

2022 International Russian Automation Conference (RusAutoCon 2022)

**Sochi, Russia
4-10 September 2022**

Pages 1-466



**IEEE Catalog Number: CFP22RUS-POD
ISBN: 978-1-6654-6656-1**

**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:	CFP22RUS-POD
ISBN (Print-On-Demand):	978-1-6654-6656-1
ISBN (Online):	978-1-6654-6655-4

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

TABLE OF CONTENTS

The Secure Information Transfer Dynamic System Based on Associative Data Protection Mechanism	1
<i>I. V. Zimakov, E. S. Belashova, D. A. Gashigullin</i>	
Classification of States of Multidimensional Objects Using a Soft Calculations Model.....	7
<i>S. A. Mantserov, L. O. Fedosova, L. S. Lomakina</i>	
Obtaining a Highly Informative Digital Image of Information Signals of Cyber-Physical Systems Using Time-Frequency Spectral Analysis and Digital Filtering.....	13
<i>Andrey N. Ragozin, Anastasiya D. Pletenkova</i>	
Implementation Method of Rendezvous Process of Unmanned Aerial Vehicle Landing on the Mobile Unmanned Vehicle.....	18
<i>X. Zhang, M. S. Selezneva, K. A. Neusyipin</i>	
Robustness Analysis of Gaussian Filters for Surface Texture of Additive Manufacturing Products	23
<i>Oleg V. Zakharov, Alexander S. Yakovishin, Andrey V. Zhukov</i>	
Development of an Automated Medical Information System for the Analysis of Fluorograms	29
<i>N. I. Pikuleva, A. Sh. Khafizova, E. L. Gimalov</i>	
Mathematical Model of Cylindrical Parts Assembly Using Digital Twins	35
<i>Oleg V. Zakharov, Konstantin G. Pugin, Ludmila V. Seliverstova</i>	
Description of Information Security Events of Production and Technological Systems Using Fuzzy Graphs	40
<i>Igor Kotenko, Igor Parashchuk</i>	
Autonomous Stabilization of a Spacecraft Orbital Orientation at the Lack of Angular Velocity Measurements.....	46
<i>Alexey V. Lapin, Nikolay E. Zubov</i>	
The Voice Control System Implementation	52
<i>N. T. Pesoshina, J. I. Yoqubjonov</i>	
The Sound Pressure Level Meter.....	58
<i>A. N. Khusnutdinov, M. G. Nuriev</i>	
Robust Sway Prevention of Suspended Loads	64
<i>Semen Podvalny, Anastasia Kalytina, Eugeny Vasiljev</i>	
The Fiber-Optic Communication System in the Enterprise.....	70
<i>V. A. Gerasimov, M. G. Nuriev, D. A. Gashigullin</i>	
Quantifying Controllability for Nonlinear State-Dependent Riccati Equation Control.....	75
<i>Yuhui Hu, Konstantin Avenirovich Neusyipin, Kai Shen</i>	
Using Homing Traces for Simplifying Passive Testing of Discrete Event Systems	81
<i>Aleksandr Tvardovskii, Nina Yevtushenko</i>	
Automation of Crude Oil Distillation in a Rectification Column.....	87
<i>Alexander S. Semenov, Yuriy A. Podkamenniy, Yuriy V. Bebikhov</i>	

