

Union of Electronics, Electrical Engineering and Telecommunications (CEEC)
Federation of the Scientific-Technical Unions in Bulgaria (FNTS)
Ministry of Transport and Communications
Communications Regulation Commission
Union of Scientists in Bulgaria
Technical University of Sofia
Faculty of Telecommunications - TUS
IEEE Bulgarian Section

**31st NATIONAL CONFERENCE
WITH INTERNATIONAL PARTICIPATION**

TELECOM 2023

THE WAYS TO CONNECT THE FUTURE



P R O G R A M M E

16 - 17 November 2023
*National Science and Technical Centre,
108 Rakovsky St. – Sofia*
&
Virtual room

TELECOM 2023

is technically co-sponsored by IEEE:

**2023 31st National Conference with
International Participation - #59629**

General partners:



A1 Bulgaria EAD



Huawei Technologies Bulgaria Ltd



Infopulse Bulgaria EOOD

The conference is organized

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VDE

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Telecom 2023 Sessions Timetable

<i>Date</i>	<i>Time</i>	<i>Sessions</i>
Wednesday 15.11.2023	16.00-17.00	Registration of participants & test the system (Virtual Room 1) Meeting ID: 886 1960 4478, Passcode: 290395 Zoom Platform (Phone: +359 2 987 97 67, Mail: ceec@mail.bg)

Thursday 16.11.2023	Exhibition – Infopulse Bulgaria EOOD, Hall 4	
	10.00 – 12.45	Plenary Session 1, Hall 4 & Virtual Room 2 Meeting ID: 813 6764 8808, Passcode: 339781
		Chairmen: Assoc. Prof. Kamen Rangelov, PhD Prof. Seferin Mirtchev, DSc
		Greetings
		Presentations: 1. CRC, 2. ATI, 3. A1, 4. Huawei, 5. Infopulse, 6. Electron progress
	13.15 - 14.00	Plenary Session 2, Hall 4 & Virtual Room 2 Meeting ID: 813 6764 8808, Passcode: 339781
		Chairman: Prof. Seferin Mirtchev, DSc
		Presentations: 7. Ivan Ganchev - invited paper, 8. Kamen Rangelov
	14.15 – 15.30	Section Session 1, Hall 4 & Virtual Room 2 Meeting ID: 813 6764 8808, Passcode: 339781
		TELECOMMUNICATIONS NETWORKS AND SERVICES.
		Chairman: Prof. Elena Shoikova, DSc
		Presentations: Papers 1.1, 1.2, 1.3.,1.4, 1.5
	15.45 – 17.15	Section Session 2, Hall 4 & Virtual Room 2 Meeting ID: 813 6764 8808, Passcode: 339781
		RESEARCH/EDUCATION METHODOLOGIES IN ICT.
		Chairman: Assoc. Prof. Rositsa Goleva, PhD
		Presentations: Papers 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7
	17.30 – 18.30	Discussion, Hall 4 & Virtual Room 2 Meeting ID: 813 6764 8808, Passcode: 339781
		EDUCATION ON TELECOMMUNICATION, INFORMATION TECHNOLOGY AND BUSINESS NEEDS.
		Chairmen: Assoc. Prof. Kamen Rangelov, PhD, Prof. Seferin Mirtchev, DSc, Assoc. Prof. Dimitar Arnaudov, PhD
	18.30 – 20.00	Informal meeting forum - Cocktail – Hall 4

