TECHNICAL PROGRAMME

NEW2AN/ruSMART 2021

Online participation by Google + Zoom

Monday, August 30, 2021

9:30 – 10:20 Keynote talk: Dr. Evgeny Khorov, IPPI RAS, Russia
Challenges and Open Issues in Wi-Fi 6 and Wi-Fi 7 (Abstract and Bio are below)
https://drive.google.com/file/d/1ZZIhHC23wXdUbBvxMQnzL3i_DXQwpL1i/view?usp=sharing

10:20 – 10:30 Q&A for the Keynote Talk: ZOOM session
https://tuni.zoom.us/j/61188957027?pwd=ejRVYklmWnhwTGFvTUo1NHFTM2g4dz09

10:30 – 11:50 Section I: ruSMART I

Fast data processing by IoT devices
Alexander Y Anufrienko (Higher School of Economics, Russia)
https://drive.google.com/file/d/11CkS6EN4dGRFnhJPLf1fxkyKkGsLqJkg/view?usp=sharing

Smart Contract Enabled Decentralized Reputation System for E-commerce Reviews
Carl Kugblenu, Petri Vuorimaa and Barbara Keller (Aalto University, Finland)
https://drive.google.com/file/d/1IYlsy1ZFlnNQ_ca4oarIAseSD4VvPSkK/view?usp=sharing

The estimation of Quality of Service in Tactile Internet, Augmented Reality and Internet of Things
Abbas Alzaghir (The Bonch-Bruevich Saint-Petersburg State University of Telecommunications, Russia); Andrey Koucheryavy (SPbSUT, Russia); Alexander Paramonov (The Bonch-Bruevich Saint-Petersburg State University of Communication, Russia)
https://drive.google.com/file/d/14Rx9sytNiZczjP9Bp7wiMjOuGDbTRskE/view?usp=sharing

Information and communications technology in the development of territories based on designing "smart cities"
Viktoria Bondarenko (Rostov state University of Economics, Russia); Natalia Guzenko and Tatiana Romanishina (Rostov State University of Economics, Russia); Valery Leventsov (Peter the Great St. Petersburg Polytechnic University, Russia); Vladimir Gluhov (Saint-Petersburg State Polytechnical University, Russia)
https://drive.google.com/file/d/1xsFEl42PTcZcQKaAlEGw9pyrn3sVNLT1/view?usp=sharing

The Challenges with Internet of Things Security for Business
Ievgeniia Kuzminykh (King's College London, United Kingdom (Great Britain) & Kharkiv National University of Radio Electronics, Ukraine); Bogdan Ghita (University of Plymouth & Centre for Security, Communications, and Network Research, United Kingdom (Great Britain)); Jose Such (King's College London, United Kingdom (Great Britain))
https://drive.google.com/file/d/17Fpcutc2p0bqqcJhFcE6PRhAVGDRLuED/view?usp=sharing

On Smart Greenhouse Issues
Manfred Schneps-Schneppe (Ventspils University College Ventspils International Radio Astronomy Centre, Latvia); Gunars Lacis (Institute of Horticulture, Latvia)

11:50 – 12:00 Q&A for Session I: ZOOM session
https://tuni.zoom.us/j/61194610373?pwd=cGUwMTBsbkNNRHpPbnZoTXUzS0hOZz09
passcode: 381815

12:00 – 13:20 Section II: Business Informatics I

Developing smart cities: the risks of using information and communications technology
Viktoria Bondarenko (Rostov state University of Economics, Russia); Tatiana Romanishina and Natalia Guzenko (Rostov State University of Economics, Russia); Natalya Mukhanova and Sergey Salkutsan (Peter the Great St. Petersburg Polytechnic University, Russia)
https://drive.google.com/file/d/10usrizMBU6K0UbBJqMbmghvMs2HslcS5/view?usp=sharing