Adaptive Repetitive Control of Nonlinear Undefined Plant with Input Saturation and Delay	94
<i>E. L. Eremin, L. V. Nikiforova, E. A. Shelenok</i>	
Development of a Method for Plant Disease Detection and Recognition Using Cascade Classifiers	100
<i>L. G. Gagarina, A. V. Chirkov</i>	
Multiagent Voltage Control System in Mains with Small-Scale Distributed Generation Plants.....	105
<i>Yuri N. Bulatov, Edward K. Shumansky</i>	
Emotion Recognition from Facial Images.....	111
<i>Nikolai V. Smirnov, Alexander S. Chernyshov</i>	
Identifiability and Detectability of Lyapunov Exponents.....	117
<i>Nikolay Karabutov</i>	
Dynamic Errors of Butterworth Band-Pass Filters in Analog-Digital Control and Monitoring Systems.....	123
<i>Leontiy Samoylov, Nikolay Prokopenko, Darya Denisenko</i>	
Asymptotic Adaptive Roll Tracking Control for Single Moving-Mass Controlled Reentry Vehicle.....	129
<i>Jingzhong Zheng, Maria Sergeevna Selezneva</i>	
Research the Radiated Electromagnetic Interference from Power Converters Under Operating Conditions	135
<i>Zinnur Gizatullin, Stella Lyasheva</i>	
Technique for Research of Conducted Interference from Power Converters in Operating Conditions.....	140
<i>Zinnur Gizatullin, Ramis Mubarakov</i>	
Identification of Systems Based on Minimax Entropy-Information Criteria.....	145
<i>Kirill Chernyshov</i>	
Energy Effective Protection Circuits of the Start-Up Device Against Switching Overvoltage.....	151
<i>Yaroslava K. Starostina</i>	
Tool Path Planning Method for Industrial Manipulators Based on 3D-Model Obtained from Computer Vision Systems	156
<i>Dmitry Yukhimets</i>	
Development of an Intrusion Detection System Prototype in Mobile Ad Hoc Networks Based on Machine Learning Methods.....	162
<i>Leonid Legashev, Luybov Grishina</i>	
Solving the Synchronization Problem Using a Photonic Frequency Locked Loop System for Control Systems in Technological Processes	167
<i>Olga Nazarova, Alexander Prygunov</i>	
Control Design for a Differential-Drive Elastic Actuator Based on Active Damping Injection	173
<i>Igor Shardyko, Vladislav Kopylov, Victor Titov</i>	
Verification Method for Diagrammatic Workflow Specifications in Computer-Aided Design	179
<i>Nikolay Voit, Semen Bochkov</i>	
Component Model of a Switch Mode Power Supply Transformer with Magnetic Hysteresis Taken into Account	185
<i>Ivan Vasyukov, Alexander Pavlenko, Denis Shchuchkin</i>	

Dynamic Object Parametric Identification with the Decompositional Neural Network	190
<i>Vasiliy Olonichev, Boris Staroverov</i>	
Automatic Speed Control System for Manipulator Mounted on Underwater Vehicle	196
<i>Alexander Konoplin, Nikita Krasavin</i>	
High-Precision Navigation on Analytical Trajectories Using Strapdown Inertial-Satellite Navigation System	201
<i>Sergey Sokolov, Andrey Sukhanov, Marianna Polyakova</i>	
Comparison of Synchronous and Self-Timed Pipeline's Soft Error Tolerance	208
<i>Igor Sokolov, Yuri Stepchenkov, Yuri Diachenko</i>	
Investigation of the Influence of Data Acquisition Conditions on the Quality of the CNN-Based Vision System.....	214
<i>Andrey Arhipov, Ivan Fomin</i>	
Application of the Neural Network Approach When Tuning the PID Controller	219
<i>Ruslan Zhilov</i>	
Maximum Stability Controller Synthesis for a System with an Interval Characteristic Polynomial Using Critical Root Diagrams	225
<i>Alexander Sobol, Sergey Gayvoronskiy, Tatiana Ezangina</i>	
Optimization of the Structure of Variable-Valued Logical Functions When Adding New Production Rules.....	231
<i>D. P. Dimitrichenko</i>	
Investigating the Frequency Characteristics of Pulse-Width DC/DC Converters with the Target- Oriented Control.....	237
<i>A. I. Andriyanov</i>	
Methods for Minimizing Computational Costs in Monitoring and Loud-Speaking Notification Systems.....	243
<i>Aleksey Anatolievich Belov, Aleksander Anatolievich Kolpakov, Aleksander Yurievich Proskuryakov</i>	
The Impact of Cloudy Weather on the Operation of Photovoltaic Power Plant in the Northern Part of the Russian Far East	248
<i>Nikolay Mestnikov, Ahmad Alzakkar, Yuri Samofalov</i>	
Simulation of the Autonomous Unmanned Underwater Vehicle Control System	253
<i>Valentina S. Bykova, Angrey I. Mashoshin</i>	
Random Search Optimization Approach for Human-Robot Systems Modeling	258
<i>Iuliia Zaitceva, Nikolay V. Kuznetsov, Boris Andrievsky</i>	
Optimization Models of UAV Route Planning for Forest Fire Monitoring.....	263
<i>Mikhail Khachumov, Vyacheslav Khachumov</i>	
Zero-Day Attacks Detection Using an Analysis of Mobile Robot Motor Primitives	269
<i>Anna Gorbenko, Vladimir Popov</i>	
Power Losses Quadratic Approximation for the Electric Drive Load Condition Monitoring	275
<i>Dmitry Topolsky, Irina Topolskaya, Yulia Plaksina</i>	

