

2019 10th International Conference on Dependable Systems, Services and Technologies (DESSERT 2019)

**Leeds, United Kingdom
5 – 7 June 2019**



**IEEE Catalog Number: CFP19P47-POD
ISBN: 978-1-7281-1734-8**

**Copyright © 2019 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: | CFP19P47-POD |
| ISBN (Print-On-Demand): | 978-1-7281-1734-8 |
| ISBN (Online): | 978-1-7281-1733-1 |

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

| | |
|--|----|
| Oleksandr Drozd, Vyacheslav Kharchenko, Andrzej Rucinski, Thaddeus Kochanski, Raymond Garbos and Dmitry Maevsky. DEVELOPMENT OF MODELS IN RESILIENT COMPUTING | 1 |
| Juan Carlos Augusto, Mario Jose Quinde and Chimezie Leonard Oguego. CONTEXT-AWARE SYSTEMS TESTING AND VALIDATION | 7 |
| Patrik Rusnak, Peter Sedlacek, Andrej Forgac, Oleg Illiashenko and Vyacheslav Kharchenko. STRUCTURE FUNCTION BASED METHODS IN EVALUATION OF AVAILABILITY OF HEALTHCARE SYSTEM | 13 |
| Patrik Rusnak, Miroslav Kvassay, Elena Zaitseva, Vyacheslav Kharchenko and Herman Fesenko. RELIABILITY ASSESSMENT OF HETEROGENEOUS DRONE FLEET WITH SLIDING REDUNDANCY | 19 |
| Aleksandr Serkov, Valeri Kravets, Igor Yakovenko, Gennady Churyumov, Volodymyr Tokariiev and Wang Nannan. ULTRA WIDEBAND SIGNALS IN CONTROL SYSTEMS OF UNMANNED AERIAL VEHICLES | 25 |
| Anton Kamenskih and Sergey Tyurin. INVESTIGATION AND DESIGN OF A THRESHOLD ELEMENT FOR THE FAULT SELF-TIMED CIRCUITS | 29 |
| Roman Kochan, Orest Kochan, Volodymyr Kochan and Anatoliy Sachenko. INCREASING METROLOGICAL RELIABILITY OF MEASURING CHANNELS FOR DISTRIBUTED AUTOMATED CONTROL SYSTEMS | 34 |
| Yuri Stepchenkov, Anton Kamenskih, Yuri Diachenko, Yuri Rogdestvenski and Denis Diachenko. FAULT-TOLERANCE OF SELF-TIMED CIRCUITS | 41 |
| Gert Kanter and Jüri Vain. TESTIT: AN OPEN-SOURCE SCALABLE LONG-TERM AUTONOMY TESTING TOOLKIT FOR ROS | 45 |
| Maryna Kolisnyk, Vyacheslav Kharchenko and Piskachova Iryna. IOT SERVER AVAILABILITY CONSIDERING DDOS-ATTACKS: ANALYSIS OF PREVENTION METHODS AND MARKOV MODEL | 51 |
| Juan Carlos Augusto, Mario Jose Quinde and Nawaz Kahn. USING FORMAL METHODS TO GUIDE THE DEVELOPMENT OF AN ASTHMA MANAGEMENT SYSTEM | 57 |
| Anastasiia Strielkina, Bohdan Volochiy and Vyacheslav Kharchenko. MODEL OF FUNCTIONAL BEHAVIOR OF HEALTHCARE INTERNET OF THINGS DEVICE | 63 |
| Oleksandr Letychevskiy, Volodymyr Peschanenko, Viktor Radchenko, Yaroslav Hryniuk and Viktor Yakovlev. ALGEBRAIC PATTERNS OF VULNERABILITIES IN BINARY CODE | 70 |
| Inna Skarga-Bandurova, Maksym Nesterov, Tetiana Biloborodova, Gennady Krivoulya, Igor Kotsiuba and Oleg Biloborodov. DATA FUSION TECHNIQUE TO PREDICTING DATABASE PERFORMANCE ISSUES | 74 |
| Fash Safdari and Anatoliy Gorbenko. EXPERIMENTAL EVALUATION OF PERFORMANCE ANOMALY IN MIXED DATA RATE IEEE802.11AC | 82 |

