



**Technical University of Sofia
Faculty of Computer Systems and
Technologies**



P R O G R A M

2025 13th International Scientific Conference

COMPUTER SCIENCE

13 – 15 September 2025

**organized by
the Faculty of Computer Systems and Technologies
Technical University of Sofia
IEEE Bulgaria Section
Bulgaria Section CAS/SSC Joint Chapter**



The 2025 13th International Scientific Conference "Computer Science", organized by the Faculty of Computer Systems and Technologies at the Technical University of Sofia, Bulgaria, continues the tradition of a series of eleven conferences organized between 2004 and 2024 as a scientific forum to present a discussion of innovative ideas, concepts and technologies in the field of computer science, computer and software engineering, information technology and their application. Participation in the conference of researchers from different countries stimulates the building of a scientific community and encourages interaction and international cooperation.

The 2025 13th International Scientific Conference "Computer Science" is part of the "Science Days of TU-Sofia" forum.

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2025 13th International Scientific Conference COMPUTER SCIENCE, 13 – 15 September, Sozopol, Bulgaria	
Saturday, 13th September 2025	
Hall 1, Hotel “Lazur”, Sozopol, Bulgaria, Virtual MS Teams meeting	
14:00 – 16:00	Registration
16:00 – 16:30	Official Conference Opening
16:30 – 18:30	Plenary Session, Invited talks
19:30 – 22:30	Conference Dinner
Sunday, 14th September 2025	
Hall 1, Hall 2, Hotel “Lazur”, Sozopol, Bulgaria, Virtual MS Teams meeting	
9:00 – 11:00	Section “Artificial Intelligence, Robotics And Control”
11:00 – 11:30	Coffee break
11:30 – 13:00	Sections “Telecommunications engineering”, “Cyber security and cyber protection”
13:00 – 14:00	Lunch break
14:00 – 16:00	Sections “Education 4.0”, “Human-Centered Computing”, “Renewable and green energy”, “High technology management”
16:00 – 16:30	Coffee break
16:30 – 18:00	Sections “Smart cities and smart society”, “Software engineering”, “Software technologies and applications systems”
14:00 – 18:00	Workshop “Bulgarian IEEE CAS Chapter” - Hall 2 Link for Virtual MS Teams meeting: https://teams.microsoft.com/meet/3458031726031?p=q5AlygFl4sbzwZA056
19:30 – 22:30	Conference Dinner
Monday, 15th September 2025	
Hall 1, Hotel “Lazur”, Sozopol, Bulgaria, Virtual MS Teams meeting	
9:00 – 11:00	Poster Sessions, Sections “Artificial intelligence, robotics and control”, “Data structures and storage, cloud and blockchain technologies”, “Software technologies and applications systems”, “Software engineering”, “Education 4.0”, “Electric and autonomous vehicles”, “High technology management”, “Renewable and green energy”, “Cyber security and cyber protection”
11:00 – 11:30	Coffee break
11:30 – 13:00	Workshop “UNIFORM CRITERIA AND METHODOLOGY FOR PROJECT DOCTORAL STUDENTS”
13:00 – 14:00	Lunch break
14:00 – 15:30	Workshop “INNOVATIVE JOINT CURRICULA AND STUDIES IN ICT IN THE HIGH SCHOOL OF MATHEMATICS AND NATURAL SCIENCES “VASIL DRUMEV” IN PARTNERSHIP WITH THE TECHNICAL UNIVERSITY OF SOFIA”
15:30 – 17:00	Presentations of scientific projects
17:00	Official Conference Closing Ceremony

Link for Virtual MS Teams meeting:

<https://teams.microsoft.com/meet/3692889028383?p=juPy3WUfN66hgSP5C>

Saturday, September 13th, 2025

14:00 – 16:00 Registration

Hall 1, Hotel "Lazur", Sozopol, Bulgaria

16:00 – 16:30

Official Conference Opening

Chair: Prof. Ognyan Nakov

Hall 1, Hotel "Lazur", Sozopol, Bulgaria and virtual MS Teams meeting

16:30 – 18:30

Plenary Session, Invited talks

Chair panel: *Assoc. Prof. Nikolay Hinov*

Hall 1, Hotel "Lazur", Sozopol, Bulgaria and virtual MS Teams meeting

Features Extraction for Vehicle Re-Identification Using Magnetic Sensing

by Prof. Darius Andriukaitis

Kaunas University of Technology, Kaunas, Lithuania

Application of COMSOL In the Cable Ampacity Calculations

By Prof. Dardan Klimenta

University of Priština in Kosovska Mitrovica, Serbia

19:30 Conference Dinner

Sunday, September 14th, 2025

Hall 1, Hotel “Lazur”, Sozopol and virtual MS Teams meeting

9:00 – 11:00

SECTION “ARTIFICIAL INTELLIGENCE, ROBOTICS AND CONTROL”

