

**2022 IEEE 16th International
Conference on Advanced
Trends in Radioelectronics,
Telecommunications and
Computer Engineering
(TCSET 2022)**

**Lviv-Slavske, Ukraine
22 – 26 February 2022**



**IEEE Catalog Number: CFP2238R-POD
ISBN: 978-1-6654-6862-6**

**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:	CFP2238R-POD
ISBN (Print-On-Demand):	978-1-6654-6862-6
ISBN (Online):	978-1-6654-6861-9

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

Planning Paradigms for IoT Systems	1
<i>Andriy Luntovskyy</i>	
Diagnosis of the Technical Condition of High-Tech Complexes by Probabilistic Methods	N/A
<i>Vitalii Budashko, Iryna Hvozdeva, Volodymyr Myrhorod, Valerii Shevchenko, Albert Sandler and Oksana Glazeva</i>	
On the Second Quantization of Virtual Photons in Nanophotonic Systems	14
<i>Alexander Gritsunov, Igor Bondarenko, Oleksiy Pashchenko, Hennadii Bendeberya, Volodimir Karnausenko and Mykhailo Kopot</i>	
Theoretical Bases of Multifrequency Radiometric Systems Development for UAV Detection Against the Background of Atmospheric Radiation	20
<i>Nikolay Ruzhentsev, Simeon Zhyla, Vladimir Pavlikov, Gleb Cherepnin, Eduard Tserne and Volodymyr Kosharskyi</i>	
Multifrequency Radiometric Complex for UAV Detection.....	N/A
<i>Nikolay Ruzhentsev, Simeon Zhyla, Vladimir Pavlikov, Gleb Cherepnin, Anatoliy Popov and Eduard Tserne</i>	
Quasi-Newtonian Method for Analyzing the Modes of Operation of Transformers.....	30
<i>Leonid Bilyy, Bohdan Krokhmalnyi and Mykhailo Segeda</i>	
Simulation of Discharge Current of the Arc over Crucible for Reactive Evaporation and Deposition of Ceramics Coatings in Electronics Industry	35
<i>Igor Melnyk, Serhii Tuhai, Iryna Shved and Vitaliy Melnyk</i>	
Multicriterial Optimization of Communication Means.....	39
<i>Valery Bezruk, Daria Chebotaryova and Yuliia Skoryk</i>	
Automatic Dependent Surveillance-Broadcast Trajectory Data Processing.....	43
<i>Ivan Ostroumov, Nataliia Kuzmenko and Olena Kyzymchuk</i>	
Biophysical Effects Database for Biomedical Engineers	48
<i>Larysa Hlinenko and Volodymyr Fast</i>	
Generalized Model of Antenna System for Radio Monitoring Stations.....	52
<i>Olga Shcherbyna, Maksym Zaliskyi, Olena Kozhokhina, Felix Yanovsky, Roman Odarchenko and Lidiia Tereshchenko</i>	
Predictive Maintenance Approach for Telecommunication and Radioelectronic Systems	58
<i>Oleksandr Solomentsev, Maksym Zaliskyi, Oleksii Zuiev, Olga Shcherbyna, Roman Odarchenko and Ivan Yashanov</i>	
Model Discrete Wavelet Transform for Clinical IoT Data and Device Interoperability	64
<i>Stanislav Krivenko, Valeriy Bezruk, Liudmyla Kryvenko, Sergey Krivenko and Mykola Samochnov</i>	
Navigation by Pair of Distance Measuring Equipment with Extrapolated Data.....	70
<i>Nataliia Kuzmenko and Ivan Ostroumov</i>	

Progressive DCT-based Coder and Its Comparison to Atomic Function Based Image Lossy Compression.....	75
<i>Victor Makarichev, Vladimir Lukin and Iryna Brysina</i>	
Analysis of Signal Synchronization Conditions in 5G Mobile Information Technologies.....	81
<i>Juliy Boiko, Ilya Pyatin and Oleksander Eromenko</i>	
Comparative Analysis Of a Different Geometric Shapes Of a Busbar's Trolley Parameters in the Higher Harmonic Current Condition	87
<i>Mikhaylo Kotsur, Dmytro Yarymbash, Yulia Bezverkhnia and Igor Kotsur</i>	
Aerospace Wide Swath Radio Vision Complex	93
<i>Volodymyr Pavlikov, Valeriy Volosyuk, Simeon Zhyla, Eduard Tserne, Olexandr Shmatko and Oleksii Odokienko</i>	
Modeling of Electrical Modes of Arc Furnace with Fuzzy Adjustmunt of Arc Lengths	99
<i>Yaroslav Paranchuk, Petro Stakhiv, Volodymyr Moroz and Bohdan Boichuk</i>	
Heuristic Method of Finding Bitsliced-description of Derivative Cryptographic S-box	104
<i>Ivan Opirskyy, Yaroslav Sovyn and Olga Mykhailova</i>	
Monitoring of Relative Quality Indicators by Immittance Parameters	110
<i>Tetiana Bubela, Vasyl Yatsuk, Evgen Pokhodylo, Volodymyr Zdeb and Yuriy Yatsuk</i>	
Neural Network Based Approach for Demodulation of Signals With Amplitude Modulation of Many Components.....	114
<i>Ivan Horbatyi and Ivan Tsybaliuk</i>	
High-efficiency Data Transmission Channel Based on Amplitude Modulation of Many Components for Remote Sensing Space Systems	118
<i>Ivan Horbatyi</i>	
Modeling Dynamically Tuned Gyroscopes	124
<i>Olha Sushchenko</i>	
Building an Intrusion Detection System in Critically Important Information Networks with Application of Data Mining Methods	128
<i>Serhii Toliupa, Serhii Buchyk, Volodymyr Nakonechnyi, Nataliia Lukova-Chuiko, Volodymyr Saiko and Ivan Parkhomenko</i>	
Analysis of Acoustic Field Distribution of Circular Microphone Array in Free Space.....	134
<i>Murad Omarov, Roman Tsekhmistro and Sergey Shapovalov</i>	
Variations of the Information Processing Functions for the Air Transport Management in Conditions of the Operational Uncertainty	139
<i>Andriy Goncharenko</i>	
Recognition of States of Radio-Emitting Objects Under a Priori Uncertainty Based on Neural Networks.....	143
<i>Oleksandr Prokhorov, Valeriy Prokhorov, Valery Orlenko and Oleksii Shatalov</i>	
Information Technology for Person Identification by Occluded Face Image.....	147
<i>Oleksii Bychkov, Kateryna Merkulova and Yelyzaveta Zhabska</i>	

