

# Contents

## New Generation of Smart Services (ruSMART 2017)

Developing of Emerging Internet Applications for Home Healthcare . . . . .	3
<i>Konstantin G. Korotkov, Konstantin P. Semenov, Victor I. Malyugin, and Dmitry V. Kieseewetter</i>	
Digital Business Model and SMART Economy Sectoral Development Trajectories Substantiation . . . . .	13
<i>L.A. Ismagilova, T.A. Gileva, M.P. Galimova, and V.V. Glukhov</i>	
Ontology Matching for Socio-Cyberphysical Systems: An Approach Based on Background Knowledge . . . . .	29
<i>Alexander Smirnov, Nikolay Teslya, Sergey Savosin, and Nikolay Shilov</i>	
Battery Monitoring Within Industry 4.0 Landscape: Solution as a Service (SaaS) for Industrial Power Unit Systems . . . . .	40
<i>Mathieu Devos and Pavel Masek</i>	
Opportunistic Data Collection for IoT-Based Indoor Air Quality Monitoring . . . . .	53
<i>Aigerim Zhalgasbekova, Arkady Zaslavsky, Saguna Saguna, Karan Mitra, and Prem Prakash Jayaraman</i>	
The IoT Identification Procedure Based on the Degraded Flash Memory Sector . . . . .	66
<i>Sergey Vladimirov and Ruslan Kirichek</i>	
DisCPAQ: Distributed Context Acquisition and Reasoning for Personalized Indoor Air Quality Monitoring in IoT-Based Systems . . . . .	75
<i>Tamara Belyakhina, Arkady Zaslavsky, Karan Mitra, Saguna Saguna, and Prem Prakash Jayaraman</i>	
Cloud Computing Solution for Investment Efficiency Measurement in Biomedicine . . . . .	87
<i>Petra Maresova and Vladimir Sobeslav</i>	
Time Series Distributed Analysis in IoT with ETL and Data Mining Technologies . . . . .	97
<i>Ivan Kholod, Maria Efimova, Andrey Rukavitsyn, and Shorov Andrey</i>	
Exploring SDN to Deploy Flexible Sampling-Based Network Monitoring . . .	109
<i>Catarina Pires da Silva, Solange Rito Lima, and João Marco Silva</i>	

VNF Orchestration and Modeling with ETSI MANO Compliant Frameworks . . . . .	121
<i>Ales Komarek, Jakub Pavlik, Lubos Mercl, and Vladimir Sobeslav</i>	
Performance Evaluation of OpenFlow Enabled Commodity and Raspberry pi Wireless Routers . . . . .	132
<i>Muhammad Zeeshan Asghar, M. Ahsan Habib, and Timo Hämäläinen</i>	
Design Issues of Information and Communication Systems for New Generation Industrial Enterprises . . . . .	142
<i>Valery Leventsov, Anton Radaev, and Nikolay Nikolaevskiy</i>	
SWM-PnR: Ontology-Based Context-Driven Knowledge Representation for IoT-Enabled Waste Management . . . . .	151
<i>Inna Sosunova, Arkady Zaslavsky, Theodoros Anagnostopoulos, Petr Fedchenkov, Oleg Sadov, and Alexey Medvedev</i>	
Supporting Data Communications in IoT-Enabled Waste Management. . . . .	163
<i>Petr Fedchenkov, Arkady Zaslavsky, Alexey Medvedev, Theodoros Anagnostopoulos, Inna Sosunova, and Oleg Sadov</i>	
<b>International Workshop on Nano-Scale Computing and Communications (NsCC 2017)</b>	
Fiber-Optic Transmission System for the Testing of Active Phased Antenna Arrays in an Anechoic Chamber . . . . .	177
<i>Roman V. Davydov, Ivan K. Savelev, Vladimir A. Lenets, Margarita Yu. Tarasenko, Tatiana R. Yalunina, Vadim V. Davydov, and Vasily Yu. Rud'</i>	
Advanced Materials for Fiber Communication Systems . . . . .	184
<i>Victor A. Klinkov, Alexandr V. Semench, and Evgenia A. Tsimerman</i>	
Dynamic Data Packaging Protocol for Real-Time Medical Applications of Nanonetworks. . . . .	196
<i>Rustam Pirmagomedov, Mikhail Blinnikov, Ruslan Glushakov, Ammar Muthanna, Ruslan Kirichek, and Andrey Koucheryav</i>	
Nano Communication Device with an Embedded Molecular Film: Electromagnetic Signals Integration with Dynamic Operation Photodetector. . . . .	206
<i>Dmitrii Dyubo and Oleg Yu. Tsybin</i>	
A Formal Definition for Nanorobots and Nanonetworks. . . . .	214
<i>Florian Büther, Florian-Lennert Lau, Marc Stelzner, and Sebastian Ebers</i>	

