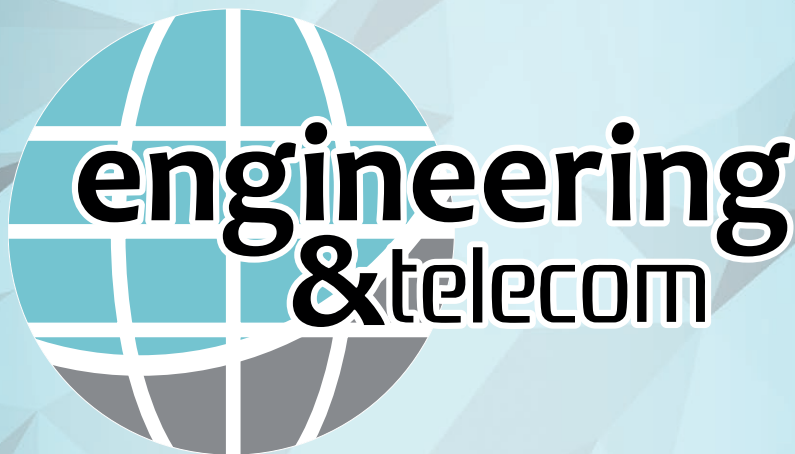


Moscow Institute of Physics and Technology (Russia)
supported by Huawei
Competence Center of Artificial Intelligence
(Russian National Technological Initiative) (Russia)
Institute of Electrical and Electronics Engineers IEEE (USA)
Huawei Technologies Co. Ltd. Company (China)
Tsinghua University (China)
Dalian University of Technology (China)
Indian Institute of Information Technology (India)
Phystech – Union (Russia)



6th International Conference
«**Engineering and Telecommunication —
En&T-2019**»

PROGRAM

November 20–21, 2019

Moscow
MIPT
2019

Campus «FIZTECH. ARCTIC»

10:00-11:00

Registration **1 floor**

Welcome Coffee **4 floor**



The classroom «LECTURE HALL» (4 floor)

11:00-11:10

Opening Ceremony

Welcome speech by *Prof. Sergey Garichev, Chairman of the Conference Organizing Committee, Vice-Rector MIPT on Research and Developments, Laureate of the Russian Government Prize, Russia*

11:10-11:20

Welcome speech by *Prof. Alexander Dvorkovich, Chairman of the Conference Program Committee, RAS Corresponding Member, Director of Phys tech -School of Radio Engineering and Computer Science, Russia*

Plenary Session

Moderator:

Prof. Andrei Tchernykh, CICESE Research Center, Mexico

11:20-11:45

Prof. Andrei Tchernykh, CICESE Research Center, Ensenada, Baja California, México

Cloud data storage: can we counteract to technogenic and cyber threats that are difficult or impossible to anticipate and manage proactively

11:45-12:10

Prof. Jin Minglu, Prof., Dalian University of Technology, China

Interference Benefits for Physical Layer Security

12:10-12:35

Prof. Dr. Hermann Rohling, Hamburg University of Technology, Germany

Automotive radar history and technical challenges

12:35-13:00

Prof. Changyong Pan, Tsinghua University, China

Technology and Application of Terrestrial Digital TV broadcasting

13:00-14:30

Lunch break



10:00-14:30

NOVEMBER 20, 2019

14:30-18:30

Round-table «AI in Telecommunications»

Moderators:

Prof. Uma Shanker Tiwary, Indian Institute of Information Technology, India

Prof. Mikhail Burtsev, Head of Neural Systems and Deep Learning Laboratory, MIPT, Russia

The purpose of the round table is to figure out the modern state and perspectives of AI concept for application in telecommunication domain development; what is the performance bound of an End-to-End (E2E) communication system; advantage of reinforcement learning and meta-learning utilization for complicated optimization problems in LowMAC and RRM layer solution; evaluate opportunity of NLP concept embedding into information theory for telecommunication systems enhancements.