| | |
|---|-----|
| Olga Chovancova, Jan Rabcan, Jozef Kostolny and Denisa Macekova. HUMAN RELIABILITY EVALUATION THROUGH ANALYSIS OF DEPRESSION PREDICTION BASED ON METABOLOMIC DATA | 88 |
| Oladapo Babajide, Hissam Tawfik, Anna Palczewska, Anatoliy Gorbenko, Arne Astrup, J. Alfredo Martinez, Jean-Michel Oppert and Thorkild Ia Sørensen. APPLICATION OF UNSUPERVISED LEARNING IN WEIGHT-LOSS CATEGORISATION FOR WEIGHT MANAGEMENT PROGRAMS | 94 |
| Volodymyr Zaslavskyi and Maya Pasichna. INFORMATION TECHNOLOGY OF DIVERSIFICATION AND OPTIMIZATION OF THE ENERGY GENERATION CAPACITIES OF THE ENERGY COMPANIES | 102 |
| Danyal Akarca, Philip Xiu, Dave Ebbitt, Hasan Al-Ramadhani and Abdullah Albeyatti. BLOCKCHAIN SECURED ELECTRONIC HEALTH RECORDS: PATIENT RIGHTS, PRIVACY AND CYBERSECURITY | 108 |
| Grace Phiri and Philippa Trevorrow. SUSTAINABLE HOUSEHOLD FOOD MANAGEMENT USING SMART TECHNOLOGY | 112 |
| Steven Haynes, Prudencia Charles Estin, Sanela Lazarevski, Mekala Soosay and Ah-Lian Kor. DATA ANALYTICS: FACTORS OF TRAFFIC ACCIDENTS IN THE UK | 120 |
| Nataliia Kussul, Andrii Shelestov, Mykola Lavreniuk, Andrii Kolotii and Vladimir Vasiliev. LAND COVER AND LAND USE MONITORING BASED ON SATELLITE DATA WITHIN WORLD BANK PROJECT | 127 |
| Leonid Shumilo, Nataliia Kussul, Andrii Shelestov, Yuliia Korsunska and Bohdan Yailymov. SENTINEL-3 URBAN HEAT ISLAND MONITORING AND ANALYSIS FOR KYIV BASED ON VECTOR DATA | 131 |
| Daria Pavlova, Ganna Zavolodko, Ivan Obod, Iryna Svyd, Oleksandr Maltsev and Lilia Saikivska. OPTIMIZING DATA PROCESSING IN INFORMATION NETWORKS OF AIRSPACE SURVEILLANCE SYSTEMS | 136 |
| Daria Pavlova, Ganna Zavolodko, Ivan Obod, Iryna Svyd, Oleksandr Maltsev and Lilia Saikivska. COMPARATIVE ANALYSIS OF DATA CONSOLIDATION IN SURVEILLANCE NETWORKS | 140 |
| Bo Jiang, Xinjun Du and Yuxiao Yang. SECURE FORMATION COMMUNICATION METHOD BASED ON THE OPPORTUNITY THEORY | 144 |
| Serhii Semenov, Denys Voloshyn, Viacheslav Lymarenko, Anna Semenova and Viacheslav Davydov. METHOD OF UAVS QUASI-AUTONOMOUS POSITIONING IN THE EXTERNAL CYBER ATTACKS CONDITIONS | 149 |
| Dmytro Zubarev and Inna Skarga-Bandurova. CROSS-SITE SCRIPTING FOR GRAPHIC DATA: VULNERABILITIES AND PREVENTION | 154 |
| Erik David Martin, Joakim Kargaard and Iain Sutherland. RASPBERRY PI MALWARE:AN ANALYSIS OF CYBERATTACKS TOWARDS IOT DEVICES | 161 |
| Tetiana Polhul. CONCEPTUAL MODEL OF AN INTELLIGENT SYSTEM FOR DETECTING FRAUD DURING MOBILE APPLICATIONS INSTALLATION | 167 |