Method of Eliminating Excessive Delay of Packets in Switching nodes of Special Purpose Information Network	152
<i>Bohdan Volochiy, Andrii Kushyk, Yuriy Salnyk and Volodymyr Onyshchenko</i>	
Radar Signal Recognition for Different Class Templates	157
<i>Jan Matuszewski</i>	
The IoT Applications Productivity: Data Management Model and ELK Tool Based Monitoring and Research	162
<i>Dmytro Tokar, Olga Morozova and Vyacheslav Kharchenko</i>	
A Simulation Model for Predicting the Maximum Length of a Terahertz Wireless Communication System	168
<i>Volodymyr Druzhynin, Igor Parkhomey, Juliy Boiko, Yevhenii Batrak and Nataliia Tsopa</i>	
Model for Wind-Related Phenomena Estimation Using Polarization Characteristics of Microwave Radar Signal	173
<i>Yuliya Averyanova, Felix Yanovsky, Olga Shcherbina, Ivan Ostroumov, Nataliia Kuzmenko, Maksym Zaliskyi, Oleksandr Solomentsev and Olha Sushchenko</i>	
Surface Modes in Modified Two-Dimensional Photonic Crystal Waveguide	178
<i>Eugene Odarenko, Yana Sashkova, Alexandr Shmat'Ko, Nataliia Shevchenko and Olha Afanasieva</i>	
System of Adaptive Lighting in the Building Based on Determination of Human Circadian Rhythms	182
<i>Yehor Zheliazkov, Julia Yamnenko, Joachim Seifert, Maximilian Beyer and Lars Schinke</i>	
Comparison of Binary and Ternary Layered Structures as Claddings of Bragg Waveguide	189
<i>Yana Sashkova, Eugene Odarenko, Alexandr Shmat'Ko and Eugeniya Fedorenko</i>	
Theory of the Electric Circuits with Coupled Capacitors	193
<i>Dmitry Maevsky, Andriy Bojko, Oleksandr Besarab and Elena Maevskaya</i>	
Autonomous Seismic Device with a New Temporal Method for Moving Vehicles Detection	198
<i>Pavel Fastykovsky and Oleg Tkachenko</i>	
Extraction of Averaged Fetal and Maternal QRS Complexes from Abdominal Signal by Using Bispectrum-Based Signal Processing	202
<i>Oleh Viunytskyi, Alexander Totsky and Valery Sharonov</i>	
Simulation of Electromagnetic Waves Propagation in the Radio Electronic Systems	206
<i>Marina Rezinkina</i>	
Microwave X-band Two-Steps Septum Polarizer for Satellite Antenna Systems	210
<i>Meng Yajing, Stepan Piltyay, Andrew Bulashenko, Anna Saranchuk, Yelizaveta Stupachenko, Tetiana Shtyk, Nadiia Yelahina, Vitalina Dmytrenko and Taisa Savenchuk</i>	
The Brusselator Model of Epidemic Diseases Expansion and COVID-19 Statistics	216
<i>Cornelia Tovstyuk and Mariya Mantoshko</i>	
Problems of Matrix Structures in the Components of Modern Computer Systems	222
<i>Oleksandr Drozd, Vitaliy Romankevich, Oleksandr Martynyuk, Kostiantyn Zashcholkin, Myroslav Drozd and Vladimir Litvinov</i>	