16:00-16:30

Coffee-break



18:30-20:00

Cheese & Wine



14:30-20:00

Campus «FIZTECH. ARCTIC»

The classroom 4.18 – 4.19

10:00-19:00

Session 1. Telecommunication Technologies and IT

Moderators:

Prof. Alexander V. Dvorkovich, MIPT, Russia

Prof. Jian Song, Tsinghua University, China

Data Rate and Remaining Power Based Multi-hop Routing Protocol

Francois Xavier Habinshuti, Ernest Mugisha, Emmanuel Mudaheranwa, Innocent Hakuzwimana

Multipath Redundant Transmissions of Critical to Delays Packets Based on UDP Protocol

Ilya I. Noskov, Vladimir A. Bogatyrev

Full-duplex MAC Protocol Design and Analysis

Ozgur Gurbuz

An Architecture Model for Active Cyber Attacks on Intelligence Info-communication Systems: Application Based on Advance System Encryption (AES-512) Using Pre-Encrypted Search Table and Pseudo-Random Functions (PRFs)

Alexey. N. Nazarov, Alireza Nik Aein Koupaei

Development of the Method for Reducing Distortions Associated With the Parasitic Third Harmonic of Voltage Frequency of the Electrical Network

Evgeni M. Portnov, Aung Kyaw Myo, Andrey A. Anisimov

Scheduling of Dedicated and Shared Links for Fast and Reliable Data Delivery in IEEE 802.15.4 TSCN Networks

Evgeny M. Khorov, Andrey I. Lyakhov, Ruslan R. Yusupov

Parametrized Autoregressive Channel Prediction Algorithm for Moving LTE Users

Vitaliy V. Kuptsov, Oleg A. Shmonin, Sergey N. Trushkov, Anastasia S. Mikhailova

On the Error Floor of the Code-Candidate for CCSDS standard

Luiza R. Medova, Pavel S. Rybin, Ivan V. Filatov

Model of the trust for encryption in a multithreaded system

Alexander I. Kolybelnikov

Radio Signals Based 3D Orientation Estimation of a Smartphone in Massive MIMO networks

Aleksei V. Fedorov, Galina Yu. Sidorenko, Haibo Zhang

Study of channel response estimation method based on theory of optimum noise immunity

Tran Thi Hong Tham, Mikhail N. Prokopchuk, Alexander V. Dvorkovich

Results of the DTMB-A Field Trials in Hong Kong

Changyong Pan, Chao Zhang, Hui Yang, Jintao Wang, Xunchun Li

The Modified Traditional Motion Compensation Method in Video Compression Applications

Alexander V. Dvorkovich, Dam Trong Nam, Gennady Yu. Gryzov, Viktor P. Dvorkovich

Error Decoding Probability of Multicomponent Codes

Kien V. Vu, Nina I. Pilipchuk

Low-Speed Vocoder with Noise Filtration

Ivan A. Beskrovnyi, Aleksandr V. Ivchenko, Pavel A. Kononyuk, Liubov A. Antufrieva, Alexander V. Dvorkovich

Wireless Self-Organizing Wi-Fi and Bluetooth based Network for Internet Of Things

Margarita V. Ushakova, Yury A. Ushakov, Petr N. Polezhaev, Alexandr Y. Shukhman

Protocol for Secure and Reliable Data Transmission in MANET based on Modular Arithmetic

Maxim A. Deryabin, Mikhail G. Babenko, Anton S. Nazarov, Nikolay N. Kucherov, Aleksander A. Karachevtsev, Arseny S. Glotov, Irina S. Vashchenko

Wireless Sensor Networks for Agriculture Systems

Igor M. Sorokin

Investigation of the Method for Identifying Cyberattacks Based on Analysis of the State of Network Nodes

Lubov S. Zabrodina, Denis I. Parfenov, Irina P. Bolodurina, Arthur Yu. Zhigalov, Vadim A. Torchin, Anton I. Parfenov

Development of bank filters for Multi-Carrier Modulation FBMC

Konstantin K. Yansitov, Vladimir A. Irtuga, Alexander V. Dvorkovich

Single-Channel 8K Ultra-high Definition Digital Television Transmission Using Polarization Diversity