Chair: Prof. Roumen Trifonov, Assoc. Prof. Galya Pavlova

1. Hybrid Model for Wild Animals Detection Based on Camera Traps in Bulgarian Mountains
Petar Matov, Milena Lazarova, Simona Petrakieva
2. Genetically Optimized Architectural Design of CNN for Medical CT Image Processing
Iva Nikolova, Georgi Zapryanov, Hristo Stefanov
3. Natural Language Processing challenges: Problems and Solutions
Seyed Soroosh Khadem, Roumen Trifonov, Galya Pavlova
4. Face Swapping Attack Detection Using Multi-Stream Feature Embeddings
Georgi Kotov, Ognyan Nakov, Milena Lazarova, Plamen Nakov, Georgi Georgiev
5. An Approach for Improving QoS of Remote Control Over Internet
Valentin Hristov
6. Application of Artificial Intelligence in Assessing Teacher Competencies
Katya Kirilova
7. Continuous Auditing with Machine Learning. Early Flagging of Risky Billing Documents from SAP
Reneta Duhova, Angel Duhov, Milena Lazarova, Petia Georgieva
8. RAG-Based Framework for Intelligent Banking Assistants Leveraging Structured Financial Data
Angel Botev, Milena Lazarova, Ognyan Nakov

11:00 – 11:30

Coffee break

11:30 – 13:00

**SECTIONS “TELECOMMUNICATIONS ENGINEERING”,
“CYBER SECURITY AND CYBER PROTECTION”**

Chairs: Prof. Rumen Trifonov, Assoc. Prof. Galya Pavlova

1. Experimental Characterization of UHF Range LTC Transmissive Polarization Converter
Si Thu Htet Si Thu, Dwi Andi Nurmantris, Achmad Munir
2. Experimental Study on Impact of Polarization Diversity on Signal Reception
Trasma Yunita, Achmad Munir
3. Creating a Virtual Private LAN Service with Mininet and Open Network Operating System
Aleksandar Hristov
4. Enhancing Cybersecurity in Industrial IoT
Roumen Trifonov, Nikolay Hristov
5. GitHub Security Tools Practical Strategies for Secure Development
Vladislav Manolov
6. Azure DevOps Security Tools: Integrated and 3rd-Party Solutions
Vladislav Manolov, Daniela Gotseva, Nikolay Hinov, Danko Valkov

13:00 – 14:00

Lunch break

14:00 – 16:00

**SECTIONS “RENEWABLE AND GREEN ENERGY”, “EDUCATION 4.0”,
“HUMAN-CENTERED COMPUTING”, “HIGH TECHNOLOGY MANAGEMENT”**

Chair: Prof. Todor Stoilov, Prof. Krasimira Stoilova

1. Modeling and Forecasting of Photovoltaic Energy Production
Krasimira Stoilova, Todor Stoilov
2. Analytical Simulation of Photovoltaic Battery Charging and Discharging
Todor Stoilov
3. The Role of an Electronic Web Platform for Managing Processes in the Formation of Policies of Bulgarian Sunday Schools Abroad
Natalia Mihalevska, Nadezhda Angelova, Galya Pavlova, Plamen Nakov
4. Integrating Generative AI Chatbot Models into IT Business Analysis Training
Radoslav Kostev
5. Evaluation of Generative AI Chatbot Models for Handling Critical Situations in Business Information Systems Implementation: A Case Study
Radoslav Kostev
6. The Digital Competence of Bulgarian Teachers in Response to DigCompEdu
Maria Kazakova
7. AI-Based Predictive Model for High-Growth Enterprises
Kiril Anguelov
8. A Comparative Analysis of Different Platforms for Creating Educational Chatbots
Tsvetana Stoyanova, Kiril Anguelov