<i>Date</i>	<i>Time</i>	<i>Sessions</i>
Friday 17.11.2023	08.30 – 09.20	<p>Section Session 3, Hall 4 & Virtual Room 3 Meeting ID: 897 7114 5542, Passcode: 584890</p> <p style="text-align: center;">WIRELESS SYSTEMS – 5G, 6G. MOBILE AND SATELLITE COMMUNICATIONS.</p> <p style="text-align: center;">Chairman: Eng. Stefan Patchedjiev, PhD</p> <p style="text-align: center;">Presentations: Papers 3.1, 3.2, 3.3,.3.4</p>
	09.30 – 10.30	<p>Section Session 4, Hall 4 & Virtual Room 3 Meeting ID: 897 7114 5542, Passcode: 584890</p> <p style="text-align: center;">COMMUNICATION TECHNOLOGY IN INTELLIGENT TRANSPORT SYSTEMS.</p> <p style="text-align: center;">Assoc. Prof. Georgy Petrov, PhD</p> <p style="text-align: center;">Presentations: Papers 4.1, 4.2, 4.3,.4.4, 4.5</p>
	10.40 – 12.30	<p>Section Session 5, Hall 4 & Virtual Room 3 Meeting ID: 897 7114 5542, Passcode: 584890</p> <p style="text-align: center;">INTERNET OF THINGS (IoT). SMART HOME AND CITIES. EHEALTH. BETTER LIVING WITH ICT.</p> <p style="text-align: center;">Chairman: Assoc. Prof. Dimitar Arnaudov, PhD Prof. Ivan Kurtev, PhD</p> <p style="text-align: center;">Presentations: Papers 5.1, 5.2, 5.3,.5.4, 5.5, 5.6, 5.7, 5.8, 5.9</p>
	13.00 – 15.00	<p>Section Session 6 Hall 4 & Virtual Room 3 Meeting ID: 897 7114 5542, Passcode: 584890</p> <p style="text-align: center;">E-GOVERNMENT. NETWORK SECURITY. CLOUD COMPUTING.</p> <p style="text-align: center;">Chairman: Assoc. Prof. Ivan Nedyalkov, PhD, Eng. Stefan Patchedjiev, PhD</p> <p style="text-align: center;">Presentations: Papers 6.1, 6.2, 6.3,.6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10</p>
	15.15 – 16.45	<p>Section Session 7, Hall 4 & Virtual Room 3 Meeting ID: 897 7114 5542, Passcode: 584890</p> <p style="text-align: center;">SIGNALS AND SYSTEMS. IMAGE PROCESSING. EDUCATION METHODOLOGIES IN ICT.</p> <p style="text-align: center;">Chairman: Prof. Seferin Mirtchev, DSc Assoc. Prof. Georgy Petrov, PhD</p> <p style="text-align: center;">Presentations: Papers 7.1, 7.2, 7.3,.7.4, 7.5, 7.6</p>
	16.55	<p style="text-align: center;">Closing of the Conference, hall 4 & Virtual Room 3 Meeting ID: 897 7114 5542, Passcode: 584890</p>
		Prof. Seferin Mirtchev, DSc

CONFERENCE PROGRAMME

Wednesday,
16.00 – 17.00
15.11.2023 г.

Registration of participants & test the system, Zoom Platform
([Virtual Room 1](#)) Meeting ID: 886 1960 4478, Passcode: 290395

Thursday,
16.11.2023 г.

NATIONAL SCIENCE AND TECHNICAL CENTRE
Hall 4 & [Virtual Room 2](#) Meeting ID: 813 6764 8808, Passcode: 339781

EXHIBITION – INFOPULSE BULGARIA EOOD, Hall 4

10.00 – 12.30
16.11.2023 г.

Plenary Session 1, Hall 4 & [Virtual Room 2](#)
Meeting ID: 813 6764 8808, Passcode: 339781
Conference Opening, Greetings
Chairmen: Assoc. Prof. Kamen Rangelov, PhD
Prof. Seferin Mirtchev, DSc

1. „Introduction and development of 5G and 6G networks - radio monitoring and message control.”
Tinka Kapitanova - Chief Director of the Main Directorate "Monitoring and Control of Messages"
Communications Regulation Commission
Valentina Velkova - Head of the "Terrestrial Networks" Department in the "Limited Resource Management" Directorate, *Communications Regulation Commission*
2. „The role of the Gigabit Infrastructure Act for Europe's connectivity”
Andreana Atanasova - Chairperson of the Managing Board
Alliance of the Technology Industry (ATI)
3. „AI 5G Network and Innovation”
Alexandar Puntchev
AI Bulgaria EAD
4. **Ivan Ivanov** - Manager,
Huawei Technologies Bulgaria Ltd
5. „Digital Transformation in the Telecoms Industry”
Mykola Kozlenko - Delivery manager Infopulse company (Telco Expert)
Infopulse Bulgaria EOOD
6. "Challenges to the construction of mobile communication-information and command nodes"
Eng. Miroslav Dimitrov -
Electron progress EAD
- 12.30 – 13.00 **Lunch Break**
- 13.00 – 14.00 **Plenary Session 2, Hall 4 & [Virtual Room 2](#)**
Meeting ID: 813 6764 8808, Passcode: 339781
16.11.2023 г. Chairman: Prof. Seferin Mirtchev, DSc
7. „Hot Access network Change (HAC) facilitated by 3P-AAA and 3P-C&B” - invited paper
Ivan Ganchev - University of Plovdiv “Paisii Hilendarski”, Plovdiv; Institute of Mathematics and Informatics – Bulgarian Academy of Sciences, Sofia; Telecommunications Research Centre (TRC), University of Limerick, Limerick,
8. “Notes on Telecommunications – 2023”
Kamen Rangelov – CEEC

