

2021 International Conference on Information and Digital Technologies (IDT 2021)

**Zilina, Slovakia
22 – 24 June 2021**



**IEEE Catalog Number: CFP21CDT-POD
ISBN: 978-1-6654-3693-9**

**Copyright © 2021 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:	CFP21CDT-POD
ISBN (Print-On-Demand):	978-1-6654-3693-9
ISBN (Online):	978-1-6654-3692-2
ISSN:	2575-6753

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

CONTENTS

<i>Andriy Luntovskyy and Tim Zobjack</i>	
Secured and Blockchained IoT	1
<i>Marek Kvet</i>	
Impact of Fairness Constraints on Average Service Accessibility in Emergency Medical System	11
<i>Jaroslav Janacek and Marek Kvet</i>	
Customization of Uniformly Deployed Set Kit for Path-relinking Method	19
<i>Darya Filatova, Charles El-Nouty and Roman Fedorenko</i>	
Some theoretical backgrounds for reinforcement learning model of supply chain management under stochastic demand	24
<i>Milan Ondrašovič, Peter Tarábek and Ondrej Šuch</i>	
Object Position Estimation From a Single Moving Camera	31
<i>Stanislaw Czapp</i>	
Time-Current Tripping Characteristics of RCDs for Sinusoidal Testing Current	38
<i>Michal Kvet and Karol Matiasko</i>	
The efficiency of the Temporal Medical Data Retrieval	44
<i>Roman Čereňák, Michal Kvet, Karol Matiaško and Adam Dudáš</i>	
Mapping rules for schema transformation SQL to NoSQL and back	52
<i>Roman Čereňák, Michal Kvet and Karol Matiaško</i>	
Improved method of selecting data in a nonrelational database	59
<i>Adam Dudáš, Jarmila Škrinárová and Adam Kiss</i>	
On Graph Coloring Analysis Through Visualization	65
<i>Peter Sedlacek and Elena Zaitseva</i>	
Software reliability model based on syntax tree	73
<i>Katerina Prihodova and Jakub Jech</i>	
Gender recognition using thermal images from UAV	83
<i>Sergey Stankevich, Nick Lubskyi and Artur Lysenko</i>	
Longwave infrared remote sensing data spatial resolution enhancement using modulation transfer function fusion approach	89
<i>Ekaterina Danilova, Dmitry Kovlyayev and Alexey Gorodilov</i>	
Advanced genetic algorithm for the embedded FPGA logic diagnostic	95
<i>Stanislava Simonova</i>	
Requirements Gathering for Specialized Information Systems in Public Administration	100

<i>Sofya Chikarenko, Kseniya Ivanova, Alexandra Skornyakova and Sergey Tyurin</i>	106
Self-Timed FPGA Design Perspectives	
<i>Galina Zverkina</i>	113
On polynomial convergence rate for extended reliability standby system	
<i>Patrik Rusnak</i>	116
Algorithms for calculation of logical derivatives for survival signature and their analysis	
<i>Baptiste Jacquet, Frank Jamet and Jean Baratgin</i>	123
On the Pragmatics of the Turing Test	
<i>Vasyl Gorbachuk, Serge Gavrilenko, Gennady Golotsukov and Dmytro Nikolenko</i>	131
To digital technologies of patent processing for development of critical products	
<i>Leonardo Pinheiro de Queiroz, Helder Oliveira and Svetlana Yanushkevich</i>	142
Thermal-Mask – A Dataset for Facial Mask Detection and Breathing Rate Measurement	
<i>Mikhail Tatur, Aleksander Ivanitski, Viachaslau Prorovski and Miroslav Kvassay</i>	152
Exploratory analysis of the fire statistics using automatic time series decomposition	
<i>Alexei Belotserkovsky, Pavel Lukashevich, Mert Doganli and Jan Rabcan</i>	156
A Concept of a Multi-robotic System for Warehouse Automation	
<i>Rajesh Venkatachalampathy, Kai Brooks, Mikhail Mayers, Roman Minko, Tyler Hull, Bliss Brass, Martin Zwick, Adam Slowik and Marek Perkowski</i>	162
Universal Biological Motions for Educational Robot Theatre and Games	
<i>Dmitry Zaitsev, Tatiana Shmeleva and Peyman Ghaffari</i>	171
Modeling Multidimensional Communication Lattices with Moore Neighborhood by Infinite Petri Nets	
<i>Andrii Astrakhantsev, Larysa Globa, Rina Novogrudskaya, Mariia Skulysh and Olexandr Stryzhak</i>	182
Improving resource allocation system for 5G networks	
<i>Dobroslav Grygar and Michal Koháni</i>	189
Simulated annealing metaheuristic with greedy improvement for road segments selection problem	
<i>Marek Baláž and Peter Tarábek</i>	194
AlphaZero with Real-Time Opponent Skill Adaptation	
<i>Jan Bohacík</i>	200
Phishing Detection for Secure Operations of UAVs	
<i>Ravil Mukhamediev, Marina Yelis, Ilyas Assanov, Yan Kuchin, Adilkhan Symagulov, Kirill Yakunin and Peter Sedlacek</i>	206
Rapid bibliometric analysis in deep learning domain	
<i>Mohamed Hedi Zaghouani, Hamza Nemouchi and János Sztrik</i>	212
Reliability analysis of Cognitive Radio Networks with balking and reneging	
<i>Tomaz Amon</i>	216
Experience with the usage of virtual reality worlds about natural history in Slovenia	
<i>Gaël Hequet, Nicolae Brînzei and Jean-François Pétin</i>	220
Usage profile in physical systems modelized with stochastic hybrid automata	
<i>Ádám Tóth, Janos Sztrik, Ákos Pintér and Zoltán Bács</i>	230
Reliability Analysis of Finite-Source Retrial Queueing System with Collisions and Impatient Customers in the Orbit Using Simulation	