Methods of Experimental Measurement of Scattering and Transmission Parameters in Microwave Frequency Bands	228
<i>Karim Benlahdar, Stepan Piltyay, Andrew Bulashenko, Taisa Savenchuk, Iryna Kononova, Dmytro Mogylevych, Igor Zabegalov, Oleksandr Bulashenko and Tetiana Shtyk</i>	
Analysis of Classification Quality of DAT-based Compression Images	233
<i>Galina Proskura, Victor Makarichev, Oleksii Rubel and Vladimir Lukin</i>	
Platform for Education in Virtual Reality	N/A
<i>Dmitriy Kritskiy, Andrii Bykov, Olha Pohudina, Tetiana Plastun, Olha Kritskaya and Mariia Pyvovar</i>	
Synchronization Implementations for 5G Mobile Networks.....	244
<i>Vyacheslav Vakas, Valerii Koval, Nataliia Ferorova, Oleksandr Manko and Dmytro Domin</i>	
Big Data analysis in IIoT systems using the Federated Machine Learning method.....	248
<i>Mykhailo Klymash, Marian Kyryk, Olena Hordiichuk-Bublivska, Liudviih Fabri and Halyna Kopets</i>	
Determine of Error Signal for Implementation of Automatic Transmission Power Adjustment in Radio Relay System	253
<i>Anatoliiy Semenko, Petro Talanchuk and Nataliia Bokla</i>	
Evaluation of Proximity and Classification of Binary Objects Under Uncertainty	257
<i>Dmytro Danylchenko, Valery Dmitrienko, Sergey Leonov and Alexander Zakovorotnyi</i>	
CGG Crystals for Control of Electromagnetic Radiation.....	262
<i>Nataliia Demyanyshyn, Bohdan Mytsyk, Oleh Buryy and Yuliya Maksishko</i>	
Application of the Method of Statistical Linearization to Determination of the Quality of Nonlinear Systems	266
<i>Yuriy Shurub</i>	
High-Sensitive Phase Unbalance Analysis in the Microwave Frequency Range Using E-plane Waveguide T-junction	271
<i>David Onoguekhian-Habert, Stepan Piltyay, Andrew Bulashenko, Maksym Kot, Oleksandr Bulashenko, Ivan Dikhtyaruk, Danylo Biletskyi, Igor Zabegalov and Olexandr Volynets</i>	
Finding Software Ways to Reduce the Error for the Solar Power Plant Simulation Model....	277
<i>Dmytro Danylchenko, Sergey Shevchenko, Andrii Potryvai, Kseniia Minakova and Stanislav Dryvetskyi</i>	
Features of Information and Technological Security for the Defense of Modern Ukraine in the 21st Century	281
<i>Ilona Mariuts, Nina Piltyay, Alla Marushkevych, Stepan Piltyay, Nadia Elagina, Andrew Bulashenko, Taisa Savenchuk, Oleksandr Bulashenko and Igor Zabegalov</i>	
Substantial Formulation of the Task of Improving the Information Model of Decision-making in the Prompt (Crisis) Response to Cyber Incidents	287
<i>Pavlo Khusainov, Valentyn Bakanov, Serhii Toliupa and Serhii Shtanenko</i>	

An Unmanned Aerial Vehicle as a Multi-State System.....	291
<i>Ihor Kliushnikov, Vyacheslav Kharchenko and Herman Fesenko</i>	
The Methodological Foundations of Building an Energy Efficient Community	297
<i>Sergey Shvorov, Natalia Pasichnyk, Oleksiy Opryshko, Dmytro Komarchuk, Alla Dudnyk and Fedir Hluhan</i>	
Time of Arrival Independent Positioning System Based on UWB Technologies	301
<i>Vadym Plakhtii, Oleksandr Dumin, Yevhen Khodachok and Oleksandr Pryshchenko</i>	
Two Types of Stepped-Impedance Resonators in Stripline Bandpass Filters	306
<i>Sergii Litvintsev, Sergii Rozenko and Maxim Kozachuk</i>	
Microstrip Second-Order Bandpass Filters With Increased Selectivity on High Dielectric Constant Substrates	310
<i>Sergii Litvintsev, Sergii Rozenko and Maxim Kozachuk</i>	
Pulse-forming Network with Improved Form of the Pulse.....	314
<i>Oleksandr Pliushch, Serhii Toliupa, Yurii Kravchenko and Anatolii Rybydajlo</i>	
Urban Agriculture - as a Component of the Concept of Energy Efficiency Communities.....	319
<i>Natalia Pasichnyk, Sergey Shvorov, Oleksiy Opryshko, Dmytro Komarchuk, Alla Dudnyk and Oksana Bahatska</i>	
Analysis of Transition Processes of Single-Phase Collector Motor With Inverter Supply Model.....	325
<i>Bohdan Kopchak and Andrii Kushnir</i>	
Productivity of Modern Homomorphous Cryptosystems in Recommendation Systems of Web Services.....	331
<i>Valentyn Onyshchuk, Vitalii Kildishev, Volodymyr Korchynskyi and Khaled Alfaioni</i>	
Substantiation of Requirements to the Optimal Functionally Stable Direct Adaptive System of Recovery Control.....	335
<i>Victor Chumakevych, Vadym Ptashnyk, Oleg Sokulskyi, Igor Puleco and Julian Daniv</i>	
Fault-Tolerant Multicast Routing with Path and Bandwidth Protection.....	340
<i>Oleksandr Lemeshko, Oleksandra Yeremenko, Maryna Yevdokymenko, Amal Mersni, Aymen M. K. Al-Dulaimi and Ahmad M. Hailan</i>	
Systems Convergence for Situational Control and Decision Making in Distributed Environments.....	344
<i>Oleksii Kovalenko</i>	
Mathematical Model for Estimating the Energy Consumption of Modern Telecommunications Networks.....	348
<i>Mykola Kaidan, Bohdan Strykhaluk, Volodymyr Andrushchak and Yuliia Pyrih</i>	
Two-level Iterative Algorithm for Solving State Equations of the WPT System	352
<i>Anatoly Luchaninov, Dmitriy Gretsikh, Vasyl Aliksieiev, Vasyl Lykhograi, Alexander Scherbina and Mikhail Nesterenko</i>	
Definition System of Human Body Position in Virtual Reality	358
<i>Roman Diachok, Halyna Klym, Ivanna Vasylechshyn and Ivan Karbovnyk</i>	