14.15 – 15.30 **Section Session 1, Hall 4 & [Virtual Room 2](#)**
Meeting ID: 813 6764 8808, Passcode: 339781
16.11.2023 г. **TELECOMMUNICATIONS NETWORKS AND SERVICES.**
Chairman: Prof. Elena Shoikova, DSc

1.1 Design and Optimization of Wireless Sensor Network Based on RP2040 and ESP8266
Milen Todorov

1.2 Implementation of an Agile SDLC CI/CD Pipeline for Managing a SDN VXLAN-EVPN fabric
Spas Georgiev, Kamelia Nikolova

1.3 Cloud and Edge Computing Architectures: A Survey
Hasnae Nouhas, Abdessamad Belangour, Mahmoud Nassar

1.4 A Universal Interpersonal Communication Application (UICA) Prototyping
Lazar Pendov

1.5 A Review of Brain-Computer Interfaces and their Applications
Aleksandar Ivanov

15.45 – 17.15 **Section Session 2, Hall 4 & [Virtual Room 2](#)**
Meeting ID: 813 6764 8808, Passcode: 339781
16.11.2023 г. **RESEARCH/EDUCATION METHODOLOGIES IN ICT.**
Chairman: Assoc. Prof. Rositsa Goleva, PhD

2.1 Manipulator with Parallel Kinematics for Teaching Robotics
Yassen Gorbounov, Yosif Bekyarov, Hao Chen, Nikolay Lakov

2.2 Robotics in Education: A Comparative Analysis of Robotic Platforms Across Educational Levels
Georgi Georgiev, Georgi Hristov, Plamen Zahariev, Diyana Kinaneva

2.3 A Chat Client-Server Application for E-learning
Serafeim A. Triantafyllou

2.4 Understanding Student Motivation in Digital Education
Nikolay Nikolov

2.5 Image Processing Methods for Microorganisms. Laboratory Assignment
Georgi Todorov, Lilyana Docheva, Ivo Dochev, Stoycho Manev

2.6 Using Python for Development of an Application for Building and Experimenting with GPSS Simulation Models
Aleksandar Hristov

2.7 Vision and Control Capabilities of Autonomous Systems with the Kria Adaptive System-on-Modules
Yassen Gorbounov, Petar Peychinov

Discussion, Hall 4 & [Virtual Room 2](#)

Meeting ID: 813 6764 8808, Passcode: 339781

17.30 – 18.30

EDUCATION ON TELECOMMUNICATION, INFORMATION TECHNOLOGY AND BUSINESS NEEDS.

16.11.2023 г.

Chairmen: Assoc. Prof. Kamen Rangelov, PhD,
Prof. Seferin Mirtchev, DSc,
Assoc. Prof. Dimitar Arnaudov, PhD

**Friday,
17.11.2023 г.**

[NATIONAL SCIENCE AND TECHNICAL CENTRE](#)

Hall 4 & [Virtual Room 3](#) Meeting ID: 897 7114 5542, Passcode: 584890

08.30 – 09.20

Section Session 3, Hall 4 & [Virtual Room 3](#)

Meeting ID: 897 7114 5542, Passcode: 584890

17.11.2023 г.

WIRELESS SYSTEMS – 5G, 6G. MOBILE AND SATELLITE COMMUNICATIONS.