Changyong Pan, Chao Zhang, Hui Yang, Jintao Wang, Xunchun Li

Research of a new algorithm of acceleration of fractal images compression

Do Ngoc Diep, Nikolay B. Novinsky

On confidentiality in storage systems with locality and availability

Stanislav A. Kruglik, Kamilla N. Nazirkhanova, Alexey A. Frolov

The classroom 4.24

10:00-19:00

Session 2. Radio Communication and Radar Systems

Moderators:

Prof. **Sergey P. Skobelev**, PJSC «Radiophysics», Russia

Igor V. Zimin, MIPT, Russia

A Family of Optimal Windows for Harmonic Analysis with Arbitrary Falloff Rate of Spectrum Sidelob

Gennady V. Zaytsev, Alexander D. Khzmalyan

FPGA Implementation of High-Performance DOA Estimation using Uniform Circular Array
Van-Nghia Tran, Tang-Cuong Nguyen

Analytical Model of Fabry-Perot Resonator Filled With Stratified Gyrotropic Material for Microwave and Optical Communication Systems
Konstantin A. Vytovtov, Elizaveta A. Barabanova, Vladimir M. Vishnevskiy

Characteristics of a Periodic Structure of Absorbing Black Holes Arranged on a Perfectly Conducting Screen
Yana I. Chizhevskaya, Olga N. Smolnikova, Sergei P. Skobelev

Modification of the Method of Auxiliary Sources in Two-Dimensional Problems of Electromagnetic Scattering by thin Perfectly Conducting Screens
Sergei P. Skobelev, Dmitry A. Borisov

Fuzzy Logic Algorithms for Target Classification in Radar Observations
Ivan S. Vylegzhanin, Boris M. Vovshin, Olga V. Vylegzhanina, Alexander A. Pushkov

Optimal Ratio of Array Spacing and Reflector Focal Length in Array Fed Reflector Antenna
Vladislav V. Gavrilin, Alexander V. Shishlov, Yuriy V. Krivosheev

Studies of the Electrodynamic Parameters of a Powdered Material Depending on the Fractional Composition in the Frequency Range of 8-12 GHz
Maksim G. Vakhitov, Denis S. Klygach, Vladimir E. Zhivulin, Denis A. Vinnik

Ku/Ka-Band Antenna Terminals for Satellite Communications
Alexander V. Shishlov, Irina L. Vilenko, Vladimir V. Denisenko, Igor V. Zimin, Viktor I. Klassen

Maximum Eigenvalue and Energy Combined Spectrum Sensing Algorithm
Wenjing Zhao, He Li, Minglu Jin, Sang-Jo Yoo

Adaptive Clutter Protection of Impulse Radars
Ivan S. Vylegzhanin, Boris M. Vovshin, Danila S. Gavrilov

Printed Emitters with Distributed Excitation
Dmitry I. Voskresenskiy, Elena V. Ovchinnikova, Dinh To Nguyen, Svetlana G. Kondratyeva, Pavel A. Shmachilin

Research of Informativeness of Polarization Attributes for Classification of Objects of Observation
Artyom A. Kopylov, Igor V. Zimin

Design of a model of a radar objects movement for solving the classification problem using ISAR
Evgeny G. Parinov, Igor V. Zimin

Determination of the Interfering signal field strength near the TV receiver
Vladislav F. Petuhov, Alexander V. Dvorkovich, Alexander V. Ivchenko

Using Inverse Aperture Synthesis for Side-View Space Radars Testing
Denis V. Orlov, Alexander I. Kovalenko

Analysis, Modeling and Modification of a Wideband Horn Antenna with a Skate Transition
Sergey A. Fedorov, Mikhail I. Kuptsov, Ivan M. Kuptsov

Optical plasmon sensor based on ellipsoidal semiconductor nanoparticles

Valery A. Astapenko, Sergey V. Sakhno, Egor S. Khramov, Andrey V. Yakovets, Evgeniya V. Sakhno, Egor S. Manuilovich

The Use of Up-to-Date Technologies in Designing and Development of a Modem for a New-Generation Satellite Communication Terminal

Vladimir I. Durnev, Igor V. Zimin, Natalya V. Subbotina, Yury N. Chekushkin, Aram A. Khachatryan