Neural-network-based Gesture Detection for Capacitive Sensing	362
<i>Zinovii Liubun, Vasyl Mandziy, Oleksandr Karpin and Vasyl Rabyk</i>	
The Boundary of Determining the Coding Rate Parameter at Constant Productivity of the Message Source.....	366
<i>Leonid Uryvsky and Andrii Korniienko</i>	
Microwave Radiation Parameters Estimation Algorithm for Satellite Modulation Radiometer	372
<i>Volodymyr Pavlikov, Valeriy Volosyuk, Simeon Zhyla, Eduard Tserne, Alexey Vertiy and Kostiantyn Bilousov</i>	
Model of Modern Information-Diagnostic System Based on Magneto-Dynamic Method of Signals Parameters Control of Railway Track Defects in Online Mode	377
<i>Vitalij Nichoha and Sergiy Fabirovskyy</i>	
Two-Stage AES Encryption Method Based on Stochastic Error of a Neural Network.....	381
<i>Roman Peleshchak, Vasyl Lytvyn, Nataliia Kholodna, Ivan Peleshchak and Victoria Vysotska</i>	
Achieving Consistency and Consensus of Distributed Infocommunication Systems.....	386
<i>Stanislav Zhuravel, Mykhailo Klymash, Olha Shpur and Orest Lavriv</i>	
Assessment of the Impact of the Elemental Composition of Batteries on the Sustainability Of Ecosystems	390
<i>Mariia Ruda, Tetiana Bubela, Myroslav Kiselychnyk, Oksana Boyko and Roman Trishch</i>	
Study of the Life Cicle of the Elemental Composition of Batteries.....	394
<i>Mariia Ruda, Tetiana Bubela, Myroslav Kiselychnyk, Oksana Boyko, Roman Trishch and Tetyana Kolach</i>	
Optimization of the Surface Formation Algorithm by the Airborne Helicopter Radar	398
<i>Valeriy Volosyuk, Simeon Zhyla, Olha Inkarbaieva and Denys Kolesnikov</i>	
Development of the Invasion Models in Wireless Sensor Networks Based on the Flows of False Events	404
<i>Olexander Belej, Nataliia Spas, Natalia Nestor and Iryna Artyschchuk</i>	
Formation of Porous Ga ₂ O ₃ /GaAs Layers for Electronic Devices	410
<i>Yana Suchikova, Andriy Lazarenko, Sergii Kovachov, Abay Usseinov, Zhakyp Karipbaev and Anatoli I. Popov</i>	
Comparison of Positional and Timer Coding in the System of Residual Classes	414
<i>Mikola Zaharchenko, Matin Hadzhyiev, Aleksander Nazarenko, Nariman Salmanov and Nataliia Shvets</i>	
The Mechanism of the Formation of Grain Boundaries Nanopores in Polycrystalline Materials.....	419
<i>Yana Suchikova, Andriy Lazarenko, Ihor Bohdanov, Abay Usseinov, Zhakyp Karipbaev and Anatoli I. Popov</i>	