Chairman: Eng. Stefan Patchedjiev, PhD

3.1 Prediction of Radio Wave Attenuation due to Clouds by using Support Vector Machine Model

Hitesh Singh, Vivek Kumar, **Boncho Bonev**, Kumud Saxena, Vinod M Kapse, Ramjee Prasad

3.2 Prediction of Radio Wave Attenuation due to Rain by SVM

Vivek Kumar, Hitesh Singh, Kumud Saxena, **Boncho Bonev**, Vinod M Kapse, Ramjee Prasad

3.3 Neural Network Architecture to Predict Radio Wave Attenuation in a 5G Network

Rosen Pasarelski, **Georgi Petrov**, Teodora Pasarelska, Krasen Angelov

3.4 Life Cycle Evaluation of Photovoltaic Panels

Plamen Stanchev, Gergana Vacheva, **Nikolay Hinov**, Dardan Klimenta

09.30 – 10.30

Section Session 4, Hall 4 & [Virtual Room 3](#)

Meeting ID: 897 7114 5542, Passcode: 584890

17.11.2023 г.

COMMUNICATION TECHNOLOGY IN INTELLIGENT TRANSPORT SYSTEMS.

Chairman: Assoc. Prof. Georgi Petrov, PhD

4.1 On the Capacity of Vehicular Communication Systems

Paschalis Sofotasios, Seong Ki Yoo, Nidhi Simmons, Simon Cotton, Mikko Valkama

4.2 Road Traffic Analysis for Management of the Intelligent Transport System

Rosen Miletiev, Ilian Damyanov, Rumens Yordanov

4.3 Dynamic Model and Adaptive Velocity Control of a Robotic Walker for Motion Support

Plamen Petrov, Ivan Kralov

4.4 Development of a Mobile Autonomous Chassis for Studying Grassland Areas by Using Thermal Cameras

Iliyan Damyanov, Durhan Saliev, Rosen Miletiev, **Kalin Dimitrov**

4.5 Prediction of Motion Trajectory of a Moving Object

Ventsislav Nikolov, Ivo Rakitin

Section Session 5, Hall 4 & [Virtual Room 3](#)

Meeting ID: 897 7114 5542, Passcode: 584890

10.40 – 12.30

17.11.2023 г.

**INTERNET OF THINGS (IoT). SMART HOME AND CITIES.
EHEALTH. BETTER LIVING WITH ICT.**

Chairmen: Assoc. Prof. Dimitar Arnaudov, PhD,
Prof. Ivan Kurtev, PhD

- 5.1 Enabling Cybersecurity Mechanisms in a SmartPatch-Based Emergency Response System**
Magdalena Kostoska, **Vladimir Trajkovik**, Bojana Koteska, Nevena Ackovska, Fedor Lehocki,
Ana Madevska Bogdanova
- 5.2 Integrated Process Management Environment for Educational Institutions**
Georgi Kolev, **Elena Koleva**
- 5.3 Developing and experimenting simulation model of DDoS attacks in IIoT networks using Python**
Aleksandar Hristov, **Galya Pavlova**, Kamelia Raynova
- 5.4 Development and Research of an IoT WSN For Measuring Fine Dust Particles PM10 and PM2.5**
Dimitar Tokmakov, **Stanislav Asenov**, Slavi Lubomirov, Stela Stoyanova, Vesela Yancheva,
Slaveya Petrova, Bogdan Nikolov, Elenka Georgieva, Rumén Popov
- 5.5 Workflow Design for Implementation of In-silico Experiments with Big Biomedical Data Streams**
Stella Vetova
- 5.6 Automated System for Tracking the Condition of a Patient's Feet and Selecting Specialized Insoles**
Ivan Ralev, Despina Georgieva, Irinka Hristova, Greta Koleva
- 5.7 Cyber-Physical System for Smoke Detection and Recognition with Smart Glasses**
Nikolay Gospodinov, Georgi Krastev
- 5.8 Digital Twin Management Systems – Challenges, Application, Development**
Ivan Stankov, Varbinka Stefanova-Stoyanova
- 5.9 Study on the Relationship between Ruminations Number and Udder Surface Temperature in Cows Using Infrared Thermography**
Hristo Hristov, Kalin Dimitrov, **Toncho Penev**

Section Session 6, Hall 4 & [Virtual Room 3](#)

Meeting ID: 897 7114 5542, Passcode: 584890

13.00 – 15.00

17.11.2023 г.

E-GOVERNMENT. NETWORK SECURITY. CLOUD COMPUTING.