16:00 – 16:30

Coffee break

16:30 – 18:00

**SECTIONS “SMART CITIES AND SMART SOCIETY”, “SOFTWARE ENGINEERING”,
“SOFTWARE TECHNOLOGIES AND APPLICATIONS SYSTEMS”, “HIGH TECHNOLOGY
MANAGEMENT”**

Chair: Assoc. Prof. Valentin Hristov

1. Leveraging Large Language Models for Legacy Database and Web Application Modernization: A Theoretical Framework
Sahana Shreedhar Kulkarni, Manoj Krishna Mohan
2. Digital Twin-Driven Testing of IoT Systems: A Scalable Simulation-Based Approach
Georgi P. Georgiev, Roumen Trifonov, Daniela Gotseva, Georgi Kotov
3. Cross-platform Rust based implementation of GPU accelerated importance resampling path traced illumination
Georgi G. Georgiev
4. The Impact of Demographic Factors and Population Prediction in the Western Balkans Using Machine Learning Methods
Berat Ujkani, Shkurte Mustafa, Daniela Minkovska
5. Creating an Environment for Software-Defined Network Simulations with Mininet and Open Network Operating System
Aleksandar Hristov

6. Hybrid Human-Algorithm Collaboration in Public Administration
Miglena Angelova
7. Algorithmic Management in the Gig Economy: ICT Infrastructures and Ethics
Miglena Angelova
8. Ethical and Legal Implications of Algorithmic Management
Miglena Angelova

14:00 – 18:00 **Hall 2 WORKSHOP “Bulgarian IEEE CAS Chapter”**

Link for Virtual MS Teams meeting:

<https://teams.microsoft.com/meet/3458031726031?p=g5AlygFl4sbzwZA056>

**Moderators: Valeri Mladenov - IEEE Bulgarian Joint CAS&SSCS Chapter Chair;
Nikolay Hinov - IEEE Bulgarian Joint CAS&SSCS Chapter Vice-Chair, Roumen Trifonov - Chair of Academic
Community of Computer Systems and Information Technology**

14:00 - 14:15 **Registration and Welcome Coffee**

14:15 - 14:45 – Keynote:

Software Automation for the Generation of DRC Code

Aleksandar Banderov - GlobalFoundries Inc

14:45 - 15:30 – Session 1:

Comparative Analysis of Large Language Models

Maksim Sharabov, Polya Georgieva, Georgi Tsochev, Rumen Trifonov – Technical University of Sofia

Using Large Language Models for Image Correction Proposals

Stefan Angelov, Milena Lazarova – Technical University of Sofia

15:30 - 16:00 – Hands-On Workshop:

Implementation of AI and Neural Networks for Automated Design of Power Systems

Georgi Tsenov – Technical University of Sofia

16:00 - 16:45 – Session 2:

A Conceptual Theoretical Model Integrating Machine Learning for Intelligent Transportation
Systems

Dimitar Andreev, Roumen Trifonov – Technical University of Sofia

A Modular Framework for Business-Specific Benchmarking of Large Language Models

Venko Andonov – Technical University of Sofia

16:45 - 17:15 – Panel Discussion:

Future of AI in VLSI and Power Systems Design

17:15 - 18:00 – Closing Remarks and Networking

19:30 **Conference Dinner**

Monday, September 15th, 2025

Hall 1, Hotel "Lazur", Sozopol and virtual MS Teams meeting

POSTER SESSIONS

9:00 – 11:00

**SECTIONS "ARTIFICIAL INTELLIGENCE, ROBOTICS AND CONTROL",
"DATA STRUCTURES AND STORAGE, CLOUD AND BLOCKCHAIN TECHNOLOGIES",
"SOFTWARE TECHNOLOGIES AND APPLICATIONS SYSTEMS",
"SOFTWARE ENGINEERING", "EDUCATION 4.0",
"ELECTRIC AND AUTONOMOUS VEHICLES", "HIGH TECHNOLOGY MANAGEMENT",
"RENEWABLE AND GREEN ENERGY", "CYBER SECURITY AND CYBER PROTECTION"**

