PROGRAM

9-th INTERNATIONAL CONFERENCE

«ENGINEERING & TELECOMMUNICATION − En&T-2022»

The Conference format: online
Working language of the Conference: English

November 23, 2022

10:30-11:00 To register as participant, use **link**

11:00-11:20 Opening Ceremony

Welcome speech by ***Prof. Sergey Garichev, Chairman of the Conference Organizing Committee, Director for Research and Development on Research, Laureate of the Russian Government Prize, MIPT Russia***

Welcome speech by ***Prof. Alexander Dvorkovich, Chairman of the Conference Program Committee, Corresponding Member RAS, MIPT, Russia***

Plenary Session

Moderator: **Prof. Alexander Dvorkovich, Corresponding Member RAS, MIPT, Russia**

11:20-11:50 Semantic Communication for B5G Wireless Networks
Neetesh Purohit, Professor, Indian Institute of Information Technology, Allahabad (IIITA), India

11:50-12:20 The 5G NR MBS Trial in Nanjing
Changyong Pan, Professor, Tsinghua University, China

12:20-12:50 Research Issues in Internet of Things (IoT) Deployments
Vijay Kumar Chaurasiya, Associate Professor, Indian Institute of Information Technology (IIITA), Allahabad, India

12:50-13:20 Integrated Access and Backhaul with Full Duplex Communication
Özgür Gürbüz, Professor, Natural Sciences at Sabanci University, Turkey

13:20-13:35 Application of Model-Based Development and Machine Learning in Designing Software Components for Radars Systems
Nikolai Kapyrin, Assistant Professor, ETCM Exponenta, Russia

13:35-13:55 Discussions

13:55-15:15 **Break**

15:15-18:00 Round-table **«mmWaves and sub-THz ranges in wireless communication: promising applications and coverage problems»**

Moderator:

Vladimir Lyashev, Associate Professor, MIPT, Russia

Novel and prospective wireless communications use higher operational frequencies and wider bands associated with strong signal losses both in the radio channel and inside the antenna hardware. Therefore, more directive antennas are to be used for further capacity enhancement in wireless communication.
Round Table purpose: discuss a way, which helps to resolve the problem of signal losses. There are several ways to solve such problem, i.e. mesh adhoc networks, active antenna arrays, reflective surfacrs and metamaterials utilization. During Round Table, we will discuss such approaches, identify pros and con points, define alternativa methods.

Discussion points:

1. mmWave MIMO system performance under antenna array hardware impairements cosideration.
2. Further antenna array enhancement via lens or metamaterial antenna utilization.
3. IRS as FR2 enabler: does this technology overcomes in-band relay solution?
4. From HBF to Holographic MIMO: what is more practical solution for mmWave coverage enhancement in terms of performance/cost balance?
5. Mesh network as alternative way to IRS approach.
6. Other enablers to increase bandwidth and resulting capacity of wireless channel? Do we need that? What is potential applications for mmWave and sub-THz carriers usage?

Round table language is English

15:15-15:30 Introduction in topic for discussion
Vladimir Lyashev, Associate Professor, MIPT, Russia

15:30-15:45 Reconfigurable-metasurface-based transceiver design for 6G wireless communication
Dmitry Yudin, Assistant Professor at Skolkovo Institute of Science and Technology, Russia

15:45-16:00 Towards Networks with Extremely Low Power Consumption: From Reconfigurable Intelligent Surfaces to Thermal Noise Communication
Ertuğrul Başar, Associate Professor, Koç University, Istanbul, Turkey

16:00-16:15 Microwave and Millimeter-Wave Tunable Antennas for Wireless Communications
Stanislav Glybovski, M. Sc. and Ph.D., ITMO University, Saint Petersburg, Russia

16:15-16:45 Discussion time. **Brief summary**

16:45-17:00 Metasurface-Based Holographic MIMO transceivers for 6G Communications and Sensing
Georgios Alexandropoulos, Professor, Kapodistrian University of Athens (NKUA), Greece

17:00–17:15 mmWave assisted Vehicular Communications
Suneel Yadav, Indian Institute of Information Technology (IIITA), Allahabad, India

17:15-17:45 Discussion time

17:45-18:00 Question Session and Round-table summary

November 24, 2022

9:30-10:00 To register as participant, use **link**

10:00-19:00 **Session 1. Telecommunication technologies and networks**
Session 2. Radio communication and radar systems

Moderator:
Prof. Alexander V. Dvorkovich, MIPT, Russia

Coherent Constant Delay Transceiver for Synchronous Fiber Optic Network
Alexander A. Deev, Andrei A. Kalschikov

Evaluation of the Conditions for Differentiated Servicing of Heterogeneous Traffic of the Surveillance Operator Based on Access Restrictions
Andrabi Umer Mukhtar, Sergey N. Stepanov, Margarita G. Kanishcheva

