

9th IEEE International Conference “Big Data, Knowledge and Control Systems Engineering” – BdKCSE'2025



PROGRAM

06 -07 November 2025

Venue: Hotel Bankya Palace, Bulgaria

06 November, 2025 (Thursday)

9:00 – 9:45	Registration
9:45 – 10:00	Opening session Academician Vasil Sgurev , Institute of Information and Communication Technologies, Bulgarian Academy of Sciences
10:00 – 10:40	Invited Talk Chair: Corr. Member Lyubka Doukovska (Institute of Information and Communication Technologies, Bulgarian Academy of Sciences) <i>MultiLoKo, a Multilingual Local Knowledge Benchmark for LLMs,</i> Nikolay Bogoychev , PhD, Research scientist, Meta, United Kingdom
10:40 – 11:00	Coffee break
Hall 1 11:00 – 12:20	Session I: Big Data Infrastructure Chair: Valentina Terzieva (Institute of Information and Communication Technologies, Bulgarian Academy of Sciences)

11:00 – 11:20	A Big Data Platform for Evaluation Project Risk , <i>Ivan Popchev and Daniela Orozova</i>
11:20 – 11:40	Big Data Infrastructure and Analytics Framework for Next-Generation Smart Healthcare Systems , <i>Ihab Nassra and Juan V. Capella</i>
11:40 – 12:00	Performance Evaluation of Distributed Framework for Healthcare Data Storage and Analysis Using Hadoop-HBase , <i>Ali Khaleel, Ahmed Al-Azzawi and Wisam Abas</i>
12:00 – 12:20	A Metaheuristic and Machine Learning-Based Algorithm for Predicting Gallstone Disease , <i>Eris Zeqo and Edjola Naka</i>
Hall 2 11:00 – 12:20 Session II: Big Data and AI Applications	
Chair: Irina Radeva (Institute of Information and Communication Technologies, Bulgarian Academy of Sciences)	
11:00 – 11:20	PaSSER: A Platform for Evaluating LLMs in RAG , <i>Miroslava Dimitrova, Ivan Popchev and Irina Radeva</i>
11:20 – 11:40	Analysis of Methods for Evaluating Responses of LLMs in Retrieval-Augmented Generation , <i>Kiril Traykov and Yuliana Kolova</i>
11:40 – 12:00	AI-based Advisory System for Career Guidance , <i>Vaska Baklarova, Stanimir Stoyanov, Veneta Tabakova-Komsalova, Evgenia Temelkova and Penyo Georgiev</i>
12:00 – 12:20	Development of an Intelligent System for Linguistic Analysis and Storage of Dialects through Logic Programming (Prolog) , <i>Radomira Lazarova, Veneta Tabakova-Komsalova, Stanimir Stoyanov and Atanas Dukovski</i>
Hall 1 12:20 – 13:40 Session III: Big Data Security and Privacy	
Chair: Editra Djambazova (Institute of Information and Communication Technologies, Bulgarian Academy of Sciences)	
12:20 – 12:40	Cybersecurity and AI-generated Programming Code , <i>Willian Dimitrov</i>
12:40 – 13:00	Secure-by-Inclusion: A Framework for Protecting Users and Preventing Security Vulnerabilities through Inclusive Design , <i>Radostina Tsvetkova</i>
13:00 – 13:20	Predicting the Impact of a Vulnerability with Markov Chains , <i>Willian Dimitrov</i>
13:20 – 13:40	AI-Driven Real Estate: Opportunities, Cyber Risks, and Emerging Challenges , <i>Rumen Ketipov, Lyubka Doukovska and Mariya Ketipova</i>
Hall 2 12:20 – 13:40 Session IV: Blockchain Technologies and Decentralized Systems	
Chair: Irina Radeva (Institute of Information and Communication Technologies, Bulgarian Academy of Sciences)	
12:20 – 12:40	Context-Aware Blockchain Design Framework: A Case in Plant Genetic Resources , <i>Irina Radeva, Ivan Popchev and Lyubka Doukovska</i>
12:40 – 13:00	The Use of Blockchain to Secure IoT Big Data , <i>Tsvetomir Gospodinov and Ivan Lambov</i>
13:00 – 13:20	Blockchain Framework for E-Voting in Bulgaria , <i>Teodora Noncheva and Irina Radeva</i>
13:20 – 13:40	Towards DevOps of Zero-Knowledge Proofs on Blockchain: LLM-Enhanced Proof Generation and Contract Deployment , <i>Goshgar Can Ismayilov</i>

