IEEE IS'26 · 13TH INTERNATIONAL CONFERENCE ON INTELLIGENT SYSTEMS

Conference Programme

03–05 September 2026 · Hotel Cherno More, Varna, Bulgaria

All times in this programme are Varna time (EEST, UTC+3). Every presenter taking part on-line carries under the entry the start of their session in their own time zone, which is when they are expected on the line.

Quick look

Thursday, 3 September 2026

	HALL A CHERNO MORE	HALL B GALATA	HALL C ODESSOS
09:30–10:00	Registration desk opens		
10:00–10:20	Official Opening of IS'26 — Acad. Vassil Sgurev		
10:20–11:00	Invited Talk — Acad. Janusz Kacprzyk (on-line) · host Lyubka Doukovska Towards new AI/LLM-enabled techno-centric, human-centric and value-centric smart environments		
11:00–11:20	Coffee break		
11:20–13:00	11:20 Invited Session „AI and Blockchain for Digital Preservation of Cultural Heritage“ Chair: Ivan Lambov	11:20 Trustworthy & Ethical AI	11:20 Machine Learning (I)
13:00–14:20	Lunch break		
14:20–16:30	14:20 Data Science & Knowledge Discovery 15:50 Intelligent Agents	14:20 Intelligent Decision-Making Systems (I) 15:20 Digital Health & Bioengineering (I)	14:20 Human-Machine Interaction
16:30–16:50	Coffee break		
16:50–18:50	16:50 Invited Session „AI, Games, and Gamification in Education“ Chair: Julita Vassileva (on-line)	16:50 Telecommunication & Networked Systems 17:40 Intelligent Decision-Making Systems (II)	16:50 Smart Cities & Urban Computing 17:40 Machine Learning (II)

Friday, 4 September 2026

	HALL A CHERNO MORE	HALL B GALATA	HALL C ODESSOS
09:30–10:00	Registration desk open		
10:00–10:40	Invited Talk — Prof. Guy De Tré · host Lyubka Doukovska Future-Proof Data Management: Making Data Veracity a First-Class Principle		
10:40–11:00	Coffee break		
11:00–13:00	11:00 Invited Session „Intelligent Agriculture Risk Modeling and Optimization“ Chair: E. Trichkova-Kashamova	11:00 Intelligent Cybersecurity 12:20 Energy & Power Systems	11:00 Knowledge Representation & Reasoning 12:00 Bio-Inspired & Evolutionary Intelligence

13:00–14:20	Lunch break		
14:20–16:20	14:20 Intelligent Pattern & Signal Processing	14:20 Explainable AI (XAI) 15:35 Internet of Things	14:20 Industrial & Manufacturing Systems 15:20 Intelligent Control & Measurement
19:30	Conference Dinner		

Saturday, 5 September 2026

	HALL A CHERNO MORE	HALL B GALATA	HALL C ODESSOS
09:30–10:00	Registration desk open		
10:00–10:40	Invited Talk — Prof. Alexander Gegov · host Lyubka Doukovska Explainable Artificial Intelligence: A Surrogate Modelling Approach		
10:40–11:00	Coffee break		
11:00–12:00	11:00 Education & Intelligent Tutoring	11:00 Digital Health & Bioengineering (II)	11:00 Intelligent Transportation Systems
12:00–12:15	Closing of IS'26		

DAY 1

Thursday, 3 September 2026

09:30–10:00 Registration desk opens

10:00–10:20 Official Opening of IS'26 — Acad. Vassil Sgurev · Hall A · Cherno More

> 10:20–11:00 **Invited Talk — Acad. Janusz Kacprzyk (on-line) · host Lyubka Doukovska · Hall A · Cherno More**
>
> *Towards new AI/LLM-enabled techno-centric, human-centric and value-centric smart environments*

11:00–11:20 Coffee break

HALL A **Cherno More** HYBRID

11:20–13:00

Invited Session „AI and Blockchain for Digital Preservation of Cultural Heritage“

