fingerprint Authentication Systems.	442
<i>Rodrigo Colnago Contreras, Luis Gustavo Nonato, Maurílio Boaventura, Inês Aparecida Gasparotto Boaventura, Bruno Gomes Coelho, and Monique Simplicio Viana</i>	
Application of a Neural Network to Generate the Hash Code for a Device Fingerprint.	456
<i>Marcin Gabryel and Milan Kocić</i>	
Fingerprint Device Parameter Stability Analysis	464
<i>Marcin Gabryel and Milan Kocić</i>	
RNA Folding Codes Optimization Using the Intel SDK for OpenCL.	473
<i>Mateusz Gruzewski and Marek Palkowski</i>	
A Comparison of Machine Learning Techniques for Diagnosing Multiple Myeloma.	483
<i>Luveshan Marimuthu, Nelishia Pillay, Rivak Punchoo, and Sachin Bhoora</i>	
Fuzzy Granulation Approach to Face Recognition	495
<i>Danuta Rutkowska, Damian Kurach, and Elisabeth Rakus-Andersson</i>	

Dynamic Signature Vertical Partitioning Using Selected Population-Based Algorithms	511
<i>Marcin Zalasinski, Tacjana Niksa-Rynkiewicz, and Krzysztof Cpałka</i>	
Author Index	519