Artificial Neural Networks in Digital Antenna Arrays

Svetlana G. Kondratieva, Elena V. Ovchinnikova, Pavel A. Shmachilin, Natalia P. Anosova

The classroom 4.25

10:00-19:00

Session 2. Radio Communication and Radar Systems

Moderators:

Prof. Vladimir E. Farber, PJSC «Radiophysics», Russia

Dmitry D. Stupin, MIPT, Russia

Application of Dipole Antennas for Perspective Vehicle–Board Systems and Complexes

Elchin V. Gadzhiev, Alexander G. Generalov, Mirzabek R. Salikhov, Vladimir O. Skripachev, Evgeniy V. Okunev, Alexander O. Zhukov

New Opportunities for the Development of Power Supplies for Autonomous Fuel Cell Based Radio Repeaters

Aleksandr V. Pilipenko

Antenna Configuration Restrictions for MIMO Radar Influenced by Ground Reflections

Victor T. Ermolayev, Alexander G. Flaksman, Oleg A. Shmonin

Development of Effective Anti-Interference Primary Signal Processing for mm-Wave Automotive Radar

Igor V. Artyukhin, Viktor T. Ermolaev, Alexander G. Flaksman, Alexey E. Rubtsov, Oleg A. Shmonin

Virtual and Physical Testing of Advanced Driver Assistance Systems with Soft Targets

Andrey M. Ivanov, Sergey S. Shadrin, Nikolay V. Popov, Vitaliy V. Gaevskiy, Sergey R. Kristalnyi

Relative Mutual Positioning Using Smartphones

Roman S. Kulikov, Alexander A. Chugunov, Anna Yu. Sizyakova, Elena V. Zakharova

Development of the Automotive Radar for the Systems of Adaptive Cruise Control and Automatic Emergency Breaking

Vladimir N. Burov, Andrey A. Kuzin, Alexander V. Myakinkov, Anatoly D. Pluzhnikov, Alexander G. Ryndyk, Roman S. Fadeev, Semen A. Shabalin, Petr S. Rogov

The problem of transition from car radar sensors to an all-weather radar vision system

Andrey E. Ananenkov, Dmitry V. Marin, Vladimir M. Nujdin, Pavel V. Sokolov, Victor B. Schneider

LIDAR developments of IAO SB RAS for aerosol atmospheric research

Pavel A. Babushkin

10:00-19:00

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Control System for Assessing Reliability Functioning of the Complex Radio Electronic Equipment Using Machine Learning Methods

Ivan A. Kalinov, Azret A. Kochkarov, Victoria M. Antoshina

Microelectronic Aerological Radar MARL-A Based on Active Phased Array

Alexander V. Kochin

The specific of 3D passive radars sensing alive and non-alive objects

Igor Sidorov, Alexandr Gudkov, Eugenij Novichikhin, Alexey Taradin, Roland Haarbrink, Chizhikov Sergey

The Process Noise Model of Kalman Filter for Chirp Radar

Mariya A. Murzova

Efficient echo cancellation in single carrier duplex satellite systems

Sergey V. Dushin, Sergey S. Shavrin

About Precision of Underwater Vehicles Location Using Underwater Acoustic Modems

Sergey Yu. Kulik, Aleksandr Yu. Rodionov, Fedor S. Dubrovin, Petr P. Unru, Oleg S. Mikhailenko

Massive MIMO System Performance in Asymptotically Full-Diversity-Gain and Degeneration Regimes for Rayleigh Max/Min-semicorrelated Channel Models

Aleksey S. Gvozdarev, Tatiana K. Artemova

Modernized method of processing low-based LFM signal burst

Nikita S. Kuznetsov, Leonid V. Shchelkun

Phase-Code Shift Keyed Probing Signals with Discrete Linear Frequency Modulation and Zero Autocorrelation Zone

Roman N. Ipanov, Aleksey A. Komarov, Anna P. Klimova

Detection of Spoofing Interference, Which Affects the Operation of Consumers Navigation Equipment of Satellite Radio Navigation Systems, with the Assistance of Inertial Navigation Systems Signals on Aircraft