Optimal Phase Matching for Second Harmonic Generation in Monoclinic Non-linear Optical Crystals Determined by Extreme Surfaces Method	423
<i>Oleh Buryy, Anatoliiy Andrushchak, Andriy Danylov and Bouchta Sahraoui</i>	
Optimization Algorithms for Information System for Forecasting Markets Dynamics	N/A
<i>Bohdan Melnyk, Petro Stakhiv, Nataliya Melnyk and Stepan Trokhaniak</i>	
Physical Parameters of the Synthesized Semiconductor Material Based on a Heterometallic Complex Compound of Copper (II) with N, N ^r -Bis(Salicylidene)Semicarbazide.....	432
<i>Oleksandr Osadchuk, Volodymyr Martyniuk, Olena Semenova, Andriy Semenov, Halyna Martyniuk and Tetiana Sydoruk</i>	
Theoretical Studies of the Information Capacity of Complex Signals Generated by the Method of Their Decomposition in Two-dimensional Space.....	436
<i>Ruslan Politsanskyi, Vasyl Kachur, Maria Vistak and Valentin Lesinsky</i>	
Optical Sensor with Frequency Output Based on Resonant Tunneling Diode	442
<i>Iaroslav A. Osadchuk, Oleksandr V. Osadchuk, Vladimir S. Osadchuk and Andriy O. Semenov</i>	
Image Enhancement Using Gain-Limited Contrast Stretching Technique	447
<i>Sergei Yelmanov and Yuriy Romanyshyn</i>	
Tracking System with a Pulse-width Modulator as Controller Simulation.....	451
<i>Markian Nakonechnyi, Orest Ivakhiv, Yuriy Hirniak, Yuriy Nakonechnyi and Oleksandr Viter</i>	
Signal Processing Algorithm for Noise Noncoherent Wideband Helicopter Altitude Radar ..	457
<i>Volodymyr Pavlikov, Valeriy Volosyuk, Oleksandr Shmatko, Simeon Zhyla, Eduard Tserne and Andrey Dyomin</i>	
Simulation of optically stimulated luminescence kinetics of YAP:Mn crystal	462
<i>Oleh Buryy and Sergii Ubizskii</i>	
Two Options of 3-dB Microstrip Coupled-Line Power Dividers Terminated with Frequency-Dependent Complex Impedances.....	468
<i>Valeriy Oborzhytskyi, Volodymyr Storozh and Andrii Kuzyk</i>	
A Review of Consensus Algorithms used in Distributed State Estimation for UAV Swarms	472
<i>Przemysław Pasek and Piotr Kaniewski</i>	
Confirming the Consistency of QoS-based Web Services Ranking by Logic Scoring of Preference Method	478
<i>Ravil Kudermetov, Olga Polska and Natalia Shcherbak</i>	
Programmable Mixed Signal Front-End for Sensor Applications.....	482
<i>Roman Holyaka, Gryhoriy Barylo, Tetyana Marusenkova, Mykola Khilchuk and Oksana Boyko</i>	
GPS-synchronization Optimization Process of Autonomous Data Collection Systems.....	486
<i>Andrii Bondarev, Andrii Prystai and Vira Pronenko</i>	

A New Method for Estimating the Power Spectrum of a Stationary Random Signal Based	491
<i>Andriy Lozynsky, Igor Romanyshyn, Bohdan Rusyn and Oleksiy Lutsyk</i>	
Peculiarities of the Magnetoresistance Si<B,Ni> Microcrystals as Sensetive Element of Sensors.....	495
<i>Anatoly Druzhinin, Yuriy Khoverko, Igor Ostrovskii, Natalia Liakh-Kaguy, Arthur Medvid and Dmytro Chemerys</i>	
Method of Selective Steganographic Data Hiding Based on Graphic Containers	499
<i>Vitaliy Tverdokhlib and Dmitry Barannik, Oleh Kulitsa, Ivan Chornomaz, Maksym Savchuk and Maksym Parkhomenko</i>	
Features of Using the Comsol Multiphysics Software for Modeling a Spiral Antenna of an NQR Detector	503
<i>Oleksandr Moisuk and Andrii Samila</i>	
Method of Binary Polyadic Sequences Structural Coding	507
<i>Vladimir Barannik, Valeriy Barannik, Roman Lazuta, Andrii Yermachenkov, Dmytro Zhurbynskyi</i>	
Technology of Formation and Coding of Marker Arrays of Sequences of Clustered Transformants of Sufficiently Informative Image Segments.....	511
<i>Andrii Krasnorutsky, Volodymyr Barannik, Sergiy Sidchenko, Roman Onyshchenko, Yevhenii Sidchenko and Gennady Pris</i>	
Analysis of Requirements for Video Information Coding Technologies for UAV Information Resources	517
<i>Vladimir Barannik, Natalia Barannik, Dmitry Barannik, Pavlo Zeleny, Ali Bekirov and Serhii Turenko</i>	
Method of Encoding Video Frames in Infocommunication Systems.....	521
<i>Vladimir Barannik, Sergii Shulgin, Victoriya Himenko, Vitalii Kolesnyk, Pavlo Hurzhii and Sergey Podlesny</i>	
LTE Network Management	525
<i>Pavlo Markolenko, Tetiana Markolenko and Vasily Irkha</i>	
Method of Modification of Self-adaptive Software Systems Based on Ontology	530
<i>Dmytro Fedasyuk and Illia Lutsyk</i>	
QoE-Aware Intelligent Handover Method for Intent-Based Software-Defined Wireless Network	534
<i>Mykola Beshley, Mykhailo Medvetskyi, Su Jun, Andrii Pryslupskyi, Yuriy Bobalo and Halyna Beshley</i>	
Evaluation of Informativeness and Effectiveness of Known Image Fusion Methods.....	539
<i>Andrii Hryvachevskyi, Sergiy Fabirovskyy, Ivan Prudyus and Roman Holyaka</i>	
Comparative Analysis of Noise and Dynamic Properties of High-Velocity Object Tracking Devices.....	544
<i>Andriy Bondariev, Ivan Maksymiv and Serhii Altunin</i>	

