

2022 IEEE 20th Jubilee World Symposium on Applied Machine Intelligence and Informatics (SAMI 2022)

**Poprad, Slovakia
2 – 5 March 2022**



**IEEE Catalog Number: CFP2208E-POD
ISBN: 978-1-6654-9705-3**

**Copyright © 2022 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP2208E-POD
ISBN (Print-On-Demand):	978-1-6654-9705-3
ISBN (Online):	978-1-6654-9704-6

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

Table of Contents

Welcome	3
Committees	4
Biomedical Engineering in the 21st Century and in the Future	11
<i>Marek Penhaker</i>	
Building a Surgical Robotics Company to Succeed	13
<i>Dwight Meglan</i>	
Autonomous Vehicle Drift With a Soft Actor-Critic Reinforcement Learning Agent	15
<i>Szilárd Hunor Tóth, Zsolt János Viharos, Ádám Bárdos</i>	
Handling the Stochastic Behaviour of the Bag-of-Audio-Words Method	21
<i>Mercedes Vetráb, Gábor Gosztolya</i>	
Energy Consumption Model of Sensor Nodes using Merged Data Collecting Methods	27
<i>József Kopják, Gergely Sebestyén</i>	
Battery Life Prediction Model of Sensor Nodes using Merged Data Collecting methods	31
<i>Gergely Sebestyén, József Kopják</i>	
Chord Analyzing Based on Signal Processing	35
<i>E. Chvoancova, J. Hurtuk, J. Palša, M. Škerlík, D. Vaľko</i>	
Initial Design of Intelligent Decision-Making System for a Small Unmanned Airplane	41
<i>Miriám Hlinková, Šimon Karaffa, Jakub Leško, Natália Gecejová, Rudolf Andoga, Róbert Bréda</i>	
Development of a Hardware Simulator for a Micro Turbojet Engine	47
<i>Roland Istenes-Németh, Károly Beneda, Ladislav Főző</i>	
Web-based Application for Processing Cardiology Medical Records	53
<i>Michal Kolárik, Ján Paralič, Zuzana Pella, Lucia Szalonová</i>	
Development of a User Interface for Parking Lot Exploration	57
<i>László Kocsány, Emese Gincsiné Szádeczky-Kardoss</i>	
The Structural Diagram for the Development of Human Papillomavirus (HPV) and Cervical Cancer Risk Assessment ..	63
<i>Ogbolu Melvin Omone, Abdullahi Mohammed Alhaji, Miklos Kozlovsky</i>	
Possibilities and Challenges of Monitoring and Evaluating Digital Education in Electronic Environments from a Pedagogical and Technological Perspective	69
<i>György Molnár, Beáta Orosz, Zoltán Balogh, Kristian Fodor, Jan Francisti, József Cserkó, Brigitta Balázs</i>	
Configuration Honeypots with an Emphasis on Logging of the Attacks and Redundancy	73
<i>Jakub Palša, Ján Hurtuk, Eva Chvoancová, Marek Havira</i>	
Analysis of Attacks on Mail Service Infrastructure Based on Application Logs and NetFlow Protocol	77
<i>Martin Chovanec, Martin Havrilla, Martin Hasin and Eva Chvoancova</i>	
Information Hiding Using Domain-Specific Hierarchical Data Structure Symmetry-aware Sparse Voxel Directed Acyclic Graphs	83
<i>Branislav Madoš, Anton Balaž, Heidar Khorshidiyeh, Martin Hasin</i>	
Comparison of Sensor Data Fusion Algorithms for Automotive Perception System	89
<i>László Lindenmaier, Szilárd Aradi, Tamás Bécsi, Olivér Törő</i>	
Evaluation of the Log-Homotopy Particle Flow Filter for Localisation	97
<i>Domonkos Csuzdi, Olivér Törő, Szilárd Aradi</i>	
Standardized Feature Extraction from Pairwise Conflicts Applied to the Train Rescheduling Problem	103
<i>Anikó Kopacz, Ágnes Mester,, Sándor Kolumbán, Lehel Csató</i>	
Maneuver Classification of Dynamic Occupancy Grid Time Series From Highway Traffic	109
<i>Olivér Rákos, Szilárd Aradi</i>	