Dao Hung Cuong, Dmitry D. Stupin, Roman A. Shevchenko

Potential Accuracy in Estimating Surface Roughness Heights for a Safe Helicopter Landing System

Aleksey A. Komarov, Anna P. Klimova

Approximate Analytical Methods of Calculation for Spatial Position of Objects Concerning Terrestrial Ellipsoid

Artem L. Zharin, Andrey E. Egorov

The classroom 510

10:00-19:00

Session 3. Computing Technologies and Systems

Moderators:

Prof. Andrei Tchernykh, CICESE Research Center, Mexico

Prof. Ignat N. Bichkov, PJSC «INEUM named after I.S. Brook», JSC «MCST», Russia

High-Quality 3D Medical Imaging by Wavelet Filters with Reduced Coefficients Bit-Width
Nikolai I. Chervyakov, Pavel A. Lyakhov, Nikolai N. Nagornov, Maria V. Valueva

Method of Cleaning Video from Impulse Noise
Nikolai I. Chervyakov, Pavel A. Lyakhov, Anzor R. Orazaev, Maria V. Valueva

Algorithm for Searching and Ranking Weakly Structured Information Using the Simulated Annealing Method
Artem I. Kvach, Evgeny M. Portnov, Sergei V. Tsybalov

About the Problem of Using Specialized Computing Algorithms, Based on Delta-Transformations on the Iterative Solution of Linear Systems
Lubov V. Pirskaya

Using the EM-algorithm to Approximate the Distribution of a Mixture by Hyperexponents
Marina A. Buranova, Dinara R. Ergasheva, Vyacheslav G. Kartashevskiy

The Accuracy Estimation of the Interval-Positional Characteristic in Residue Number System
Mikhail G. Babenko, Maxim A. Deryabin, Andrei N. Tchernykh

Mathematical Basis of Self-Healing Computing
Sergei A. Petrenko, Dmitry D. Stupin, Alexey S. Petrenko

Using of FEC and Interleaving at Link Layer
Alexander V. Ivchenko, Pavel A. Kononyuk, Vladislav F. Petuhov, Alexander V. Dvorkovich

Simulation-Based Capacity Analysis of Circle Metro Lines
Nikolay A. Kuznetsov, Konstantin V. Semenikhin, Denis S. Fomichev

A Multi-Functional Method of QR Code Used During the Process of Indoor Navigation
Daria V. Mamaeva, Mikhail A. Afanasev, Vitaliy S. Bakshaev, Mark S. Kliachin

WebRTC Quality Improvement in the Learning Multipoint Video Conference
Yuri A. Ushakov, Petr N. Polezhaev, Andrey L. Konnov, Margarita V. Ushakova, Alexander E. Shukhman

Avoiding Common Scalability Pitfalls Inshared-Cache Chip Multiprocessor Design
Yuri A. Nedbailo

Efficient Implementation of Cryptography on Points of an Elliptic Curve in Residue Number System
Mikhail G. Babenko, Aziz S. Redvanov, Maxim A. Deryabin, Nikolay I. Chervyakov, Anton S. Nazarov, Safwat Chiad Al-Galda, Irina S. Vashchenko, Inna V. Dvoryaninova, Elena V. Nepretimova

Statistical compaction of a monitoring cloud cluster resource when processing streaming service
Alexey N. Nazarov, Artem K. Sychev, Alireza Nik Aein Koupaei, Sanjeev Kumar Ojha, Himanshu Rai

The Dirichlet-Dirichlet Domain Decomposition with QTT for Numerical Solving Differential Equations
Larisa B. Markeeva, Ivan V. Tsybulin, Ivan V. Oseledets

Overview of Features and Possibilities of Using Modern Videogrammetry Methods
Vsevolod M. Sergeev, Konstantin K. Yansitov, Mikhail N. Prokopchuk

Developing a New Type of Digital Signature Schemebased on RSA Problem
Hiep Pham Van, Dung Luu Hong, Thang Vu Viet

Optimization of Model Parameters by Complex Probabilistic Criteria
Pham T. A., Nguyen Quang Thuong, Bui Tr.A., Nguyen V. T., Fedor F. Pashchenko, Alexander F. Pashchenko