The Methodology for Synthesizing the Parameters of the Cellular Communication System Maintenance Strategy.....	548
<i>Leonid Ozirkovskyy, Bohdan Volochiy, Vasyl Marynovych, Pavlo Kazan, Mykhailo Zmysnyi and Oleksandr Shkiliuk</i>	
Methods and Process of Service Migration from Monolithic Architecture to Microservices ...	553
<i>Marian Kyryk, Nazar Pleskanka, Oleksandr Tymchenko and Mariana Pleskanka</i>	
Optimization of Polarization-Doppler Selection Small-sized Objects on the Background of the Earth Surface	559
<i>Volodymyr Pavlikov, Valeriy Volosyuk, Simeon Zhyla, Volodymyr Kosharskyi, Anatolii Popov and Oleksii Odokienko</i>	
Segmentation of Partially Shadowed Rust Images	564
<i>Olena Berehulyak, Roman Vorobel, Teodor Mandziy and Iryna Ivasenko</i>	
Design of Dual Band Matching Network With Diplexers On Basis Defected Ground Structure.....	569
<i>Yulia Rassokhina, Vasyl Komarov, Vladimir Krizhanovski, Dmitrii Chernov and Denis Makarov</i>	
Investigation of the Influence of Random Interferences on the Error with Frequency Conversion Electrical Signals Information Systems Power Supply	573
<i>Larysa Hatsenko, Dmytro Kyrychenko, Maksym Yakovlev, Roman Trishch, Olexandr Iohov and Yurii Chernichenko</i>	
Cloud Video System Availability Assessment Using Markov and Semi-Markov Models	578
<i>Oleg Ivanchenko, Vyacheslav Kharchenko, Iryna Udovyk, Yuriy Ponochovnyi</i>	
An Overlay Network Based on Cellular Technologies for the Secure Control of Intelligent Mobile Objects	584
<i>Vitalii Tkachov, Andriy Kovalenko, Vyacheslav Kharchenko, Mykhailo Hunko and Kateryna Hvozdetska</i>	
Modeling of Information System for Blended Education Quality Assurance and Socio-Economic Impact	590
<i>Iurii Volk, Artem Artyukhov and Serhiy Lyeonov</i>	
Copper-Graphene Grating Based Structures for Photodetectors Applications	594
<i>Iryna Yaremchuk, Oleksandr Vernyhor, Tetiana Bulavinets, Palvo Stakhira and Volodymyr Fitio</i>	
Radiation of Array Constructed of Thin Wires.....	598
<i>Mykhayko Andriychuk</i>	
Using Quadratic Complex Planar Splines in Solving Local Positioning Problems.....	602
<i>Irina Strelkovskaya, Irina Solovskaya, Juliya Strelkovska and Tetyana Grygoryeva</i>	
Hardware And Software System For Control Of Complex Sensorimotor Response And Coordination Parameters During Physical Training	606
<i>Zynovii Mykytyuk, Oksana Blavt, Yurii Kachurak, Volodymyr Stadnyk, Tatyana Gurtova, Ivan Diskovskiy and Nazar Barylo</i>	

Description of eVTOL Movement	610
<i>Dmitriy Kritskiy, Aleksii Popov and Sergiy Yashin</i>	
Power Transfer from Dipole Source Through 2 by 2 Wire Media Waveguide	614
<i>Kseniia Andriichuk, Mykhailo Apostoliuk and Mykhailo Khavruniak</i>	
Selection and Calculation of Fluxgate Sensor Excitation for High Sensitive Mobile Gradiometer	618
<i>Leonid Rakhlin, Serhiy Timoshyn, Petro Kondratov, Viktor Tkachenko, Leonid Lazko and Volodymyr Kotlyarov</i>	
Wire Media Applications for Devices of EM Power Transfer at Broad Microwave and Sub-THz Frequency Bands (Survey)	622
<i>Kseniia Andriichuk, Yevheniia Derevesnikova, Vladyslav Tkach and Serhii Haliuk</i>	
Research on Classification of Cement-based Electron Microscope Images Based on Improved Residual Network.....	628
<i>Wei Liu, Xuguang Wu, Yingbin Wang, Zhiwei Ye, Pan Li and Orest Kochan</i>	
On-board Wraparound Antenna for Trajectory Measurements and Telemetry	632
<i>Anatoly Luchaninov, Dmitriy Gretsikh, Vasyl Lykhograi, Alexander Scherbina, Alexey Zhalilo and Volodymyr Nazarenko</i>	
SDN Network Modeling Using the GUI MiniEdit.....	637
<i>Oleksandr Romanov, Mykola Nesterenko, Anton Marinov, Serhii Skolets and Hryhorii Burlaka</i>	
Risk Assessment Method of Destructive Chain Effects Occurrence and Development in Cyber-Physical Systems.....	643
<i>Yuriy Danyk and Valery Shestakov</i>	
Intelligence management of BLE sensors by the edge device	649
<i>Volodymyr Andrushchak, Volodymyr Pastukh, Bohdan Drozd, Taras Maksymyuk and Oksana Urikova</i>	
Federated Learning Techniques for 5G Mobile Networks.....	653
<i>Bohdan Shubyn, Dariusz Mrozek, Ludvig Fabry, Taras Maksymyuk, El Mehdi Amhoud and Juraj Gazda</i>	
Operative Object Safety Data Encryption and Transmission by the Wireless Systems Using.....	658
<i>Bohdan Shevchuk, Orest Ivakhiv, Roman Velgan and Mykhaylo Geraimchuk</i>	
Development of Modern Methods and Directions of Rapid Diagnostics of Railway Tracks Defects by Television Methods.....	663
<i>Vitalij Nichoha, Volodymyr Storozh and Yuriy Matiieshyn</i>	
Optimization of the Linear Periodically Time-Varying Circuits in the MATLAB Environment	669
<i>Yuriy Shapovalov, Dariya Bachyk and Ksenia Detsyk</i>	
Analysis of Cryptographic Randomness Properties of a TRNG-based Key Generator Hardware	673
<i>Beyzanur Durmuş and Fatih Özkaynak</i>	