Chair: Ivan Lambov

161 **Decentralized Digital Asset Repository Architecture Built on Solid Pods and Blockchain**
Ivan Lambov
Presented by Ivan Lambov — Bulgarian Academy of Sciences, Bulgaria

132 **LLM-Assisted Ontology Engineering for Intangible Cultural Heritage in a Lower-Resourced Language: A Human-in-the-Loop Case Study on Bulgarian Crafts and an Application of a Reusable Error Ontology**
Sebiha Madanska
Presented by Sebiha Madanska — Paisii Hilendarski University of Plovdiv, Bulgaria · **on-line**

76 **Selection of Cryptographic Mechanisms for Blockchain E-Voting**
Teodora Noncheva, Irina Radeva
Presented by Teodora Noncheva — Trakia University, Bulgaria

168 **A Reusable Governance-Aware Evidence Infrastructure for Traceability Applications**
Aleksandar Panayotov, Ivan Lambov, Mariana Atanasova
Presented by Aleksandar Panayotov — Sofia University, Bulgaria · **on-line**

13:00–14:20 Lunch break

14:20–15:50

Data Science & Knowledge Discovery

Chair: Guy De Tré

67 **An Ontological Model for Semantic Interoperability in a Digital University Information Ecosystem**
Vassil Milev
Presented by Vassil Milev — Department of Computer Systems and Technologies St. Cyril and St. Methodius University of Veliko Tarnovo Veliko Tarnovo, Bulgaria · **on-line**

170 **Auditing LLM-Based Coreference Rewriting for Narrative Retrieval**
Miroslava Dimitrova, Irina Radeva, Lyubka Doukovska, Ivan Popchev
Presented by Miroslava Dimitrova — Institute of Information and Communication Technologies - BAS, Bulgaria · **on-line**

43 **Multi-Label Toxicity Detection for Romanian Online Communities Using Fine-Tuned Transformers**
Ionut Catalin Grecu, Paul Stefan Popescu, Marian Cristian Mihăescu
Presented by Ionut Catalin Grecu — University of Craiova, Romania · **on-line**

121 **TeCoCo: Temporal Knowledge Graph Completion through Compound Geometric Operations in the Complex Space**
Bao Nguyen, Long Nguyen
Presented by Bao Nguyen — Faculty of Information Technology, University of Science, Ho Chi Minh City, Vietnam · **on-line**
▸ session starts 18:20 UTC+7

64 **Automating Security Risk Assessment: A RAG-Based Approach for Compliance Auditing**
Mohammed Haaris Shaikh, Mohammed Rahil Wahedna, Amaan Syed, Irfan Siddavatam, Ashwini Dalvi
Presented by Amaan Syed — K.J Somaiya School of Engineering, India · **on-line**
▸ session starts 16:50 UTC+5:30

15:50–16:30

Intelligent Agents

Chair: Stanimir Stoyanov

15 **Modeling Financial Risks in Smart Agriculture**

Todor Todorov, Veneta Tabakova-Komsalova, Stanimir Stoyanov, Stoyan Cheresharov, Ivan Stoyanov

Presented by Todor Todorov — Faculty of Mathematics and Informatics University of Plovdiv “Paisii Hilendarski” Plovdiv, Bulgaria · **on-line**

53 **Event Model for Agent-Oriented Platforms**

Ivan Stoyanov, Boyan Belichev, Veneta Tabakova-Komsalova, Stanimir Stoyanov, Asya Stoyanova-Doycheva

Presented by Veneta Tabakova-Komsalova — Centre of Excellence in Informatics and Information and Communication Technologies, Sofia, Bulgaria

16:30–16:50 Coffee break

16:50–18:50

Invited Session „AI, Games, and Gamification in Education“

Chair: Julita Vassileva (on-line) · host Valentina Terzieva

167 **Recent Trends and Challenges in Immersive Technologies for STEM Education**

Yanina Popova, Edita Djambazova, Valentina Terzieva

Presented by Yanina Popova — Institute of Informationa and Communication Technologies, Bulgarian Academy of Science, Bulgaria