Prediction of User Interruptions Generated by Mobile Communication Media and Evaluating the Impact of Interruption	115
<i>Ioana Albişoru, Mirabela Ursu, Horaţiu Moldovan, Marius Marcu</i>	
Short Term Traffic Congestion Prediction using Publically Available Traffic Data: a Case Study on Timisoara	121
<i>Dacian Avramoni, Alexandru Iovanovici, Anca-Maria Iliencescu, Lucian Prodan</i>	
Automated Covid-19 Respiratory Symptoms Analysis from Speech and Cough	127
<i>Matus Pleva, Elien Martens, Jozef Juhar</i>	
Comparison of Artificial Neural Network and ANFIS for Parameter Estimation of a Tumor Model	133
<i>Erzsébet Nagy, Melánia Puskás, Dániel András Drexler</i>	
LPV-based Modeling of a Floating Piston Pneumatic Actuator	141
<i>Adam Szabo, Tamas Becsi, Szilard Aradi</i>	
Log Collection and SIEM for 5G SOC	147
<i>Miklós Orsós, Miklós Kecskés, Eszter Kail, Anna Bánáti</i>	
Honeypot Optimization Based on CTF Game	153
<i>Ádám Balogh, Máté Érsok, László Erdődi, Anikó Szarvák, Eszter Kail, Anna Bánáti</i>	
Experimental Investigation of the Performance of a Thermoelectric Generator	159
<i>Zoltán Varga, Ervin Rácz</i>	
Markov Clustering-based Feature Selection for Brain Tumor Segmentation from Multi-Spectral MRI Records	165
<i>Ioan-Marius Pisak-Lukáts, László Szilágyi</i>	
Using Non-Stationary Extreme Value Analysis to Characterize Blood Glucose Curves	171
<i>Tamás Ferenci, Mátyás Szigeti, Levente Kovács</i>	
Considering Needs of the Temperature Dependence of a Thermal Conductivity Coefficient at Simulating Thermal Conduction Tasks	177
<i>Attila Érchegyi, Ervin Rácz</i>	
Emotion Extraction from Speech using Deep Learning	181
<i>Suryakant Tyagi, Sándor Szénási</i>	
Perceptions of the Digital Generation and the Millennials on Online Education During the Pandemic	187
<i>Mónika Garai-Fodor, Klaudia Csercsa</i>	
Generation-Specific Perceptions of Financial Literacy and Digital Solutions	193
<i>Mónika Garai-Fodor, János Varga, Ágnes Csiszárík-Kocsir</i>	
Generation-Specific Analysis of the Pandemic's Impact on Financial Culture	201
<i>Ágnes Csiszárík-Kocsir, Mónika Garai-Fodor, János Varga</i>	
How Generation Z managers think about the agility in a world of digitalization	207
<i>Oszkár Dobos, István Márk Tóth, Ágnes Csiszárík-Kocsir, Mónika Garai-Fodor, László Kremmer</i>	
Voice-Specific Augmentations for Parkinson's Disease Detection Using Deep Convolutional Neural Network	213
<i>Máté Hireš, Matej Gazda, Lukáš Vavrek, Peter Drotár</i>	
Learning Ontologies with Relational Concept Analysis	219
<i>Patricia Mateiu, Adrian Groza, Cristina Nica</i>	
Implemented Parallel Annealing in Scalable Fully Coupled Annealing Processing System	225
<i>Kaoru Yamamoto, Takayuki Kawahara</i>	
Detecting Ancient Mayan Construction Activity by U-Net	231
<i>Maroš Hliboký, Marek Bundzel, Stanislav Husár</i>	
Logic-based Machine Comprehension for Chatbots	237
<i>Sergiu Redeca and Adrian Groza</i>	