Features of Use Direct and External Modulation in Fiber Optical Simulators of a False Target for Testing Radar Station . . . . .	227
<i>Margarita Yu. Tarasenko, Vadim V. Davydov, Vladimir A. Lenets, Natalya V. Akulich, and Tatyana R. Yalunina</i>	

## **Next Generation Wired/Wireless Advanced Networks and Systems (NEW2AN 2017)**

On Detection of Network-Based Co-residence Verification Attacks in SDN-Driven Clouds. . . . .	235
<i>Mikhail Zolotukhin, Elena Ivannikova, and Timo Hämäläinen</i>	
Health-Care Pervasive Environments: A CLA Based Trust Management . . . .	247
<i>Omid Bushehrian and Shayeste Esmail Nejad</i>	
Physical-Layer Security for DF Two-Way Dual-Hop Cooperative Wireless Networks over Nakagami-m Fading Channels. . . . .	258
<i>Islam M. Tanash, Mamoun F. Al-Mistarihi, and Amer M. Magableh</i>	
Physical-Layer Security for DF Two-Way Full-Duplex Cooperative Wireless Networks over Rayleigh Fading Channels . . . . .	270
<i>Islam M. Tanash, Amer M. Magableh, and Mamoun F. Al-Mistarihi</i>	
DNS Tunneling Detection Techniques – Classification, and Theoretical Comparison in Case of a Real APT Campaign . . . . .	280
<i>Viivi Nuojua, Gil David, and Timo Hämäläinen</i>	
Digital Watermarking Method Based on Image Compression Algorithms . . . .	292
<i>Sergey Bezzateev and Natalia Voloshina</i>	
Development of the Credit Risk Assessment Mechanism of Investment Projects in Telecommunications . . . . .	300
<i>Sergei Grishunin and Svetlana Suloeva</i>	
High-Tech Sector in the Conditions of Institutionalization of the Smart Economy (on the Example of the Telecommunication Industry) . . . . .	315
<i>N.V. Vasilenko, A.J. Linkov, and V.V. Glukhov</i>	
Virtual Telecommunication Enterprises and Their Risk Assessment. . . . .	326
<i>N.V. Apatova, O.V. Boychenko, Tatyana P. Nekrasova, and S.V. Malkov</i>	
Peculiarities of Creation of Information System at the Enterprises of Telecommunication Branch . . . . .	337
<i>Ye. Yu. Vinogradova, A.I. Galimova, Natalya V. Mukhanova, and S.L. Andreeva</i>	