134 **Application of Games and Gamification in Bulgarian STEM education**

Elena Paunova-Hubenova, Yanina Popova, Salzitsa Martinska, Desislava Simeonova

Presented by Yanina Popova — Institute of Informationa and Communication Technologies, Bulgarian Academy of Science, Bulgaria · **on-line**

112 **A Pilot Experimental Evaluation of a Context-Grounded AI Instructional Assistant in Undergraduate Programming Labs**

Wiktoria Zdyb, Somayeh Fatahi

Presented by Somayeh Fatahi — WILFRID LAURIER UNIVERSITY, Canada · **on-line**

▸ session starts 09:50 UTC−4

120 **Comparing Pedagogical Traits of LLM and Human-Written Code Explanations using Readability, Verbosity, and Semantic evaluation**

Sahil Talati, Somayeh Fatahi

Presented by Somayeh Fatahi — WILFRID LAURIER UNIVERSITY, Canada · **on-line**

▸ session starts 09:50 UTC−4

74 **Profile-Driven Adaptive Gamification in CS1: Design and Preliminary Evaluation of an Intelligent Personalized System**

Matias Torrealba, Francisco J Gutierrez, Julita Vassileva

Presented by Matias Torrealba — University of Chile · **on-line**

▸ session starts 07:50 UTC−6

HALL B **Galata** HYBRID

11:20–13:00

Trustworthy & Ethical AI

Chair: Gelayol Golcarenarenji

49 **A Multi-Level Evaluation Framework for Gender Bias in Large Language Models: Directional Bias and Item-Level Stereotyping**

Brent Dawson, Alaa Mohasseb, Ella Haig, Gelayol Golcarenarenji

Presented by Brent Dawson — University of Portsmouth, United Kingdom

145 **From Personas to Procurement: A Persona-Driven Framework for Accessible Workplace ICT and Inclusive Employment**

Radostina Tsvetkova

Presented by Radostina Tsvetkova — Bulgarian Academy of Sciences, Bulgaria · **on-line**

153 **Designing for Trust and Usability: A User-Centered Design Approach for an AI-Powered Accident Reporting Application**

Haya Alhodaib, Hatoun Almogherah, Mashal Alkhalifa

Presented by Hatoun Almogherah — King Saud University, Saudi Arabia

58 **Development and Validation of an Ethical AI Governance Framework for AI-Assisted Academic Writing in Higher Education: Evidence from Philippine Universities**

Carlo Romero, Julius Meneses

Presented by Carlo Romero — National University - Clark Campus, Philippines · **on-line**

▸ session starts 16:20 UTC+8

87 **An Explainable, Reliability-Aware Intelligent Decision Support System for Digital Transformation Risk Prioritization**

Alish Nazarov

Presented by Alish Nazarov — Azerbaijan State Oil and Industry University, Azerbaijan · **on-line**

▸ session starts 12:20 UTC+4

13:00–14:20 Lunch break

14:20–15:20

Intelligent Decision-Making Systems (I)

Chair: Tatyana Radeva-Stoilova

123 **ACT-R Cognitive Modeling for Decision Analysis in SCADA-Controlled Environments During Critical Infrastructure Disruptions**

Tanya Zapryanova, Tatyana Radeva-Stoilova

Presented by Tanya Zapryanova — Intelligent Systems Department Institute of Information and Communication Technologies Bulgarian Academy, Bulgaria

13 **LLM Agents as Feedback Tools for Software Architecture**

Ion George Dinu, Marian Cristian Mihăescu, Traian Rebedea

Presented by Ion George Dinu — University of Craiova, Romania

147 **Towards a Governed Agentic AI Approach for Assessing the Quality and Reuse Readiness of Tabular Health-Related Data**

Agate Jarmakoviča, Arnis Kirshners

Presented by Agate Jarmakoviča — Riga Technical University, Latvia · **on-line**

15:20–16:20

Digital Health & Bioengineering (I)

Chair: Katharina Wasilew

143 **Practical Considerations for Mobile Sensing Systems in Digital Mental Health: Lessons from a Smartphone Typing-Based Sensing Study**