Chairmen: Assoc. Prof. Ivan Nedyalkov, PhD,
Eng. Stefan Patchedjiev, PhD

- 6.1 Health Monitoring of Microsoft Defender for IoT Implementation**
Marian Hristov, **Maria Nenova**, Viktoria Dimitrova, Kamelia Nikolova
- 6.2 Studying the Impact of Various DoS Attacks on the Network Performance of a Power Electronic Device**
Ivan Nedyalkov, Georgi Georgiev, Anton Gogushev
- 6.3 Implementation of Blockchain Technology In Electronic Voting Systems**
Angel Georgiev, Vladimir Valkanov
- 6.4 Secure Text Encryption Based on Clifford Attractors**
Tsvetelina Ivanova, **Borislav Stoyanov**, Dobrev Dimitar

6.5 EU Cybersecurity Theory and Practice

Ivan Stankov

6.6 CyberAttacks and Robotics

Grozdan Hristov, Ivan Stankov, Dayana Mladenova

6.7 Web Scraping - State of Art, Techniques and Approaches

Irena Valova, Tsvetelina Mladenova, Gabriel Kanev, Tsvetana Halacheva

6.8 Exploiting Android using Metasploit Framework

Ivan Ivanov, Mariyana Dimitrova, Maya Atanasova

6.9 Antivirus Bypass of Payloads to Launch Advanced Client-Side Attacks

Ivan Ivanov, Mariyana Dimitrova, Maya Atanasova

6.10 A Practical Guide to Deploying Smart Contracts and Orchestrating Digital Ecosystems: Transitioning from Fiat Payment Systems to Digital Economies for Institutional and Academic Institutions

Martin Kaloiev, Georgi Krastev

Section Session 7, Hall 4 & [Virtual Room 3](#)

Meeting ID: 897 7114 5542, Passcode: 584890

15.15 – 16.30

17.11.2023 г.

SIGNALS AND SYSTEMS. IMAGE PROCESSING.

EDUCATION METHODOLOGIES IN ICT.

Chairmen: Prof. Seferin Mirtchev, DSc

Assoc. Prof. Georgi Petrov, PhD

7.1 Signal Processing Techniques Used in Speech Recognition or Synthesis. An Overview

Ivan Ralev, Georgi Krastev

7.2 Creating HDR Image Using Linear Step-by-Step Contrast Changes

Olena Osharovska, Mikola Patlayenko, Valentina Solodka

7.3 Synthesis of Fractal Images in the Problems of Compression of Static and Dynamic UHD Images

Stanislav Galchuk, Irina Tregubova, Mykola Patlaienko

7.4 Web-Based Remote Laboratory For Programming Arduino-Based Experiments

Ventsislav Nachev

7.5 Applying Additive Manufacturing to Engineering Education

Slavi Lyubomirov, Stanislav Asenov, Dimitar Tokmakov, Hristo Kanevski, Daniela Shehova, Slaveya Petrova

7.6 Case Study of 3D Scanning and Processing to Create Virtual 3D Plant Objects for Education

Stanislav Asenov, Slavi Lyubomirov, Dimitar Tokmakov, Hristo Kanevski, Daniela Shehova, Slaveya Petrova

16.35

17.11.2023 г.

CLOSING OF THE CONFERENCE, Hall 4 & [Virtual Room 3](#)

Meeting ID: 897 7114 5542, Passcode: 584890.

Prof. Seferin Mirtchev, DSc

Information for the participants and guests of Telecom 2023

Until 15 November 2023 detailed information on issues of the Conference can be obtained at the National House of Science and Technology in Sofia, 108 Rakovski St., V Floor, Room 506 or by phone: 02 987-97-67.

Email of the conference: telecom.ceec@gmail.com

Website of the conference: <http://e-university.tu-sofia.bg/e-conf/?konf=177>

Registration fee: Participants with/without a paper - Euro 200, Students - Euro 100, IEEE and CEEC Members Discount -15 %. The fee should be preferably paid before November 13, 2023 through a bank transfer on the account of:

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BIC: UNCRBGSF

CEEC, TELECOM 2023, participant's name

Participants are kindly requested to send a Payment Order copy with details of payment to the Organizing Committee, or present it upon registration.

The Registration Fee can be paid in cash at the Office of CEEC: 108, Rakovsky Str., Sofia 1000.

By way of exception, the Registration Fee may be paid upon arrival at the Conference site in cash (Euro 220).

The Registration Fee includes admission to all Conference events, a set of Conference materials (program, abstracts etc.).

The Organizing Committee will award a young author (up to 35 years old) for the best individually presented paper with substantial scientific research contribution.