Hungarian Organizations' Attitude toward the Protection against Industrial Espionage.243
<i>Andrea Tick, Alexandra Ágnes Mészáros</i>	
Data Analytics Methods for Analyzing the Impact of Factors on Early Detection of Cardiovascular Risk249
<i>Oliver Lohaj, Zuzana Pella, Jan Paralič</i>	
Applicability of OPC UA and REST in Edge Computing.255
<i>Alexander Brecko, Filip Burda, Peter Papcun, Erik Kajati</i>	
Impact of the Persistence Layer on Performance and Architecture for a Java Web Application261
<i>Păcurariu Marco, Marius Marcu</i>	
Data-driven Student Performance Prediction267
<i>Viera Anderková, Tomáš Adam, František Babič</i>	
The Effects of the Covid-19 Pandemic on High School Education273
<i>Zoltan Zakota, József Fogarasi</i>	
Design and Evaluation of the Electronic Sensing System of Rehapiano.279
<i>Stanislav Husár, Norbert Ferenčík, Marek Bundzel, Slavomír Kardoš</i>	
Time-Frequency Varying Tissue Impedance Properties from Noxious Stimulation Protocols.285
<i>Mihaela Ghita,, Mihaela Ghita,, Dana Copot,, Isabela Birs,, Robin De Keyser, Clara M. Ionescu</i>	
Evaluating of IAQ-index and TVOC As Measurements Parameters for IoT-based Hazardous Gases Detection and Alarming Systems291
<i>Mohammed Faeik Ruzajj Al-Okby,, Sebastian Neubert, Thomas Roddelkopf, Heidi Fleischer, Kerstin Thurow</i>	
Optimizing Radiotherapy with Chemotherapy Using PKPD Modeling for Lung Cancer299
<i>Maria Ghita,, Mihaela Ghita, Dana Copot, Isabela Roxana Birs,, Cristina Muresan, Clara Mihaela Ionescu</i>	
Preliminary Ideas on the Estimation of Parameter and Model Component Significance in Adaptive Control of Nonlinear Systems305
<i>Awudu Atinga, József K. Tar</i>	
AI Assistant in a Smart Cloud311
<i>Katalin Szenes, Bence Tureczki</i>	
Fault Detection in GPU-enabled Cloud Systems –An Overview.317
<i>Farida Asadova, Gábor Kertész,, Róbert Lovas,, Sándor Szénási</i>	
Adaptive Control of a Nonlinear System Avoiding State Estimation323
<i>Bence Varga, Richárd Horváth, József K. Tar</i>	
Automated Dataset Generation with Blender for Deep Learning-based Object Segmentation329
<i>Artúr I. Károly, Péter Galambos</i>	
Application of MFV-robustified Correlation Coefficient for the Investigation of the Strength of Beta-convergence of EU NUTS regions.335
<i>Ferenc Tolner,, Balázs Barta, Levente Kovács, György Eigner</i>	
“Opened” or “Closed” RAN in 5G347
<i>Gergely Kún, Péter János Varga, Tibor Wühl, Dóra Wühl, Sándor Gyányi, László Náday, Róbert Kovács</i>	
Review the Progress of Threat and Risk Assessment on 5G Network353
<i>Anikó Szarvák, Valéria Póser</i>	
5G RAN research in Óbuda University.359
<i>Péter János Varga, László Náday, András Bálint Tóth, Eszter Kail, Tibor Wühl, Sándor Gyányi, Gergely Kún, Róbert Kovács, Anna Bánáti, Miklós Kozlovsky</i>	
Using Neural Networks for ECG Classification.367
<i>Norbert Ádám, Dávid Val'ko, Martin Havrilla</i>	
Information Extraction for Modeling Screenplay Evolution of Star Wars Fiction373
<i>Marina Pozhidaeva, Ilya Makarov</i>	

Safe Overfitting of Boosted Tree Algorithm in Heat Transfer Modeling	379
<i>Zoltán Biczó, Sándor Szénási, Imre Felde</i>	
Training and Analysis of Hyperparameters in Neural Networks for Computer Vision Applications: A Didactic Approach	383
<i>Saulo Cardoso Barreto, Péter Tamás Szemes</i>	
Classification via Compressed Latent Space	389
<i>Igor Vasilyev, Ilya Makarov</i>	
AR Image Presentation based on Gaze Information for Operator support in teleoperation	395
<i>Kae Doki, Yuki Funabara, Shinji Doki, Yoshikazu Yano</i>	
Overlapping Speech Analysis in Slovak Conversational Interactions	401
<i>Stanislav Ondáš, Matúš Pleva, Jozef Juhár</i>	
Stress-Management Skills among Dutch and Hungarian Students	407
<i>Judit Módné Takács, Monika Pogatsnik</i>	
Are we Prepared to Learn Digital in the Digital Economy and Society?	413
<i>Tamas Kersanszki</i>	
Route Selection Method with Ethical Considerations for Automated Vehicles under Critical Situations	419
<i>Balázs Németh</i>	
Advanced Analytics as a Service in Smart Factories	425
<i>Mirco Soderi, Vignesh Kamath, Jeff Morgan, John G. Breslin</i>	
High Abstraction in Engineering Communication	431
<i>László Horváth</i>	
Geometric Transformations and Tensor Product	437
<i>Vaclav Skala</i>	
Matlab Software Designed for 3D Localization by a Multistatic UWB Radar	443
<i>Kristián Kelij, Jana Fortes</i>	
Concept Drift Visualization Using Feature Importance on the Streaming Data	449
<i>Martin Sarnovský</i>	
Temporary Parking via Computer Vision and Deep Learning	455
<i>Kristian Micko, Frantisek Babic, Peter Papcun, Iveta Zolotova</i>	
Brief overview of Edge AI accelerators for Energy-constrained Edge	461
<i>Ladislav Pomšár, Alexander Brecko, Iveta Zolotová</i>	
A Clothoid-based Local Trajectory Planner with Extended Kalman Filter	467
<i>Gergő Ignéczi, Ernő Horváth</i>	
A Model-Based LQR Control of an Obstacle Avoidance Maneuver of a Self-Driving Car	473
<i>Igor Astrov, Andres Udal, Heiko Pikner, Ehsan Malayjerdí</i>	
Quadratical Stabilization of Uncertain Discrete-Time Takagi-Sugeno Fuzzy Systems	479
<i>Dušan Krokavec, Anna Filasová</i>	
A Generic Approach for Multivariate Process Optimization	485
<i>Philipp Rosenberger, Andrea Tick</i>	
Authors Index	491