Ravishankar Subramani Iyer, Rita Orji, Sandra Meier

Presented by Ravishankar Subramani Iyer — Faculty of Computer Science, Dalhousie University, Canada · **on-line**

▸ session starts 09:20 UTC−3

48 **Towards an Adaptive and Intelligent Dashboard for AI-Driven Clinical Decision Support**

Fidelia A. Orji, Arafat Motolani, Grace Ataguba, Frank Rudzicz, Rita Orji

Presented by Fidelia A. Orji — Dalhousie University, Canada · **on-line**

▸ session starts 09:20 UTC−3

142 **NeoWeight: An Explainable Prediction Approach for Neonatal Birth Weight**

Sussan Anukem, Grace Ataguba, Evangelos Milios, Rita Orji

Presented by Sussan Anukem — Dalhousie University, Canada · **on-line**

▸ session starts 09:20 UTC−3

16:30–16:50 Coffee break

16:50–17:40

Telecommunication & Networked Systems

Chair: Vladimir Jotsov

138 **AI-Based Algorithm for Flying Ad-Hoc Networks**

Denislav Kanev, Petar Trifonov, Vladimir Jotsov, Magdalena Garvanova, Ivan Garvanov, Vladimir Ivanov

Presented by Denislav Kanev — University of Library Studies and Information Technologies, Bulgaria

139 **QoS-Aware UAV Fleets for Prioritized IIoT Data Harvesting in Automated Industrial Sites**

Mohammed Faizan

Presented by Mohammed Faizan — University of Maryland Baltimore County, United States · **on-line**

▸ session starts 09:50 UTC−4

7 **QueueRecall: Host-Side Issuance Frontiers for RoCE-Class GPU Fabrics**

Rohan Bhosle

Presented by Rohan Bhosle — Microsoft, United States · **on-line**

▸ session starts 06:50 UTC−7

17:40–18:50

Intelligent Decision-Making Systems (II)

Chair: Edita Djambazova

91 **A Stochastic Optimization Framework for Semiconductor Product Mix Decisions with Binning and Chiplet Flexibility**
Nikhil Vishnu Vadlamudi
Presented by Nikhil Vishnu Vadlamudi — Intel Corporation, United States · **on-line**
▸ session starts 09:40 UTC−5

159 **An Explainable Machine Learning and Optimization Framework for Profitability-Driven E-Waste Refurbishment**
Md Saifur Rahman, Nourin Sultana
Presented by Md Saifur Rahman — Central Washington University eRecyclee.org (Founder and Executive Director), United States · **on-line**
▸ session starts 07:40 UTC−7

109 **Machine Learning-Based Optimization of Skyscraper Design to Minimize Vortex-Induced Vibrations**
Dhanya Ganesh
Presented by Dhanya Ganesh — Basis Independent Fremont, United States · **on-line**
▸ session starts 07:40 UTC−7

62 **Bridging the Explainability Gap In Digital Marketing: A Structural Equation Model for Transparent Media Mix Modeling**
Ashner Novilla, Julita Vassileva
Presented by Ashner Novilla — University of Saskatchewan, Canada · **on-line**
▸ session starts 08:40 UTC−6

HALL C Odessos HYBRID

11:20–13:00

Machine Learning (I)

Chair: Irina Radeva

75 **Energy-Aware INT8 Quantization of BanglaBERT for Offline Edge Deployment**
Md. Saiful Islam Mansib, Tayammum A Chowdhury, Mahbub Hasan Prantik, Mohammad Rashedur Rahman
Presented by Mohammad Rashedur Rahman — North South University, Bangladesh · **on-line**
▸ session starts 14:20 UTC+6

152 **BhashaLLM: A QLoRA-Based Framework for Bangla Text Generation and Handwritten Character Recognition**
Samiyeel Alim Binaaf, Md. Yeasin Arafat, Atique Shahrier Chaklader, Mohammad Rashedur Rahman
Presented by Mohammad Rashedur Rahman — North South University, Bangladesh · **on-line**
▸ session starts 14:20 UTC+6