13:40 – 14:40	Lunch break
Hall 1 14:40 – 16:00	Session V: Big Data for Sustainable Development
Chair: Tatyana Radeva (Institute of Information and Communication Technologies, Bulgarian Academy of Sciences)	
14:40 – 15:00 Enhancing Agricultural Supply Chain Traceability with Blockchain, Smart Contracts, and E-Labeling , <i>Ibsen G. Bazie, Alidor Mbayandjambe Masheke, Kevin T. Nguemdjom, Alain M. Kuyunsa, Hervek K. Kabengele, Rajesh Gupta, Tasho Tashev, Kyandoghene Kyamakya and Selain K. Kasereka</i>	
15:00 – 15:20 A Heuristic Approach for Knowledge Acquisition Using Fuzzy Rules for Determining Yield in Agriculture , <i>Boriana Vatchova and Yordanka Boneva</i>	
15:20 – 15:40 Smart Irrigation for Precision Agriculture: A Pathway to Sustainable Farming in Low-Income Regions , <i>Selain K. Kasereka, Yves-Christophane Nonlomè Medagbe, Ocamo Okurwoth Vicus, Godwill Ilunga, Tasho Tashev, Elam Kyungu and Kyandoghene Kyamakya</i>	
15:40 – 16:00 Automated System for Image Analysis and Determination of Chlorophyll Content in Corn Plant Leaves , <i>Svetoslav Petrov, Tsvetelina Georgieva, Stanislav Penchev and Plamen Daskalov</i>	
Hall 2 14:40 – 16:00	Session VI: Intelligent Technologies in Education
Chair: Yordanka Boneva (Institute of Information and Communication Technologies, Bulgarian Academy of Sciences)	
14:40 – 15:00 Defining Teachers' Generative AI Competence: A Two-Dimensional Map and Six-Domain Framework , <i>Ivan Draganov</i>	
15:00 – 15:20 Comprehensive Infrastructure for Creating and Managing Personalized Competency Profiles , <i>Gergana Vassileva, Ivaylo Blagoev and Vladimir Monov</i>	
15:20 – 15:40 Intelligent Educational Technologies for Personalization in STEM Education: A Bibliometric Analysis , <i>Edita Djambazova, Valentina Terzieva and Elena Paunova-Hubenova</i>	
15:40 – 16:00 Evaluation of Video Games for STEM Education , <i>Valentina Terzieva, Boyan Bontchev, Yavor Dankov and Aleksandar Dimov</i>	
16:00 – 16:20	Coffee break
Hall 1 16:20 – 18:00	Session VII: System Analysis and Smart Decision-Making
Chair: Boriana Vatchova (Institute of Information and Communication Technologies, Bulgarian Academy of Sciences)	
16:20 – 16:40 Real-time Culinary Content Filtering and Classification using Cloud-Powered Deep Learning for Food Science Applications , <i>Hari Sannamuri</i>	
16:40 – 17:00 Intelligent Agent-Driven Test Artifact Synthesis with Dynamic Environmental Feedback , <i>Shahzaib Khan</i>	
17:00 – 17:20 Real-Time Data Processing at Scale: A High-Performance Analytical Framework , <i>Vishal Makwana</i>	
17:20 – 17:40 Navigating the Landscape of Stablecoins: Understanding Design, Volatility, and Regulatory Challenges , <i>Abhigyan Mukherjee</i>	

17:40 – 18:00	Digital Safeguards for Health Data: Architecting Privacy and Security in Next-Gen Medical Informatics , <i>Velu Kaliappan</i>
Hall 2 16:20 – 18:00 Session VIII: Knowledge, Data, and Risk Management	
Chair: Ivan Draganov (Institute of Information and Communication Technologies, Bulgarian Academy of Sciences)	
16:20 – 16:40	Difference-in-Differences Meets Artificial Intelligence: Identification, Representation, and Robust Inference via Learned Counterfactual Dynamics , <i>Frederic Mirindi, Derrick Mirindi, David Sinkhonde and Tajebe Bezabih</i>
16:40 – 17:00	Case Study: Enhancing Customer Trust Through AI-Driven Post-Purchase Management , <i>Milena Kumurdjieva, Lyubka Doukovska, Nehla Ghouaiel, Ahmad Dhanani and Rodrigo Arenas</i>
17:00 – 17:20	Distributed Embedding Indexing for Real-Time Vector Search at Scale , <i>Abu Ahmed</i>
17:20 – 17:40	Governance of AI and Agentic Systems: Challenges and Methodologies , <i>Milena Kumurdjieva, Lyubka Doukovska, Nehla Ghouaiel, Ahmad Dhanani and Rodrigo Arenas</i>
17:40 – 18:00	Predictive Wellness Analytics Through Hybrid Sensor-LLM Integration , <i>Roopam Dhanraj Choudhari and Gaurav Khodwe</i>
19:00 Conference dinner <i>Restaurant in the Hotel Bankya Palace</i>	