A Game-Theoretic Model for Investments in the Telecommunications Industry . . . . .	351
<i>Sergey A. Chernogorskiy and K.V. Shvetsov</i>	
Business Perception Based on Sentiment Analysis Through Deep Neuronal Networks for Natural Language Processing . . . . .	365
<i>Mónica Pineda Vargas, Octavio José Salcedo Parra, and Miguel José Espitia Rico</i>	
Cognitive Models for Access Network Management . . . . .	375
<i>Vladimir Akishin, Alex Goldstein, and Boris Goldstein</i>	
Bargaining in a Dual Radar and Communication System Using Radar-Prioritized OFDM Waveforms . . . . .	382
<i>Andrey Garnaev, Wade Trappe, and Athina Petropulu</i>	
Discrete Time Bulk Service Queue for Analyzing LTE Packet Scheduling for V2X Communications . . . . .	395
<i>Vitalii Beschastnyi, Valeriy Naumov, Pasquale Scopelliti, Irina Gudkova, Claudia Campolo, Giuseppe Araniti, Iliya Dzantiev, and Konstantin Samouylov</i>	
Structure Analysis of an Explanatory Dictionary Ontological Graph . . . . .	408
<i>Yu. N. Orlov and Yu. A. Parfenova</i>	
Performance Optimization of a Clustering Adaptive Gravitational Search Scheme for Wireless Sensor Networks. . . . .	420
<i>Elham Pourabdollah, Reza Mohammadi Asl, and Theodore Tsiligiridis</i>	
A Retrial Queueing System with Preemptive Priority and Randomized Push-Out Mechanism. . . . .	432
<i>Alexander Ilyashenko, Oleg Zayats, Maria Korenevskaya, and Vladimir Muliukha</i>	
NGN/IMS and post-NGN Management Model . . . . .	441
<i>Alex Goldstein</i>	
The Principles of Antennas Constructive Synthesis in Dissipative Media . . . .	455
<i>Roman U. Borodulin, Boris V. Sosunov, and Sergey B. Makarov</i>	
Amplitude and Phase Stability Measurements of Multistage Microwave Receiver . . . . .	466
<i>Yuriy V. Vekshin and Alexander P. Lavrov</i>	
Evolving Toward Virtualized Mobile Access Platform for Service Flexibility . . . . .	473
<i>Seung-Que Lee and Jinup Kim</i>	

Model of Photonic Beamformer for Microwave Phased Array Antenna . . . . .	482
<i>Sergey I. Ivanov, Alexander P. Lavrov, and Igor I. Saenko</i>	
Nanosecond Miniature Transmitters for Pulsed Optical Radars . . . . .	490
<i>Alexey V. Filimonov, Valery E. Zemlyakov, Vladimir I. Egorkin, Andrey V. Maslevtsov, Marc Christopher Wurz, and Sergey N. Vainshtein</i>	
Fog Computing for Telemetry Gathering from Moving Objects. . . . .	498
<i>Ivan Kholod, Nikolai Plokhoi, and Andrey Shorov</i>	
Stability and Delay of Algorithms of Random Access with Successive Interference Cancellation. . . . .	510
<i>Nikolay Apanasenko, Nikolay Matveev, and Andrey Turlikov</i>	
Throughput Analysis of Adaptive ALOHA Algorithm Using Hybrid-ARQ with Chase Combining in AWGN Channel . . . . .	519
<i>Artem Burkov, Nikolay Kuropatkin, and Nikolay Matveev</i>	
Characterizing Time-Dependent Variance and Coefficient of Variation of SIR in D2D Connectivity. . . . .	526
<i>Anastasia Ivchenko, Yuri Orlov, Andrey Samouylov, Dmitri Molchanov, and Yuliya Gaidamaka</i>	
Analysis of Admission Control Schemes Models for Wireless Network Under Licensed Shared Access Framework . . . . .	536
<i>Ekaterina Markova, Dmitry Poluektov, Darya Ostrikova, Irina Gudkova, Iliya Dzantiev, Konstantin Samouylov, and Vsevolod Shorgin</i>	
Low-Complexity Iterative MIMO Detection Based on Turbo-MMSE Algorithm . . . . .	550
<i>Mikhail Bakulin, Vitaly Kreyndelin, Andrey Rog, Dmitry Petrov, and Sergei Melnik</i>	
Rubidium Atomic Clock with Improved Metrological Characteristics for Satellite Communication System . . . . .	561
<i>Alexander A. Petrov, Vadim V. Davydov, Nikita S. Myazin, and Vladislav E. Kaganovskiy</i>	
Provision of Connectivity for (Heterogeneous) Self-organizing Network Using UAVs . . . . .	569
<i>Alexander Paramonov, Ilhom Nurilloev, and Andrey Koucheryavy</i>	
Performance Evaluation of COPE-like Network Coding in Flying Ad Hoc Networks: Simulation-Based Study . . . . .	577
<i>Danil S. Vasiliev, Irina A. Kaysina, and Albert Abilov</i>	