Generation of Substitution Box Structures Based on Blum Blum Shub Random Number Outputs.....	677
<i>Ali Ari and Fatih Özkaynak</i>	
The Original Method of Controlling a Computer Using Distance Sensors	683
<i>Pavlo Savaryn, Vadym Strekha, Mykola Brych, Lesia Brych, Vitalii Kabak and Mykola Polishchuk</i>	
Preparation of Potassium Pentaborate and Lithium Niobate Crystalline Nanocomposites Based on Al ₂ O ₃ and SiO ₂ Nanoporous Matrices	689
<i>Oleg Yaremko, Volodymyr Adamiv, Ihor Teslyuk, Yaroslav Shchur, Anatolii Andrushchak, Dariia Zhukovska and Monika Lelonek</i>	
Development of the Automated System of Analysis and Quality Assessment of Visible Light sources	694
<i>Taras Dyhdalovych, Andriy Fechan, Stepan Kutsiy and Serhii Melnykov</i>	
Time Domain Analysis of Impulse Electromagnetic Field on the Interface of Two Media.....	698
<i>Dmytro Havrylenko, Oleksandr Dumin, Vadym Plakhtii, Victor Katrich and Mikhail Nesterenko</i>	
State-of-the-Art Architectures for Interoperability of Heterogeneous Clouds.....	704
<i>Anton Caceres and Larysa Globa</i>	
Detection and Prediction of DDoS Cyber Attacks Using Spline Functions	710
<i>Serhii Kivalov and Irina Strelkovskaya</i>	
Use of Porous Silicon as an Antireflection in the Structure of Silicon Solar Cells	714
<i>Valeriy Yerokhov, Ihor Skrypnyk, Stepan Nichkalo and Nazar Shtangret</i>	
Patch Antenna Array with a Parasitic Slotted Technique for Dual-band Operation over S-band.....	718
<i>Marwa Ismail, Bashar S. Bashar and Maki Mahdi</i>	
The Multifunctional System for Investigation of Luminescence Phenomena in Storage Phosphors.....	722
<i>Denis Afanassyev, Vasyl Rabyk, Oleksandr Poshvyak and Sergii Ubizskii</i>	
Application of States and Transitions Graph for Developing the Model of the Process of Shelling a Mobile Armored Target.....	727
<i>Vadim Yakovenko, Bohdan Volochiy, Nataliia Furmanova, Inna Savina and Oleksandr Malji</i>	
Structural-parametric Adaptation of the Active Noise Interference Autocompensator Implementing the Gram-Schmidt Orthogonalization Procedure.....	733
<i>Viacheslav Chmelov, Serhii Zhuk, Andrii Onysko and Oleksandr Tereshchenko</i>	
Development and Transmission Spectrum Investigation of the Dichroic Filter for 300 GHz.....	737
<i>Nazariy Andrushchak, Dmytro Vynnyk, Nazariy Jaworski and Yevhen Yashchyshyn</i>	