Influence of digital technology and telecommunications on the customer-oriented development of electronic commerce
Olga Chkalova (Lobachevsky State University of Nizhni Novgorod, Russia); Yury Trifonov and Pavel Shalabaev (Lobachevsky State University of Nizhny Novgorod, Russia); Ekaterina Abushova (Peter the Great Saint-Petersburg Polytechnic University, Russia); Elena Kasianenko (Peter the Great St. Petersburg Polytechnic University, Russia)
https://drive.google.com/file/d/17CTBJC0d9CkQUy1KfSgWcorR7qjYsfDt/view?usp=sharing

Utilization of Organizational-Economic Mechanism for Selection and Management of Spectrum Sharing Scenarios to Increase Economic Efficiency of 5G operators
Valery Tikhvinskiy (Radio Research & Development Institute (NIIR) & Bauman Moscow State Technical University (BMSTU), Russia); Roman Umanskiy (Moscow Technical University of Communications and Informatics (MTUCI), Russia); Vladimir Makarov (The Bonch-Bruevich Saint Petersburg State University of Telecommunications, Russia); Arseny Plossky (Radio Research & Development Institute, Russia)
https://drive.google.com/file/d/1ZOvszf6ktVB1L9VcfPoMCBGEpDVxwu4S/view?usp=sharing

Sustainable Development of Small and Medium Business in View of the Rapid Growth of Telecommunications and Digital Economy in the Russian Federation
Marina Efremova, Maxim Tcvetkov and Nikolay Shimin (National Research Lobachevsky State University of Nizhny Novgorod, Russia); Oksana Anatolyevna Evseeva and Alexey Efimov (Peter the Great St. Petersburg Polytechnic University, Russia)
https://drive.google.com/file/d/1LA_wae0GffdcTmljnPqKdebygnZtxdgy/view?usp=sharing

Info-communications-based interaction of companies and consumers on the grocery retail market
Olga Chkalova, Inna Bolshakova and Natalia Kopasovskaya (Lobachevsky State University of Nizhni Novgorod, Russia); Tatyana Nekrasova and Sergey Salkutsan (Peter the Great St. Petersburg Polytechnic University, Russia)
https://drive.google.com/file/d/1bIw0xtWv078LemQ7AFxLD_AaNMK1SZdR/view?usp=sharing

Transforming the strategic benchmarks of Russian telecommunications companies in the sustainable development paradigm
Irina Krasyuk and Oksana Anatolyevna Evseeva (Peter the Great St. Petersburg Polytechnic University, Russia); Maria Kolgan and Yulia Medvedeva (Don State Technical University, Russia)
https://drive.google.com/file/d/1O_qfFxFg5fZjSkDBLpVM8332jeaJ_Jih/view?usp=sharing

13:20 – 13:30 Q&A for Session II: ZOOM session
https://tuni.zoom.us/j/68805005703?pwd=TG12Q1FRSE9PdkFKSXlNV04vR2o0QT09
Passcode: 381815

13:30 – 14:50 Section III: Business Informatics II

Study of relationship between the corporate governance factors and ESG ratings of ICT companies from the developed markets
Sergei Grishunin (Higher School of Economics, Russia); Svetlana Suloeva (Peter the Great Saint-Petersburg Polytechnic University, Russia); Tatyana Nekrasova (Peter the Great St. Petersburg Polytechnic University, Russia); Alexandra Egorova (Higher School of Economics, Russia)
https://drive.google.com/file/d/12QbRFBVIG-L91NyD8Z-y_DC22EJIdLgI/view?usp=sharing

Improving Project Management for the Development of New Internet Applications
Tatyana Nekrasova (Peter the Great St. Petersburg Polytechnic University (SPbPU), Russia); Natalia Alekseeva (Peter the Great Saint-Petersburg Polytechnic University, Russia)
https://drive.google.com/file/d/1Ug2I6ILUhE7hBy7dB4KcFkWsUSDdG-f_/view?usp=sharing

Increasing the competitiveness of info-telecommunications enterprises through building a mobile eco-system
Irina Krasyuk, Valery Leventsov and Olga Kartavenko (Peter the Great St. Petersburg Polytechnic University, Russia); Maria Kolgan and Yulia Medvedeva (Don State Technical University, Russia)
https://drive.google.com/file/d/1HuAxNdTdjM3ViH5xnG4aHkvZRebW3IlR/view?usp=sharing