Image Denoising Using Weight Model	280
<i>Mikhail Shleymovich, Rimma Safina</i>	
Research of the Influence of Internal Parameters of a Vision System on Its Accuracy	285
<i>K. Palaguta, E. Pikalov, A. Kuznecov</i>	
Lidar Odometry and Mapping Optimized by the Theory of Functional Systems in the Parking Lot	290
<i>J. Yi, M. S. Selezneva, K. A. Neusyipin</i>	
The Types of Filtering Images with Cloudy Weather	295
<i>R. R. Akhmetzyanova, I. I. Bikmullina</i>	
Modeling the Operation of the Synchronous Generator of an Autonomous Electric Power System During the Test Input of Quasi-Direct Current.....	301
<i>Vera Vakhnina, Aleksey Chernenko, Dmitry Kretov</i>	
A Neural Network Model for Simulation the Electrical Characteristics of Heterostructural Nanodevices Accounting the Technology Process Instabilities	307
<i>Natalia Vetrova, Alexandr Filyaev, Kirill Pchelintsev</i>	
Smart City Management System Based on Multi-Purpose Deep Neural Network	312
<i>Evgeny Nikolaev, Assem Konyrkhanova, Vladimir Zakharov</i>	
Selection and Optimization of Main Components and Parameters of Secondary Power Supplies for Intelligent Vehicles.....	317
<i>Alexey Vasin, Anton Kocherov, Pavel Anisimov</i>	
Distributed Detection of Anomalies in the Network Flow Using Generative Adversarial Networks	323
<i>Mikhail Grekov, Alexey Sychugov</i>	
Simulation of the Interaction of a Flapping Wing with Air.....	328
<i>Sergey Efimov, Oksana Emelyanova, Sergey Jatsun</i>	
On the Relation Between Anisotropy-Based Theory and Covariance Control Theory	334
<i>Arkadiy Yu. Kustov, Alexander V. Yurchenkov</i>	
The Issues of Providing Secure Information Systems Interaction Based on the Open System Environment Reference Model.....	340
<i>Daria Bogacheva, Olga Lukinova</i>	
Empirical Analysis of Visual Localization Accuracy.....	345
<i>Anastasiia Iusupova, Viktor Titov</i>	
Preprocessing and Future Extraction for Visual Underwater Odometry	352
<i>B. Skorohod, S. Fateev, P. Zhilyakov</i>	
One Approach to the Recognition of Bottom Objects Using Monitoring Systems Installed on an Autonomous Underwater Vehicle	358
<i>Valentina Bykova, Andrey Mashoshin, Alexey Smirnov</i>	
The Influence of the Object Model Choice on the Automatic Control System Efficiency	363
<i>Daniil Suslov, Galina Pikina</i>	
Designing a Human-Machine Interface Based on the Cognitive Model of Information Systems Users.....	368
<i>Yury Sineshchuk, Aleksey Vostrykh, Igor Saenko</i>	