<i>Ibrahim Alameri, Jitka Komarkova and Mustafa Ramadhan</i>	Conceptual analysis of single and multiple path routing in MANET network	235
<i>Ibrahim Alameri, Stepan Hubalovsky and Jitka Komarkova</i>	Evaluation of impact of mobility, network size and time on performance of adaptive routing protocols	245
<i>Attila Kuki, Tamás Bérczes, János Sztrik and Ádám Tóth</i>	Reliability analysis of a retrial queueing systems with collisions, non-patient customers, and catastrophic breakdowns .	254
<i>Kirill Yakunin, Ravil Mukhamediev, Marina Yelis, Adilkhan Symagulov, Yan Kuchin, Elena Muhamedijeva, Jan Rabcan and Aubakirov Margulan</i>	Reflection of the COVID-19 pandemic in mass media	260
<i>Jaroslav Majerník, Martin Komenda, Andrzej Kononowicz, Inga Hege and Adrian Ciureanu</i>	Software based support of curriculum mapping in education at medical faculties	264
<i>Matej Meško, Patrik Hrkút, Štefan Toth, Michal Ďuračík and Dominik Kornhauser</i>	Checking the writing of commas in Slovak	268
<i>Oksana Nass, Gaukhar Kamalova, Rauan Shotkin and Jan Rabcan</i>	Analysis of methods for planning data processing tasks in distributed system for the remote access to information resources	273
<i>Hanan Tariq and Stanislaw Czapp</i>	Tripping of F-type RCDs for High-Frequency Residual Currents	277
<i>Mariana Ondrušová and Ivan Cimrák</i>	Computational study of red blood cell behaviour in shear flow for different bending stiffness of the membrane	282
<i>Kristína Kovalčíková, Hynek Bachratý, Katarína Bachratá and Katarína Buzáková</i>	Numerical Experiment Characteristics Dependence on Red Blood Cell Parameters	286
<i>Alexander Kolchin, Stepan Potiyenko and Thomas Weigert</i>	Extending data flow coverage with redefinition analysis	293
<i>Kim Gandy, Myra Schmaderer, Anthony Szema, Chris March, Mary Topping, Anna Song, Marcos Garcia-Ojeda, Arthur Durazo, Jos Domen and Paul Barach</i>	Remote Patient Monitoring: A Promising Digital Health Frontier	297
<i>Ihor Kliushnikov, Vyacheslav Kharchenko, Herman Fesenko and Elena Zaitseva</i>	Multi-UAV Routing for Critical Infrastructure Monitoring Considering Failures of UAVs: Reliability Models, Rerouting Algorithms, Industrial Case	303
<i>Luisa Francini, Paolo Soda and Rosa Sicilia</i>	Describing rumours: a comparative evaluation of two handcrafted representations for rumour detection	311
<i>Terézia Sliacka, Michal Varga and Norbert Adamko</i>	Application of the A* algorithm for navigation of workers in simulation models of railway yards	319
<i>Ján Kučera, Norbert Adamko and Michal Varga</i>	Securing constrained edges in a triangulation	326
<i>Andriy Kovalenko, Nina Kuchuk, Heorhii Kuchuk and Jozef Kostolny</i>	Horizontal scaling method for a hyperconverged network	331
<i>Jozef Kostolny, Patrik Rusnak and Rudolf Simo</i>	Development of Knowledge Games in an Interactive Educational Portal	337

<i>Michal Mrena and Miroslav Kvassay</i>	
Comparison of Left Fold and Tree Fold Strategies in Creation of Binary Decision Diagrams	341
<i>Mikulas Klimo, Nika Kvassayova, Miroslav Kvassay, Marek Mansell and Bibiana Kleinova</i>	
3D Printed Face Shield as a Help for Nursing Homes During COVID-19 Pandemic	353
<i>Nika Kvassayova, Marek Mansell, Martin Capay and Magdalena Bellayova</i>	
The BBC micro:bit in Slovakia	359