Chair: Prof. Georgi Popov, Prof. Daniela Minkovska

1. System for Automatic Irrigation and Monitoring of The Humidity of Plants
Neven Nikolov
2. AI in Education: Enhancement or Replacement? Insights from Student Surveys
Elena Antonova, Daniela Minkovska, Plamen Nakov
3. Rethinking Academic Success: How Institutions Can Support Student Mental Health
Elena Antonova, Daniela Minkovska, Daniela Gotseva
4. Influence of the Length of the Forecast Horizon on the Accuracy of Predicting Future Values of Financial Time Series Using an Automated Tool
Kiril Koparanov
5. Self-Adaptive Algorithms for the Control of Hybrid Energy Systems with Elements of AI: Contemporary Approaches and Challenges
Georgios Ivanov, Elizabet Mihaylova, Natalia Mihalevska
6. Big Data Management and Analysis: Preprocessing Strategies, Efficient Storage, and Optimized Algorithms
Bogdan Danov, Daniela Gotseva
7. Analysis and Prediction of Student Dropout Risk Using Machine Learning Approaches: A Case Study from Bulgarian School
Liliya Andonova, Rumen Trifonov, George Popov
8. The Role of Digitalization in SME Business Processes: Challenges in Data Optimization and Opportunities for Decision-Making
Elena Gurova
9. Intelligent Charging and Delivery Management in EV Fleets Through Reinforcement Learning
Plamen Stanchev, Nikolay Hinov
10. Comparative Analysis of Traditional and Deep Models for Short-term Forecasting of Price Time Series with the Inclusion of Exogenous Factors
Plamen Stanchev, Nikolay Hinov, Zoran Zlatev
11. Energy Cost Minimization in Renewable Microgrids Using Binary Particle Swarm Optimization
Plamen Stanchev, Nikolay Hinov
12. A-MAPSS: An Advanced Methodology for Architectural Prototyping of Software Systems

Hristo Hristov

13. Stateful or Stateless: The First Choice in Authentication
Firas Al-Husari, Ognyan Nakov, Nathalia Mihalevska
14. Storing Authentication tokens in Web Worker
Firas Al-Husari, Plamen Nakov
15. Innovative Solutions for Digitizing Low-Quality Analog Information and Enhancing Content Identification
Milan Minchev, Plamen Nakov, Yavor Tomov, Nikolay Hinov
16. Research on the Most Common Software Methods to Accessing Cryptocurrency Exchange Platforms via API
Hristo Hristov, Milena Karova, Ventsislav Nikolov, Dimitrichka Nikolaeva
17. A New Method for Generating Symmetric Keys for Image Encryption Using Blowfish, Twofish and Threefish Algorithms
Gergana Spasova, Milena Karova, Bozhidar Dyakov
18. A New Model of Image Encryption with Symmetric Key Schemes
Gergana Spasova, Milena Karova, Bozhidar Dyakov
19. Optimization of Diversity Redundancy Systems Based on Modified Shannon Index
Antoaneta Popova, George Popov
20. Reliability and Security Issues of Automated IoT Systems for Automatic and Remote Plant Cultivation
Kamelia Raynova, George Popov, Antoaneta Popova
21. Corporate Social Responsibility Reporting: Information System Requirements
Philip Stoyanov, Kiril Anguelov
22. Experimental Evaluation of Real-Time Object Detection and Tracking Systems for Unmanned Aerial Vehicles
Eleonora Ivanova, Dimiter Gerov

11:00 – 11:30

Coffee break

11:30 – 13:00

**WORKSHOP “UNIFORM CRITERIA AND METHODOLOGY FOR PROJECT
Ph.D STUDENTS”**

Chair panel: Prof. Ognyan Nakov

13:00 – 14:00

Lunch break

14:00 – 15:30

**WORKSHOP “INNOVATIVE JOINT CURRICULA AND STUDIES IN ICT IN
THE HIGH SCHOOL OF MATHEMATICS AND NATURAL SCIENCES “VASIL DRUMEV”
IN PARTNERSHIP WITH THE TECHNICAL UNIVERSITY OF SOFIA”**

Chair panel: Prof. Roumen Trifonov

15:30 – 17:00

PRESENTATIONS OF SCIENTIFIC PROJECTS

Chair panel: Prof. Nikolay Hinov

17:00

Official Conference Closing Ceremony

Chair: Assoc. Prof. Nikolay Hinov

Hall 1, Hotel "Lazur", Sozopol and virtual MS Teams meeting

Special Issue

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Guest Editors

Dr. Nikolay Hinov
Prof. Dr. Ognyan Nakov
Prof. Dr. Milena Lazarova

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31 December 2025



IMPACT
FACTOR
2.6

CITESCORE
6.1

https://www.mdpi.com/journal/electronics/special_issues/KX462K7V27