07 November, 2025 (Friday)

9:30 – 10:00	Registration
10:00 – 10:40	Invited Talk
Chair: Corr. Member Lyubka Doukovska (Institute of Information and Communication Technologies, Bulgarian Academy of Sciences)	
<i>Explainable AI: Recent Developments and Future Directions</i>	
Alexander Gegov , Professor, DSc, School of Computing, Faculty of Technology, University of Portsmouth, United Kingdom	
10:40 – 11:00	Coffee break
Hall 1 11:00 – 12:20 Session IX: IoT Networks for Smart Environments	
Chair: Yordanka Boneva (Institute of Information and Communication Technologies, Bulgarian Academy of Sciences)	
11:00 – 11:20	TOPSIS MCDM Approach for the Comparison of Traditional and Innovative Ship Propulsion Systems , <i>Cinzia Muriana, Rosario Miceli, Giuseppe Aiello and Muhammad Muzammil Farooqi</i>
11:20 – 11:40	A Real-Time Framework for Traffic Control in Resource-Constrained Cities , <i>Dieme M. Mumbere, Alidor Mbayandjambe Masheke, Ruffin-Benoît Ngoie, Pierre M. Kasengedia, Witesyavwirwa Vianney Kambale, Tasho Tashev, Kyandoghene Kyamakya and Selain K. Kasereka</i>

11:40 – 12:00	Agent-based Air Monitoring Platform , <i>Jordan Todorov, Ivan Stoyanov, Stanimir Stoyanov, Veneta Tabakova-Komsalova, Asya Stoyanova-Doycheva and Katharina Wassilew</i>
12:00 – 12:20	Analysis of Existing Street Lighting with Replacement with Energy Efficient in Settlement Areas , <i>Tatyana Radeva, Vesselina Trashlieva and Iliya Kolarov</i>
Hall 2 11:00 – 12:20	Session X: Intelligent Control Systems Engineering
Chair: Boriana Vatchova (Institute of Information and Communication Technologies, Bulgarian Academy of Sciences)	
11:00 – 11:20	Reference Network Design for Integrating Digital Twins with Existing Manufacturing Systems , <i>Daniel Stoyanov and Anna Lekova</i>
11:20 – 11:40	Maximum Network Flow at Total Capacity on the Arcs Outgoing from the Network Vertices , <i>Vassil Sgurev and Lyubka Doukovska</i>
11:40 – 12:00	Automated System for Functional Testing and Diagnostics of Air Circuit Breakers , <i>Kristian Ivanov, Pavlin Ilkov, Iosko Balabozov and Valentin Mateev</i>
12:00 – 12:20	Implementation and Process Control of a Dual Fired Heater , <i>Radoy Dukovski</i>
Hall 1 12:20 – 13:40	Session XI: Big Data Applications – 1
Chair: Edita Djambazova (Institute of Information and Communication Technologies, Bulgarian Academy of Sciences)	
12:20 – 12:40	Intelligent Resource Provisioning in Cloud Environments: A Metaheuristic Optimization Approach , <i>Akash Kota Raju</i>
12:40 – 13:00	The Impact of Credential Prestige and Accreditation on Hiring Decisions: Unveiling the Competitive Edge of Alternative Education , <i>Tejas Varma Venkataswamy</i>
13:00 – 13:20	The Mediating Role of Real Estate Prices in Philippine Macroeconomic Dynamics: Evidence from VAR and Granger Causality Analysis , <i>Adulfo Arevalo, Avillardo Clarin, Ronald Pancho, Roland Simbre and Claro Mananquil</i>
13:20 – 13:40	The Interest Rate Threshold of Inflation in Southeast-5 Asian Countries: A Bivariate Polynomial Regression Analysis , <i>Adulfo Arevalo</i>
Hall 2 12:20 – 13:40	Session XII: Big Data Applications – 2
Chair: Tatyana Radeva (Institute of Information and Communication Technologies, Bulgarian Academy of Sciences)	
12:20 – 12:40	Interpreting Genomic Regulatory Networks through Generalized Network Flow , <i>Vassil Sgurev and Draga Toncheva</i>
12:40 – 13:00	Data Spaces Against Hybrid Warfare: A Novel Way to Achieve Resilience , <i>Borislav Bankov</i>
13:00 – 13:20	A Flexible Method for Backing up and Migrating MySQL Users “MySQLUserFlex” , <i>Dimitar T. Todorov</i>
13:20 – 13:40	Adaptive Trading Strategies Comparison with Reinforcement Learning , <i>Turgud Valiyev</i>
13:40	Conference closing ceremony