Structural shifts on derivatives markets at the time of increasing digitalization and post-pandemic transformation of the market
Vladimir Gluhov (Saint-Petersburg State Polytechnical University, Russia); Olga Kartavenko (Peter the Great St. Petersburg Polytechnic University, Russia); Anna Kamyshova, Ekaterina Popova and Nikita Kapustin (St. Petersburg State University of Economics, Russia)
https://drive.google.com/file/d/1IqJdzdqhp9JraspoyMED_GB_X1DFIPnw/view?usp=sharing

Specifics of forming an innovation sector when developing Industry 4.0 technology
Valery Leventsov (Peter the Great St. Petersburg Polytechnic University, Russia); Vladimir Gluhov (Saint-Petersburg State Polytechnical University, Russia); Anna Kamyshova and Denis Skripnichenko (St. Petersburg State University of Economics, Russia)

14:50 – 15:00 Q&A for Session III: ZOOM session
https://tuni.zoom.us/j/61679033072?pwd=dE10K2VKUXcrKy9rRDlJVDJLSGNKZz09
Passcode: 934428

15:00 – 16:20 Section IV: Optics issues

Coarse estimation of the distance to the harmonic sound source by DAS for the determination of optical cable location
Vladimir Burdin (Povolzhskiy State University of Telecommunications and Informatics (PSUTI), Russia); Olga Gubareva and Vladimir Gureev (Povolzhskiy State University of Telecommunications and Informatics, Russia)
https://drive.google.com/file/d/1kZOIJpeEBWGDiVfi0jZFoEVEr9T9UvU3/view?usp=sharing

Fiber optic system for monitoring coolant parameters in nuclear power plants
Roman Davydov (Peter the Great St. Petersburg Polytechnic University, Russia); Semen Logunov and Denis Nikolaev (Peter the Great Saint Petersburg Polytechnic University, Russia); Vadim Davydov (Saint-Petersburg state Polytecnical University, Russia); Valentin Dudkin (The Bonch-Bruevich Saint - Petersburg State University of Telecommunications, Russia)
https://drive.google.com/file/d/1iTH-XE_4SgUR42VyxSAsojK8msiXD5NX/view?usp=sharing

Fiber-optic sensor for monitoring radiation level
Diana S Dmitrieva (The Bonch-Bruevich Saint - Petersburg State University of Telecommunications, Russia); Valeria Pilipova (The Bonch-Bruevich Saint Petersburg State University of Telecommunications, Russia); Valentin Dudkin (The Bonch-Bruevich Saint - Petersburg State University of Telecommunications, Russia); Roman Davydov (Peter the Great St. Petersburg Polytechnic University, Russia); Vadim Davydov (Saint-Petersburg state Polytecnical University, Russia)
https://drive.google.com/file/d/1JevuH7HzPQItMTf-LYVBQuokAm4L0Zha/view?usp=sharing

Experimental Study of Temperature Impact on Fiber Optic Current Sensor Elements
Valentina Temkina and Andrei Medvedev (Peter the Great St. Petersburg Polytechnic University, Russia); Alexey Mayzel (Software-Defined Systems LLC, Russia); Eduard Sivolenko (Radiophysics and Electronics Yerevan State University, Armenia); Ekaterina Poletaeva and Iuliia Dudnik (Peter the Great St. Petersburg Polytechnic University, Russia)
https://drive.google.com/file/d/1V27KWA5og9oaFI0fK4rHHjtBUzvbxOJz/view?usp=sharing

Fiber-Optic Recirculating Memory Loop for Wideband Microwave Signal
Sergei Ivanov, Alexander P. Lavrov and Dmitrii Kondakov (Peter the Great St. Petersburg Polytechnic University, Russia); Yurij Matveev (Peter the Great Saint-Petersburg Polytechnic University, Russia)
https://drive.google.com/file/d/1jvure4oUq9veaI3eQwRxFVMgeC1uQECN/view?usp=sharing