Communication Technologies in the Space Experiment “Kontur-2” . . . . .	587
<i>Vladimir Muliukha, Vladimir Zaborovsky, Alexander Ilyashenko, and Yuri Podgurski</i>	
Accuracy of Secondary Surveillance Radar System Remote Analysis Station . . . . .	598
<i>Igor A. Tsikin and Ekaterina S. Poklonskaya</i>	
Spectral and Energy Efficiency of Optimal Signals with Increased Duration, Providing Overcoming “Nyquist Barrier” . . . . .	607
<i>Anna S. Ovsyannikova, Sergey V. Zavjalov, Sergey B. Makarov, Sergey V. Volvenko, and Trinh Luong Quang</i>	
Choosing Parameters of Optimal Signals with Restriction on Correlation Coefficient . . . . .	619
<i>Anna S. Ovsyannikova, Sergey V. Zavjalov, Sergey B. Makarov, and Sergey V. Volvenko</i>	
The Filtration of Composite Signals from Interference by the Maximum Likelihood Method . . . . .	629
<i>Kseniia V. Vlasova, Valerii A. Pakhotin, Evgenii V. Korotey, and Sergey B. Makarov</i>	
Direct Signal Processing for GNSS Integrity Monitoring . . . . .	635
<i>Igor A. Tsikin and Antonina P. Melikhova</i>	
An Intentional Introduction of ISI Combined with Signal Constellation Size Increase for Extra Gain in Bandwidth Efficiency. . . . .	644
<i>Van Phe Nguyen, Anton Gorlov, and Aleksandr Gelgor</i>	
Foreground Detection Using Region of Interest Analysis Based on Feature Points Processing. . . . .	653
<i>Nikita Ustyuzhanin and Marat Gilmutdinov</i>	
Modified EM-Algorithm for Motion Field Refinement in Motion Compensated Frame Interpolation. . . . .	662
<i>Nikolay Nemcev and Marat Gilmutdinov</i>	
The Models of Moving Users and IoT Devices Density Investigation for Augmented Reality Applications . . . . .	671
<i>M. Makolkina, A. Koucheryavy, and A. Paramonov</i>	
Quality of Experience Estimation for Video Service Delivery Based on SDN Core Network. . . . .	683
<i>Maria Makolkina, Ammar Muthanna, and Steve Manariyo</i>	

LTE MCS Cell Range and Downlink Throughput Measurement and Analysis in Urban Area . . . . .	693
<i>Yi Hua Chen, Kai Jen Chen, and Jyun Jhih Yang</i>	
Transfer of Multimedia Data via LoRa. . . . .	708
<i>Ruslan Kirichek, Van-Dai Pham, Aleksey Kolechkin, Mahmood Al-Bahri, and Alexander Paramonov</i>	
Practical Results of WLAN Traffic Analysis. . . . .	721
<i>A. Paramonov, A. Vikulov, and S. Scherbakov</i>	
Wi-Fi Based Indoor Positioning System Using Inertial Measurements . . . . .	734
<i>Mstislav Sivers, Grigoriy Fokin, Pavel Dmitriev, Artem Kireev, Dmitry Volgushev, and Al-odhari Abdulwahab Hussein Ali</i>	
Power Allocation in Cognitive Radio with Distributed Antenna System . . . . .	745
<i>Jerzy Martyna</i>	
Multi-level Cluster Based Device-to-Device (D2D) Communication Protocol for the Base Station Failure Situation . . . . .	755
<i>Abdelhamied A. Ateya, Ammar Muthanna, Anastasia Vybornova, and Andrey Koucheryavy</i>	
<b>Author Index . . . . .</b>	<b>767</b>

Internet of Things, Smart Spaces, and Next Generation  
Networks and Systems

17th International Conference, NEW2AN 2017, 10th  
Conference, ruSMART 2017, Third Workshop NsCC  
2017, St. Petersburg, Russia, August 28–30, 2017,  
Proceedings

Galinina, O.; Andreev, S.; Balandin, S.; Koucheryavy, Y.  
(Eds.)

2017, XVII, 769 p. 340 illus., Softcover

ISBN: 978-3-319-67379-0