Analysis of the Small UAV Trajectory Detection Algorithm Based on the “ $l/n-d$ ” Criterion Using Kalman Filtering Due to FMCW Radar Data.....	741
<i>Oleksandr S. Neuimin, Serhii Ya. Zhuk, Igor O. Tovkach and Taras V. Malenchyk</i>	
Methodology of Specification of Parameters of Strengthening of Elements of Bearing Surfaces of Aircraft	746
<i>Andriy Senyuk, Viktor Pabyrivskiy, Oksana Ukhanska, Yuriy Futryk, Yuliya Senyuk and Oleksandr Stepanyuk</i>	
Combined Method of Prioritization and Automation of Software Regression Testing	751
<i>Dmitry Zhyhulin, Kostiantyn Kasian and Mykola Kasian</i>	
Safety Condition Investigation for a Reusable Aerospace System at the Stage of Carrier Rocket Movement in the Cargo Compartment.....	756
<i>Oleg Mashkov, Victor Chumakevych, Vadym Ptashnyk and Maksym Nakonechnyy</i>	
Method of High Resolution Measurement of Metal and Graphene Hall Sensors Signals in Extreme Temperature and Radiation Conditions of Fusion Reactors	762
<i>Inessa Bolshakova, Yaroslav Kost, Serhiy Sukhorebryy, Fedir Shuryhin and Yuriy Mykhashchuk</i>	
The Role of Sample Size in Multilayer Neural Networks.....	767
<i>Sergiy Sveleba, Ivan Katerynychuk, Ivan Kuno, Ostap Semotyjuk, Yaroslav Shmyhelskyi and Nazar Sveleba</i>	
Analysis the Influence of Sensor Network Configuration on RFID Location Accuracy Based on RSS Measurements.....	771
<i>Igor O. Tovkach, Serhii Ya. Zhuk, Volodymyr M. Vasyliev and Oleksandr S. Neuimin</i>	
The Concept of a Channeling System for Satellite Mobile Communication for Media Delivery with Increased Efficiency	775
<i>Roman Odarchenko, Konstantin Sunduchkov, Vladislav Fesenko, Oleksii Verkhovets, Andrii Fesenko and Alexander Didenko</i>	
Industrial 5G Private Network: Architectures, Resource Management, Challenges, and Future Directions.....	780
<i>Wang Ruoxi, Halyna Beshley, Mykola Beshley, Yan Lingyu, Oleh Kuzmin and Oksana Urikova</i>	
A Simple Method to Increase the Stability of a Class E Power Oscillator	785
<i>Volodymyr Kryzhanovskiy, Dmitrii Chernov, Vladimir Krizhanovski and Denis Makarov</i>	
Use of Cognitive Information Technology for Monitoring the State of Radio Technical Systems Elements.....	789
<i>Hryhorii Potapov, Maksim Pavlenko, Yurii Pribyliev, Lyudmila Safoshkina, Natalija Knyschenko and Dmitrii Pavlov</i>	
Using of FEM for Modeling of Compatible Movement of Surface Kinematic Waves and River Flows	793
<i>Petro Venherskyi and Yaryna Kokovska</i>	
Electrical and Thermolectrical Properties of PbSe–AgSbSe ₂ Monocrystals	798
<i>Oleksii Novosad, Pavlo Shygorin, Volodymyr Bozhko, Polina Pishova, Bohdan Venhryn and Vasyl Goldun</i>	

Method for Increasing the Interference Immunity of the Channel for Measuring of the Short-Range Navigation Radio System	802
<i>Iryna Svyd, Ivan Obod, Oleksandr Maltsev, Oleksandr Vorgul, Irena Vorgul and Ivan Shevtsov</i>	
Deep Learning Methods Application for Object Detection Tasks Using Unmanned Aerial Vehicles.....	808
<i>Anatolii Babaryka, Ivan Katerynychuk, Mykhailo Klymash and Ivan Chesanovskiy</i>	
Designing a Steganography System	812
<i>Oktay Kaan Memis, Selehattin Yildiz and Pinar Kirci</i>	
Two-factor Authentication System Using Audio Signal Analysis	816
<i>Serhiy Otrokh, Liubov Berkman, Valeriy Kuzminykh, Kseniia Olienieva, Kateryna Sushchenko and Oleksandr Chumak</i>	
Simulation of the Temperature Measurement by Infrared Radiation of the Aircrafts' Gas Turbine Engine.....	819
<i>Nataliya Hots, Vasyl Parakuda, Andrzej Pazur and Andrzej Szelmanowski</i>	
Vector Models for Modeling Logic Based on XOR-Relations	823
<i>Vladimir Hahanov, Svetlana Chumachenko, Eugenia Litvinova, Hanna Khakhanova, Olga Shevchenko and Ivan Hahanov</i>	
Modeling of Percolation Effect in Arrays of Curved Nanotubes	829
<i>Illia Zhydenko, Halyna Klym, Dmytro Chalyy and Ivan Karbovnyk</i>	
Micro-, Nanostructural Properties of the MgAl ₂ O ₃ Ceramics Studied by Combined Methods	833
<i>Halyna Klym and Ivan Hadzaman</i>	
Interval Model of the User Reactions to Messages in Thematic Groups of Social Networks ..	837
<i>Mykola Dyvak, Andriy Melnyk and Yevhen Kedrin</i>	
Providing the Bandwidth of Telecommunications Systems and Their Optimization	841
<i>Volodymyr Pelishok, Ihor Tchaikovskiy, Yuliia Pyrih and Olga Shpur</i>	
Nonlinear Optical Characterisation of Disperse Orange Dyes (3 and 25) and Pigment Orange 43.....	847
<i>Houda El Karout, Anatoliy Andrushchak, Robert Wielgosz, Abdelkrim El-Ghayoury and Bouchta Sahraoui</i>	
Photoluminescence Properties of Reactive Red 141 for Organic Light-Emitting Diode (OLED).....	852
<i>Aouatif Aamoum, Said Taboukhat, Mina Bakasse, Anna Zawadzka, Robert Wielgosz, Anatoliy Andrushchak, Houda El Karout and Bouchta Sahraoui</i>	
Experimental Investigation of Acoustic Wave Shift Angles And Attenuation in Acousto-Light Guid.....	857
<i>Taras Voronyak, Ihor Stasyshyn, Oleksandr Sakharuk and Dmytro Vynnyk</i>	
Assessment of Image Quality Based on Deep Neural Networks.....	861
<i>Arkadiusz Talun, Pawel Drozda, Sergei Yelmanov, Orest Lavriv, Yuriy Romanyshyn and Hryhorii Vaskiv</i>	