16:20 – 16:30 Q&A for Session IV: ZOOM session
https://tuni.zoom.us/j/61202530931?pwd=dEY3ZTNPa3FNc3BkNndLOUZRTmVTZz09
Passcode: 455374

Tuesday, August 31, 2021

10:30 – 11:50

Section V: Drones and UAVs

Simulation and Experimental Study of Multi-Source Application Layer ARQ for FANET
Irina Kaisina (Kalashnikov Izhevsk State Technical University, Russia); Albert Abilov and
Danil Vasiliev (Izhevsk State Technical University, Russia); Mohammed Amin Lamri and
Anatoli Nistyuk (Kalashnikov Izhevsk State Technical University, Russia)
https://drive.google.com/file/d/1NhRRa7lrRjOFjcbZkJeuyRhOZT7aSfsj/view?usp=sharing

Deep learning approach for predicting energy consumption of drones based on MEC
Ali R. Abdellah (SPbSUT, Russia & Al-azhar University, Egypt); Abbas Alzaghir (The Bonch-
Bruevich Saint-Petersburg State University of Telecommunications, Russia); Andrey
Koucheryavy (SPbSUT, Russia)
https://drive.google.com/file/d/1Grq5oB06NTMmLAomyB0Rub07b6A_kwzZ/view?usp=sharing

Predicting energy consumption for UAV-enabled MEC using Machine Learning Algorithm
Abbas Alzaghir (The Bonch-Bruevich Saint-Petersburg State University of
Telecommunications, Russia); Ali R. Abdellah (SPbSUT, Russia & Al-azhar University,
Egypt); Andrey Koucheryavy (SPbSUT, Russia)
https://drive.google.com/file/d/1GcVDM9K_FzeKvycmDpaucFt-OB1LIjty/view?usp=sharing

Section VI: Other topics

Investigation methods of dehydrated protein films for biomolecular electronics
Maksim Baranov (Peter the Great St. Petersburg Politechnic University, Russia); Elena
Velichko (Peter the Great St. Petersburg Polytechnic University, Russia)
https://drive.google.com/file/d/1g-1TmOgeJOIF_UPhkjcReg-vApzigwu_/view?usp=sharing

Applying Deep Learning Techniques to Extract Diagnostic Information from ECG Images
Georgy Kostin (Peter the Great St. Petersburg Polytechnic University, Russia); Vitalii Pavlov
(Peter the Great St Petersburg Polytechnic University, Russia)
https://drive.google.com/file/d/1V1h-wHC8GLqyNTodnjgo-xXppBKuz16N/view?usp=sharing

Application of wavelet transform for ECG processing
Veronika Nikolaevna Malysheva, Diana Maratovna Zaynullina and Alena Olegovna Stosh
(Peter the Great St. Petersburg Polytechnic University, Russia); Gregory Alexandrovich
Cherepennikov (Saint-Petersburg State University of Aerospace Instrumentation, Russia)
https://drive.google.com/file/d/1sDyBJmeqpJbDRw1VkYc3rLTOes7Q2-5X/view?usp=sharing

11:50 – 12:00 Q&A for Session V and VI: ZOOM session
https://tuni.zoom.us/j/69997727408?pwd=MWZEZGJvcnQveVl1eXFnWlhMdEtQdz09
Passcode: 306725

12:00 – 13:20 Section VII: Signals and PHY I

Analysis of nonlinear distortions of FTN signals transmitted through TWT amplifier
Ekaterina Smirnova and Sergey B. Makarov (Peter the Great St. Petersburg Polytechnic University, Russia)
https://drive.google.com/file/d/1fvJdBLw9zk2JCPjXIbTMcgxksiyA5CoW/view?usp=sharing