| | |
|---|-----|
| Kostiantyn Zashcholkin, Oleksandr Drozd, Olena Ivanova, Ruslan Shaporin, Olga Veselska and Hanna Stepova. EMBEDDING THE DIGITAL WATERMARKS INTO FPGA- PROJECTS CONTAINING THE ADAPTIVE LOGICMODULES | 175 |
| Abiodun Brimmo Yusuf, Ah-Lian Kor and Hissam Tawfik. A SIMULATION ENVIRONMENT FOR INVESTIGATING IN-FLIGHT STARTLE IN GENERAL AVIATION | 180 |
| Vladimir Sklyar and Vyacheslav Kharchenko. ASSURANCE CASE BASED LICENSING FOR NUCLEAR POWER PLANT POST-ACCIDENT MONITORING SYSTEM BASED ON UNMANNED AIRCRAFT VEHICLES | 186 |
| Hanna Ukhina, Valerii Sytnikov, Oleg Streltsov, Pavel Stupen, Dmitry Yakovlev. TRANSFER FUNCTION COEFFICIENTS INFLUENCE ON THE PROCESSING PATH BANDPASS FREQUENCY-DEPENDENT COMPONENTS' AMPLITUDE-FREQUENCY CHARACTERISTICS PROPERTIES AT THE NPP TP ACS | 193 |
| Vyacheslav Kharchenko, Sergiy Dotsenko, Oleg Illiashenko and Sergiy Kamenskyi. INTEGRATED CYBER SAFETY & SECURITY MANAGEMENT SYSTEM: INDUSTRY 4.0 ISSUE | 197 |
| Asaad Qasim, Rob Aspin and Farid Meziane. INTEGRATION OF DIGITAL WATERMARKING TECHNIQUE INTO MEDICAL IMAGING SYSTEMS | 202 |
| Gennadiy Kostyuk, Nikolay Nechiporuk and Kateryna Kostyk. DETERMINATION OF TECHNOLOGICAL PARAMETERS FOR OBTAINING NANOSTRUCTURES UNDER PULSE LASER RADIATION ON STEEL OF DRONE ENGINE PARTS | 208 |
| Yevhen Brezhniev. MULTILEVEL FUZZY LOGIC-BASED APPROACH FOR CRITICAL ENERGY INFRASTRUCTURE'S CYBER RESILIENCE ASSESSMENT | 213 |
| Yehor Boltov, Inna Skarga-Bandurova, Igor Kotsiuba, Mykhailo Hrushka, Gennady Krivoulya and Rostyslav Siriak. PERFORMANCE EVALUATION OF REAL-TIME SYSTEM FOR VISION-BASED NAVIGATION OF SMALL AUTONOMOUS MOBILE ROBOTS | 218 |
| Richard Rudd-Orthner and Lyudmila Mihaylova. NON-RANDOM WEIGHT INITIALISATION IN DEEP LEARNING NETWORKS FOR REPEATABLE DETERMINISM | 223 |
| Balbir Singh and Hissam Tawfik. A MACHINE LEARNING APPROACH FOR PREDICTING WEIGHT GAIN RISKS IN YOUNG ADULTS | 231 |
| Bhupesh Kumar Mishra, Dhavalkumar Thakker, Suvodeep Mazumdar, Daniel Neagu and Sydney Simpson. USING DEEP LEARNING FOR IOT-ENABLED CAMERA : A USE CASE OF FLOOD MONITORING | 235 |
| Sudhir Rao Rupanagudi, Varsha G. Bhat, Shreya K. Gurikar, S. Pranava Koundinya, Sumedh Kumar M. S., Shreyas R., Shilpa S., Suman N. M., Rachana R. Bademi, Manisha Koppiseti, Vasanthi Satyananda. A VIDEO PROCESSING BASED EYE GAZE RECOGNITION ALGORITHM FOR WHEELCHAIR CONTROL | 241 |