Designing and Developing Mathematical Models for the Electric Power Systems of Industrial Companies	374
<i>Yuriy V. Bebihov, Darya V. Kazazaeva, Ilya A. Yakushev</i>	
Model for Determining the Message Source by Analyzing Their Arrival Time	379
<i>Alexey V. Plugatarev, Maksim O. Tanygin</i>	
Simulation of Joint Operation of Subsystems for Stabilizing the Oscillation Amplitude and Ensuring the Resonant Mode of Installation for Carrying Out Fatigue Vibration Tests of Gas Turbine Engine Blades	384
<i>K. A. Palaguta, N. V. Grunenkov, E. V. Pikalov</i>	
Clustering Algorithm Based on Feature Space Partitioning	390
<i>Mukhamed Kazakov</i>	
Automation of Program Code Analysis Using Machine Learning Methods	395
<i>Vadim Moshkin, Vladislav Kalachev, Anton Zarubin</i>	
Locating a Defect in a Rotary Machine Using Analysis of Signal Phase Spectrums at Specified Points	400
<i>Anvar Valeev, Bulat Kharrasov, Rinat Karimov</i>	
Structural Reliability of a Multipath Routing Network with Reconfigurations When Switching Routes	405
<i>Vladimir Anatolievich Bogatyrev, Anh Tu Le, Evgenia Alexandrovna Abramova</i>	
Usage of Clustering of Paley Graphs in Polar Coordinates for the Development of New Network on Chip Topologies	410
<i>Alijon F. Fatullaev, Edward R. Rzaev, Aleksandr Yu. Romanov</i>	
Machine Learning Boosting Algorithms for Determining Euler Angles in an Inertial Navigation System	415
<i>Aleksandr N. Grekov, Aleksey A. Kabanov</i>	
Robust Virtual Sensors Design.....	420
<i>Alexey Zhirabok, Alexander Zuev, Alexey Shumsky</i>	
Summarization of Videos from Online Events Based on Multimodal Emotion Recognition	427
<i>Amir Abdrahimov, Andrey V. Savchenko</i>	
The Functional Scheme of Hardware Semafore for Parallel Computing	433
<i>Evgeny A. Titenko, Oleg G. Dobroserdov, Alexey N. Schitov</i>	
Influence of Natural Vibration Frequencies in the Analysis on Vibration Resistance of Steel Supporting Parts of a Car	439
<i>Igor Petrovich Balabanov, Valery Dmitrievich Mogilevets, Aleksandr Alikovich Shabaev</i>	
Assessment of Dynamic Errors of Input Circuits in Measuring Systems When Setting Line Interference Filters.....	444
<i>Leontiy Samoylov, Darya Denisenko, Vladislav Chumakov</i>	
Analysis of the Effectiveness of a New Composite Method Joining Features of Implicit and Modular Enumeration Algorithms.....	450
<i>Vitaliy Oskarovich Groppen, Aleksey Aleksandrovich Berko</i>	
Collecting Data from Variable Kinematic Machine Tools with OPC UA Protocol	456
<i>Georgi Martinov, Roman Pushkov, Svetlana Evstafieva</i>	

Fuzzy Approach of Metrics Control of Communication Links in the Software Defined Network of Internet of Things	462
<i>Dmitry Perepelkin, Kirill Anisimov</i>	
Research of Multipath Routing Processes in Software Defined Networks Based on Firefly Algorithm	467
<i>Dmitry Perepelkin, Tin Nguyen</i>	
Multiclass Classification of Attacks in APCS by Applying SW Graph	475
<i>G. D. Asyaev, A. N. Sokolov</i>	
Detection of the Optimal Reflection Symmetry Axis with the Jaccard Index and the Radon Transform	480
<i>Nikita Lomov, Oleg Seredin, Olesia Kushnir</i>	
Determinal Model Resource Distribution for Objects of the Logistics System.....	490
<i>Bayrambek Alibekov, Alexander Guda, Enver Mamaev</i>	
Modeling and Quality Analysis of Algorithms for Formation of Panoramic Images for Different	496
<i>Gregory Dagldiani, Dmitrii Shvalov</i>	
Modeling of Complex Transport Processes Taking into Account the Phenomenon of Hysteresis.....	502
<i>Nikolay Nikolaevich Labah, Anna Sergeevna Saryan, Alexander Nikolayevich Guda</i>	
Proposals for the Development of the Road Information Logistics System (RILS).....	508
<i>Victor Zubkov, Ekaterina Ryazanova, Kirill Anoshkin</i>	
Real-Time Acquisition and Processing of Measurement Information in the Complex Technical Systems Diagnosis.....	518
<i>Sergey Levoniuk, Larisa Ginis, Larisa Gordienko</i>	
Synthesis of Algorithms for Complex Information Processing of Inertial Navigation System for UV Control in Smart City Model	523
<i>Petr Trefilov</i>	
Protocol for Multipath Routing of Traffic in Wireless Ad-Hoc Networks Based on the Status of Channels and Network Nodes	529
<i>Maxim S. Pestin, Alexander S. Novikov</i>	
Analysis of the Efficiency of Quasioptimal Nonlinear Control Laws with Adaptation of the Switching Hypersurface Under Uncertainty of External Influences	535
<i>Andrey A. Kostoglotov, Alexander A. Agapov, Sergey V. Lazarenko</i>	
Method of Synthesis of Adaptive Estimation Algorithms Based on the Condition of Generalized Power Maximum and the Shaping Filter Method.....	540
<i>Andrey A. Kostoglotov, Anton S. Penkov, Sergey V. Lazarenko</i>	
Control and Remote Monitoring of a CNC Lathe Using a Software-Based Controller	546
<i>P. A. Nikishechkin, A. A. Akimov</i>	
Simulation of the Exoskeletons Group Work During Load Lifting Process	551
<i>Sergey Jatsun, Andrei Malchikov, Andrey Yatsun</i>	
Allocation of Network Levels and Organization of Data Transmission in the Workshop Information Space of Digital Production.....	557
<i>Georgi Martinov, Liliya Martinova, Anatoly Nikich</i>	