The classroom «LECTURE HALL»

10:00-19:00

Session 4. Artificial Intelligence Systems

Moderators:

Prof. **Prithish Varadwaj**, Indian Institute of Information Technology, India

Prof. **Uma Shanker Tiwary**, Indian Institute of Information Technology, India

GaborNet: Gabor filters with learnable parameters in deep convolutional neural network
Andrey S. Alekseev, Anatoly S. Bobe

Roadside Parking Space Search and Assistance System for Modern Cities
Aneesh Epari, Vijay K. Chaurasiya, Shishupal Kumar

Classification of Wafer Maps Defect Based on Deep Learning Methods with Small Amount of Data

Maksim Kudrov, Kirill Bukharov, Nikita Grishin, Alexander Bazzaeov, Arina Lozhkina, Vladislav Semenkin, Eduard Zakharov, Daniil Makhotkin, Nikolay Krivoshein

Portal: A User-friendly Environment for BCI Models Training

Anatoly S. Bobe, Grigory V. Rashkov, Maria V. Komarova, Dmitry V. Fastovets

Cascade Multi-Scale Object Detection on High-Resolution Images

Alexey Yu. Novoselov, Oleg N. Dyakov, Igor S. Kostromin, Dmitry A. Pogibelskiy

Detection of Streaks of Faint Space Objects

Nikita R. Berenkov

Researching of the quickest algorithms for changepoint detection in Hidden Markov Model
Valentin S. Spivak

Parkinson's Disease Recognition using Gauss Map based Chaotic Particle Swarm-Neural Network

Hasan Koyuncu

Development of Quantitative Criteria for Determining the Fault Tolerance of Memristors, Neurons, and Neural networks Based on Them

Sergey N. Danilin, Sergey A. Shchanikov, Ilya A. Bordanov, Anton D. Zuev, Sergey V. Pantelev

Analysis of Approaches to the Universal Approximation of a Continuous Function Using Kolmogorov's Superposition

Andrey Yu. Gorchakov, Vyacheslav K. Mozolenko

NLP Methods for Automatic Candidate's CV Segmentation

Maria I. Tikhonova, Anastasia Y. Gavrishchuk

Development of a Hardware-in-the-loop Simulation System for Memristor-based Artificial Neural Networks

Sergey A. Shchanikov, Ilya A. Bordanov, Sergey N. Danilin

10:00-19:00

NOVEMBER 21, 2019

10:00-19:00

Hypersonic Vehicle Trajectory Classification Using Convolutional Neural Network
Nikolay E. Gaiduchenko, Pavel A. Gritsyk

Algorithms for Fault-tolerant tuning Memristor-Based Synapses of Artificial Neural Networks
Sergey A. Shchanikov, Ilya A. Bordanov, Anton D. Zuev, Sergey N. Danilin

Data Collection and Processing System
Do H. H., Fedor F. Pashchenko

Statistical Synthesis of the Principle of Rational Organization of a Complex Technical System
Vladimir M. Balyk, Elena V. Balyk, Nguyen Quang Thuong

Method of Combining the Synthesis of Program Control with Homing Methods for the Problem of UAV's Control in Conditions of Multifactorial Uncertainty
Nguyen Quang Thuong

Use of a Neurofilter to Extract a Periodic Signal from Noise
Alexander A. Yakushev, Nikolay L. Dembitsky

JP Morgan stock price prediction using machine analysis of news text
Artem A. Solomatin

Social Media Analytics for Better Detection of Fraudulent Applications for Online Micro-finance Loans
Valentina Yu. Kuznetsova, Iskandar M. Azhmukhamedov, Oleg M. Protalinskiy

Using of neural networks to predict the exchange rate
Bui Tr. A., Pham T. A., Do H. H., Fedor F. Pashchenko, Larisa F. Ereemeeva

Palletizing for Full-Automated Warehouses on the Genetics Algorithm Base
Alexander A. Gilya-Zetinov, Darya D. Demianova, Alexander V. Khelvas

11:30-12:30
Coffee break

13:00-14:30
Lunch break

16:00-16:30
Coffee break

19:00
Conference closing