Selecting a receiver for wideband spectrum sensing in cognitive radio systems based on an assessment of the signal environment complexity
Alexey Podstrigaev (Saint Petersburg Electrotechnical University LETI, Russia); Andrey Smolyakov (Saint Petersburg Electrotechnical University LETI & Scientific-Research Institute Vector OJSC, Russia); Vladimir Likhachev (Zhukovsky-Gagarin Air Force Academy, Russia); Sergei Efimov (Saint Petersburg State University of Aerospace Instrumentation, Russia); Vadim Davydov (Saint-Petersburg state Polytecnical University, Russia)
https://drive.google.com/file/d/11zEKT58PN249v4Kqou7rSw0X7p7Jp49J/view?usp=sharing

Instantaneous Interference Evaluation Model for Smart Antennas in 5G Ultra-Dense Networks
Grigoriy Fokin (The Bonch-Bruevich St. Petersburg State University of Telecommunications, Russia); Vadim Davydov (Saint-Petersburg state Polytecnical University, Russia); Vitaly Lazarev (The Bonch-Bruevich Saint - Petersburg State University of Telecommunications, Russia); Angelina Moroz (Peter the Great Saint Petersburg Polytechnic University, Russia)
https://drive.google.com/file/d/1lJAsQwGN7xeCuE0oo2rwEAkuaTegfbPI/view?usp=sharing

The effect of error burst when using a decision feedback algorithm for receiving non-orthogonal multi-frequency signals
Sergey B. Makarov, Dac Cu Nguyen, Sergey V. Zavjalov and Anna S. Ovsyannikova (Peter the Great St. Petersburg Polytechnic University, Russia); Canh Minh Nguyen (University of Transport and Communications, Vietnam)
https://drive.google.com/file/d/1nkA5drmTh-lym3esbBR9dn8PXt97ybWk/view?usp=sharing

Application of Neural Network as Demodulator of SEFDM Signals
Anastasiia Semenova (St. Petersburg Polytechnic University named after Peter the Great, Russia); Sergey V. Zavjalov (Peter the Great St. Petersburg Polytechnic University, Russia)
https://drive.google.com/file/d/1eb4pBY1WqhwLEy4z7HMwqTslWSAbA6ks/view?usp=sharing

Software implementation of the algorithm for optimal joint estimation and detection of an arbitrary waveform
Nikita Ilchenko (Peter The Great Saint-Petersburg Polytehnic University, Russia); Evgenii Popov (Peter the Great St. Petersburg Polytechnic University, Russia)
https://drive.google.com/file/d/1ZEGtIIHzezNftXv9gspd9NguQ-BUdhbB/view?usp=sharing

13:20 – 13:30 Q&A for Session VII: ZOOM session
https://tuni.zoom.us/j/68926475367?pwd=K3JXd3AyR0JFckdvWWVEcHk0MDlnZz09
Passcode: 414117

13:30 – 15:10

Section VIII: Section II: Signals and PHY II

Electromagnetic waves propagation in low-profile SIW structures
Ekaterina Kiseleva, Artem Galushko and Alexander Sochava (Peter the Great St. Petersburg Polytechnic University, Russia)
https://drive.google.com/file/d/1irgbr-ohgdt2kDeopuY2ajlb8X8Wnuem/view?usp=sharing

Observation interval analysis for Faster-than-Nyquist signals coherent detection with decision feedback
Ilya Lavrenyuk and Sergey B. Makarov (Peter the Great St. Petersburg Polytechnic University, Russia); Wei Xue (Harbin Engineering University, China)
https://drive.google.com/file/d/1jGrp3gKX7jRRgXk-hGnkl2zSn_egiC6x/view?usp=sharing

Section IX: Networks and correspondent issues

Geometrical approach to the plane tessellation in the IEEE 802.11 networks channel planning
Anton Vikulov and Alexander Paramonov (The Bonch-Bruevich Saint-Petersburg State University of Communication, Russia); Tatiana M Tatarnikova (Russian State Hydrometeorological University & State University of Aerospace Instrumentation, Russia)
https://drive.google.com/file/d/1RhcX8WQxd_oWDBqxn6SZh_pEx7aj0aq3/view?usp=sharing