Coverage and Mobile Performance Field Trials for 5G NR Multicast and Broadcast Services
Zeng Qingjun, Liang Xiangjun, Song Jian, Pan Changyong

Data Transmission and Indoor Accurate Positioning System Based on PLC+VLC
li Dejian, Wu Feng, Hu Yi, Liu Bin, Yang Hui, Pan Changyong

Approach to the Industry Consolidation Level Dynamics Estimation
Shamil M. Gadzhimirzaev, Petr Lukianchenko, Alexander Bugaev, Egor Gorbunov, Ruslan Pashkov, Polina Ilyina

Difference Analysis of DTMB and DTMB-A Terrestrial Broadcasting Coverage in Dili
Mao Ke, Fang Haidong, Pan Changyong, Yang Tao, Chen Ying

Using the LLVM Framework for Static Performance Prediction via Intermediate Representation Embedding Analysis
Roman K. Zavodskikh, Nikolay N. Efanov

Development and Verification of Communication Platform Based on Software Defined Radio
Yongjun Ye, Changyong Pan, Chao Zhang

AoI-based Backpressure Routing Protocol for the Internet of Things
Zhang Hualei, Du Jun, Wang Jintao, Dong Tao, Liu Zhihui

Non-mechanical Steering of GHz Waves by diffraction Grating
Anton S. Usachev, Kirill A. Makhnyr

Low-Complexity Algorithm of DoA Estimation in Automotive Distributed Non-Coherent Multi-Radar Systems
Igor V. Artyukhin, Ilya M. Averin, Alexander G. Flaksman, Alexey E. Rubtsov

Numerical Calculation of Multipolar Coefficients of Active Antennas Far Fields
Vladimir D. Burtsev, Dmitry S. Filonov

Estimation Moment of Atmospheric Reentry of Space Objects by Simulation
Mariya A. Murzova,Vladimir E. Farber, Boris A. Levitan, Sergey A. Topchiev

10:00-19:00 Session 3. Computing systems and data processing

Moderator:

Konstantin A. Vytovtov, Dr. Tech. Sc., Russia

Increasing Efficiency of a Non-inclusive Shared Cache of a Chip Multiprocessor
Yuri A. Nedbailo, Aleksandr V. Surchenko

Efficient and Error-free Information Hiding in the Hybrid Domain of Digital Images Using Metaheuristic Optimization
Anna S. Melman, Oleg O. Evsutin

Investigation of the Security of a CNN for Traffic Sign Recognition to Adversarial Attacks
Denis I. Parfenov, Irina P. Bolodurina, Lyubov S. Grishina, Arthur Yu. Zhigalov, Sergey V. Tolmachev

Reducing Miss Rate in a Non-inclusive Shared Cache of a Chip Multiprocessor
Yuri A. Nedbailo, Alexander V. Surchenko, Ignat N. Bychkov

Group Management of DC Motors in a Robotic System
Daniiar A. Volf, Rinat R. Galin, Saniya B. Galina, Mark V. Mamchenko

Implementation of the NVMe-controller Driver in the Binary Compiler Elbrus-x86
Ekaterina V. Khudiakova, Alexander F. Rozhin

Application of Automatic Code Generation and Fuzzing Technology for C/C++ Library Testing
Tran Chi Thien

10:00-19:00 Session 4. Artificial intelligence systems (AI) in telecommunications

Moderator:

Roman V. Mesheryakov, Dr. Tech. Sc., Professor, Russia

Application of Neural Network Algorithms for Exoskeleton Control Based on the Processing of Low-channel EMG Data and Human Hand Position Data
German A. Karnup, Vladislav O. Naumov, Alexandr Yu. Zalesskiy, Oleg A. Telminov, Evgeniy S. Gornev, Timur Bergaliev

Development and Research of Machine Learning Algorithms for Solving Classification Problem on Twitter Publications
Ivan S. Makarov, Ekaterina R. Bagantsova, Prokhor A. Yashin, Maria D. Kovaleva

Application of Neural Networks to Intellectual Analysis of Ground-Penetrating Radar Data
Roman A. Gorbachev, Mikhail N. Zaripov, Dmitry L. Shishkov, Ekaterina M. Zakharova

Development and Research of a Rigid Algorithm for Analyzing Twitter Publications and its Influence on the Movements of the Cryptocurrency Market
Ivan S. Makarov, Ekaterina R. Bagantsova, Prokhor A. Yashin, Maria D. Kovaleva

Development and Research of an Algorithm for Distinguishing Features in Twitter Publications for a Classification Problem with Known Markup
Ivan S. Makarov, Ekaterina R. Bagantsova, Prokhor A. Yashin, Maria D. Kovaleva, Roman A. Gorbachev

Shallow Neural Network Representation of Polynomials
Aleksandr Beknazaryan

Twitter Bot Detection Through Unsupervised Machine Learning
Wu Jeremy, Eric Teng, Cao Ziyue

19:00 Conference closing