Padé Approximations and the SDRE Technique in the Design of Parametric Families of Feedback Laws	563
<i>Yulia Danik, Mikhail Dmitriev</i>	
Method to Create Virtual Mock-Ups of Complex Technical Objects	571
<i>Nikolay Voit, Semen Bochkov</i>	
Algorithms for Determining the Optimal Load Mode of the Cable Block	578
<i>Nataliya Trufanova, Irina Kukharchuk</i>	
Algorithm for a Dynamic Object State Estimation from Indirect Observations.....	583
<i>Vladimir N. Trofimenco</i>	
The Model of Parallel Processing of Messages Buffered in the Shared Memory	589
<i>Maxim O. Tanygin, Mikhail A. Efremov, Elena A. Tanygina</i>	
Modeling and Optimization of Integrated Internet of Things System	594
<i>Igor Lvovich, Andrey Preobrazhenskiy, Yakov Lvovich</i>	
FPGA-Based Asynchronous Remote Laboratory for Online Learning	599
<i>A. Lorens, G. Petukhov, I. Romanova</i>	
Method for Improving the Reliability of an Ergatic Control System for an Automated Aircraft.....	604
<i>Ivan Muraviov, Gennadiy Kovalenko, Alexey Bogomolov</i>	
Critical Information Infrastructure Objects: Operator Support Systems	609
<i>Elena Jharko</i>	
Diagnostics of Onboard Information Processing and Control Systems of Autonomous Underwater Vehicles	614
<i>Egor Lukoyanov, Nikolai Kolesov, Alexander Gruzlikov</i>	
Development of an Automatic Control Algorithm for the Combined RCB-Burners and Carbon Material Injectors of the Flexible Modular Furnace	620
<i>A. A. Nikolaev, P. G. Tulupov, S. S. Ryzhevskiy, S. A. Linkov</i>	
Analysis of the Impact of Autonomous Inverter Control Algorithms on the Battery and Motor	625
<i>The Hien Nguyen, Bogdan Yurievich Vasilev</i>	
Reducing Asymmetry and Harmonic Distortion at Substations Connected to 25 kV Power Lines Using Rails as a Live Part	631
<i>Andrey Kryukov, Aleksandr Cherepanov, Nguen Khyok Khieu</i>	
Development of Methods for Dispatching User Renewable Threads in Multi-Core Systems	636
<i>Aung Kyaw Myo, Evgeni Mikhailovich Portnov, Alexander Mikhailovich Bain</i>	
Review and Analysis of Information Security Issues in Data Exchange and Management of a Virtualized Environment of Remote Data Processing Centers.....	642
<i>A. I. Martyshkin, R. A. Biktashev, E. G. Bershadskaya</i>	
Efficient Algorithms for Video-Based Engagement Prediction for a MOOC Course	648
<i>Polina Demochkina, Andrey Savchenko</i>	
Approach to the Dynamic Functioning of a Robotic Complex in Case of Failures and Restoration of Connected Functional Parts.....	653
<i>Ekaterina Cherskikh, Anton Saveliev</i>	