Advancement of fingerprint polarimetric scheme for purposes of authentication
Pavel Trubin, Aleksandr A Murashov and Dmitry Suntsov (Peter the Great St. Petersburg Polytechnic University (SPbPU), Russia); Elena Velichko (Peter the Great St. Petersburg Polytechnic University, Russia)
https://drive.google.com/file/d/1KWPJxVoc5AN-MU5zZqI_LmvASlV0ASJj/view?usp=sharing

Network slice degradation probability as a metric for defining slice performance isolation
Nikita Polyakov (RUDN University, Russia); Natalia Yarkina (Peoples' Friendship University of Russia, Russia); Konstantin Samouylov (Peoples' Friendship University of Russia, Russia)
https://drive.google.com/file/d/1scOYk934ciDWaOSVgI6KNKV4E-7k8nxL/view?usp=sharing

Using a Machine Learning Model for Malicious URL Type Detection
Suet Ping Tung and Ka Yan Wong (HKU School of Professional and Continuing Education, Hong Kong); Ievgeniia Kuzminykh (King's College London, United Kingdom (Great Britain) & Kharkiv National University of Radio Electronics, Ukraine); Taimur Bakhshi (National University of Computer and Emerging Sciences, Pakistan); Bogdan Ghita (University of Plymouth & Centre for Security, Communications, and Network Research, United Kingdom (Great Britain))

Heuristic Design Algorithm for Scheduling of URLLC and eMBB Traffics in 5G Cellular Networks
Jerzy Martyna (Jagiellonian University, Poland)

16:20 – 16:30 Q&A for Sessions VIII and IX: ZOOM session and conference closing remarks
https://tuni.zoom.us/j/69493068923?pwd=bUIwZkRjV0hLK3k1ZE1DWTA2YUdRUT09
Passcode: 463382

Keynote talk
Dr. Evgeny Khorov
Head of the Wireless Networks Lab and the Deputy Director of the Institute for Information Transmission Problems of the Russian Academy of Sciences

Challenges and Open Issues in Wi-Fi 6 and Wi-Fi 7

Abstract

According to the Cisco Visual Networking Index, Wi-Fi is the most popular Internet access technology, which serves over half of global traffic. In the talk, we will focus on the two novel most important standards in the IEEE 802.11 landscape, namely 802.11ax, also known as Wi-Fi 6, which has recently appeared on the market, and 802.11be, or Wi-Fi 7, which is under active development.

We will consider how promising approaches are implemented in the future Wi-Fi standard, what and why is left beyond the scope of the standard, and how the research community can contribute to maximizing user experience in Wi-Fi networks. We discuss the peculiarities of resource allocation in 11ax networks and show how they modify the classical schedulers for wireless networks. We consider how the vision on the interference problem is changed over time and how to manage carrier sensing in dense (or sparse) environments. We demonstrate how Wi-Fi 7 supports emerging real-time applications and which revolutionary novelties of Wi-Fi 7 form a basement for further Wi-Fi evolution.

Bio

EVGENY KHOROV (Senior Member, IEEE) is currently the Head of the Wireless Networks Lab and the Deputy Director of the Institute for Information Transmission Problems of the Russian Academy of Sciences. He has led dozens of national and international projects sponsored by academic funds and industry. Being a voting member of IEEE 802.11, he has contributed to 802.11 standards with many proposals. He has authored more than 100 articles on 5G and beyond wireless systems, next-generation Wi-Fi, protocol design, and QoS-aware cross-layer optimization. He received the Russian Government Award in Science and Technology, several Best Papers Awards, and the Scopus Award Russia 2018. Many times Huawei awarded him as the Best Cooperation Project Leader. He gives tutorials and participates in panels at large IEEE events, chairs TPC of the IEEE GLOBECOM 2018 CA5GS Workshop, IEEE BLACKSEACOM 2019, and the Internet Architecture Board Workshop on Network Quality 2021. He was awarded as the Editor of the Year 2020 of Ad Hoc Networks.