Developing Distributed Control Software with the Reflex Language: Bottle-Filling System Case Study.....	659
<i>Igor S. Anureev, Vladimir E. Zyubin, Natalia O. Garanina, Sergey M. Staroletov</i>	
Development of the Algorithm for Determining PWM Parameters of Active Rectifiers Based on Experimental Data.....	665
<i>A. A. Nikolaev, M. V. Bulanov, I. G. Gilemov, S. A. Linkov</i>	
Investigation of a Simulated Robot Model When it is Trained to Set Trajectories in the Task of Controlling Assembly Parameters at Remote Visualization.....	670
<i>A. Yu. Malkarov, M. V. Arkhipov, L. B. Kocherevskaya</i>	
Algorithm for Replacing the Battery of a Robotic Tool Using Serving Mobile Robots	676
<i>Polina Kozyr', Yuliya Vasunina, Anton Saveliev</i>	
Development of a Chatbot for the Subject Area Train Schedule for Telegram.....	682
<i>Konstantin Aksyonov, Polina Ziomkovskaya, Elena Aksyonova</i>	
The Constructing UAV Trajectories Method Using Bezier Curves and Pythagorean Hodograph.....	687
<i>K. Y. Ganshin, O. S. Mezenteceva, Y. S. Agakhanova</i>	
Investigation of the Non-Stationarity Process in Virtualized Systems	693
<i>A. I. Martyshkin, R. A. Biktashev</i>	
Synthesis of UAV Motion Control Algorithms Along a Given Trajectory	700
<i>O. D. Kreerenko</i>	
Modified SDRE Method for Finite-Time Nonlinear Optimal Control Problem.....	705
<i>Aleksey A. Kabanov</i>	
Combinatorial Approach for the Access Points Map Correcting in the Mines Positioning Systems	710
<i>Dmitry Larionov, Roman Voronov</i>	
Control of the Active-Passive Ankle Mechanotherapy Device	715
<i>Sergey Jatsun, Andrey Knyazev, Andrey Fedorov</i>	
A Metric for the IACS Availability Risk Assessment.....	720
<i>A. A. Baybulatov, G. Promyslov</i>	
A Load Balancing Method for a Data Center Computing Cluster.....	725
<i>Valery P. Mochalov, Ilya S. Palkanov, Gennady I. Linets</i>	
A Dynamic Load Balancing Method for Data Centers with Fractal Properties of Network Traffic	731
<i>Valery P. Mochalov, Natal'Ya Yu. Bratchenko, Gennady I. Linets</i>	
Specified Model of a Double-Circuit Transmission Line with Two Ground Wires for Calculating a Single-Phase Short Circuit Current in a Network with an Effectively Grounded Neutral	737
<i>Evgeniya A. Panova, Regina R. Sabirova, Ivan V. Novikov</i>	
Waste Heat Boiler Control System Based on Neural Network Technology and Fuzzy Logic.....	742
<i>Dmitry Lusenko</i>	
The Method for Estimating the Dynamic Error of Sensors and Modules Under Their Operating Conditions and Its Application.....	747
<i>Dmitry Gryazin, Olga Belova</i>	

Study of the Static Electricity Discharges Impact in an Unmanned Aerial Vehicle.....	752
<i>Rustam R. Gaynutdinov, Sergey F. Chermoshentsev</i>	
Development of Methods for Analyzing the Process of Operator Training When Working with a CNC System Using Components of Analytical Systems	758
<i>Liliia Tuktamyshova, Ilya Kovalev, Ramil Nezmetdinov</i>	
Detection of Distorted Points on Images of Micro-Objects Based on the Properties and Peculiarities of the Wavelet - Transformation	764
<i>Isroil I. Jumanov, Rustam A. Safarov, Olimjon I. Djumanov</i>	
Comparative Analysis of the Mathematical Methods Accuracy of the Parametric Identification of an Aeroengine Gas Path	770
<i>Tatiana A. Kuznetsova, Polina V. Repp, Vladimir O. Fofanov</i>	
Optimization of Identification of Non-Stationary Objects Based on the Regulation of Systematic Error Values	778
<i>Isroil I Jumanov, Sunatillo M Kholmonov</i>	
Taxonomy and Bot Threats in Social Networks	784
<i>Lidia Vitkova, Maxim Kolomeec, Andrey Chechulin</i>	
Identification of the Horizontal Movement of the Underwater Vehicle MiddleAUV	790
<i>Ivan Lipko</i>	
On the Issue of Studying the Output Signal Amplifier in Magnetostrictive Linear and Angular Displacement Transducers.....	796
<i>Yu. N. Slesarev, A. A. Vorontsov</i>	
Proactive Detection of Attacks on APSCS Accounts Based on Analysis of User Identification Graphical Attributes	801
<i>Alexander Salomatin, Andrey Iskhakov, Roman Meshcheryakov</i>	
Multi-Agent Control of Distributed Generation Sources Based on the Environmental Friendliness Rating	806
<i>Elena Sosnina, Andrey Shalukho, Natalya Erdili</i>	
Developing Methods for Combinational Circuit Generation.....	812
<i>V. V. Zunin, A. Yu. Romanov, R. A. Solovyev</i>	
On the Possibility of Different Accuracy of Mathematical Modeling of a Mechanical Component and a Control Loop in Mechatronic Systems with Electric Drives.....	817
<i>Aleksandr Ya. Krasinskii</i>	
The Method of Conjugation of Rectilinear Trajectories of AUV with Regard to Its Dynamic Properties.....	822
<i>Dmitry Yukhimets, Svetlana Karmanova</i>	
Cluster Dynamic Model for Detecting Anomalous States of Natural and Technical Systems	828
<i>A. V. Skatkov, A. A. Bryukhovetskiy, D. V. Moiseev</i>	
Grammar-Based Testing a Process-Oriented Extension of the IEC 61131-3 Structured Text Language	833
<i>Sergey M. Staroletov</i>	
Automated Measuring Device for Remote Control of Dielectric Power Equipment	840
<i>A. V. Golenishchev-Kutuzov, A. V. Semennikov, D. A. Ivanov</i>	

Model of Information-Control System Used for One-Parameter Selective Assembly of Three Elements	846
<i>Oleg Filipovich, Mikhail Maistrishin, Vadim Filipovich</i>	
Method for Determining the Digital Twin Structure of Distributed Open Sources.....	851
<i>V. V. Antonov, Y. S. Voyakovskaya, V. A. Suvorova</i>	
Numerical Solution of Linear Time-Optimal Control Problem Using of Genetic Algorithm	856
<i>A. B. Filimonov, N. B. Filimonov</i>	
On the Interior Crisis in a Pulse Modulated Control System.....	861
<i>Ulanbek Sopuev, Aitibek Abdirasulov, Yuriy Gol'Tsov</i>	
Development of a Comprehensive Simulation Model of the Power Supply and Drive System Based on AFE-FC for Power Quality Research.....	866
<i>Alexander A. Nikolaev, Michail V. Bulanov, Ildar G. Gilemov, Sergei A. Linkov</i>	
Automation of Architecture Justification and Parameters Selection of Artificial Neural Networks for Intelligent Detection of Cyber-Physical Threats.....	872
<i>Aleksey Rogachev, Elena Melikhova</i>	
Simulation of Robotic Laser Welding Process	877
<i>Yuri Smirnov, Anna Kalyashina, Rimma Zaripova</i>	
Algorithm for Compensating Systematic Errors of Radar Measurements Based on Solving Cubic Equation	882
<i>Ivan Kalienko, Andrey Kostoglotov, Sergey Lazarenko</i>	
Study of the Accuracy of Signal Phase Estimation by Piecewise Overlay Method in the Emergency Mode.....	887
<i>Aleksandr A. Tikhomirov, Nikita V. Sobolev, Egor E. Fomin</i>	
Characteristics of the Risks of Threats to the Information System with a Limited Number of Information Sources	892
<i>Ildar Burnashev</i>	
Background and Theoretical Foundations Increasing the Stability of the Signal Frequency in Radio Engineering Systems	897
<i>Olga Safaryan, Irina Alferova</i>	
Intelligent Monitoring System of Underground Cable Network Faults	903
<i>Sergey N. Verzunov, Igor V. Bochkarev, Vadim R. Khramshin</i>	
Updating the Electrical Loads of Residential Buildings by Introducing a Correction Factor	909
<i>Yuri Soluyanov, Azat Akhmetshin, Vladimir Soluyanov</i>	
An Approach to the Implementation of the Machine Safety Function Using an Integrated in the CNC System Softplc and an External Safety Controller Made According to the SoftPLC	914
<i>Liliya Martinova, Georgi Martinov</i>	
Analysis of the Operation of a Gas Turbine Plant When Burning Hydrogen Fuel.....	919
<i>George Marin, Boris Osipov, Azat Akhmetshin</i>	
Selection Algorithm of Preprogrammed PWM Switching Patterns for 3L NPC Voltage Source Inverter	924
<i>Alexander S. Maklakov, Tao Jing, Vadim R. Gasiyarov</i>	

Author Index