122 **Dynamic Domain Routing for Hallucination-Aware Hierarchical Multi-Agent Retrieval-Augmented Generation (RAG): Optimizing the Debater Agent and Guardian Layer for Cross-Domain Consensus Verification**
Dr. Jayashree R, Tarun Gowda Pradeep, Suhas Sreenath Iyengar, Shubashitha Gowtham
Presented by Dr. Jayashree R — PES UNIVERSITY, India · **on-line**
▸ session starts 13:50 UTC+5:30

47 **Reporting Scale Prediction in Conflict Event Data Using Machine Learning**
Chukwuma Jonathan, Alaa Mohasseb
Presented by Chukwuma Jonathan — University of portsmouth, United Kingdom · **on-line**
▸ session starts 09:20 UTC+1

89 **Privacy-Preserving Sentiment Analysis: A Federated Learning Approach with Uncertainty-Aware Fusion**
Babatunde Solomon Jaiyesimi, Dunsin Fatuase, Olufemi Taiwo, Amira Ifori, Akintunde Akinbo, Olumide Olu-Oshadare
Presented by Babatunde Solomon Jaiyesimi — Independent researcher, United Kingdom · **on-line**
▸ session starts 09:20 UTC+1

13:00–14:20 Lunch break

14:20–16:20

Human-Machine Interaction

Chair: Valentina Terzieva

55 **Assisting Blind People at Mealtime Using Plate Detection and Multimodal LLM**
Jee-Eun Kim, Kurumi Suzuki, Masahiro Bessho
Presented by Jee-Eun Kim — Toyo University, Japan

24 **DiaSense: A Multisensing and Adaptive AI-Driven Persuasive System for Type 2 Diabetes Prevention and Management**
Josteve Adekanbi, Joseph Folaji, Olumide Thomas Adeleke, Ibukun Okunade, Rita Orji, Oladapo Oyebode
Presented by Josteve Adekanbi — Dalhousie University, Canada · **on-line**
▸ session starts 08:20 UTC−3

3 **EnergyWise: A Persuasive and LLM-driven Energy Management System for Climate Change Conservation**
Paul Anukem, Grace Ataguba, Fidelia A. Orji, Segun Olatinwo, Rita Orji
Presented by Grace Ataguba — Dalhousie University, Canada · **on-line**
▸ session starts 08:20 UTC−3

16 **Design and User-Centred Evaluation of a Persuasive and Explainable AI App for Health Monitoring**
Fidelia A. Orji, Grace Ataguba, Harshil Makwana, Divy Bhavsar, Frank Rudzicz, Rita Orji
Presented by Fidelia A. Orji — Dalhousie University, Canada · **on-line**
▸ session starts 08:20 UTC−3

25 **CookTwin: A Multimodal and Adaptive AI-Assisted Interactive System for Remote Robot-Driven Cooking**
Josteve Adekanbi, Babafayofunmi Ayodeji Olutunde, Olayemi Afolabi, Olubunmi Dupe Alabi, Rita Orji, Oladapo Oyebode
Presented by Josteve Adekanbi — Dalhousie University, Canada · **on-line**
▸ session starts 08:20 UTC−3

105 **Multimodal Sensor Fusion for Human Action Recognition in Human-Robot Interaction: A Systematic Mapping Review of Fusion Reporting**
Saminda Wattuhewa, Zhaojie Ju, Dongxu Gao
Presented by Saminda Wattuhewa — University of Portsmouth, United Kingdom · **on-line**
▸ session starts 12:20 UTC+1

16:30–16:50 Coffee break

16:50–17:40

Smart Cities & Urban Computing

Chair: Yordanka Boneva

101 **A Conceptual Framework for Translating Qualitative Real Estate Attributes into Valuation Models**
Mariya Ketipova, Lyubka Doukovska, Rumen Ketipov, Radoy Dukovski, Katharina Wasilew
Presented by Mariya Ketipova — Bulgarian Academy of Sciences, Bulgaria · **on-line**

149 **An Offline Mobile Framework for Smartphone-Based Soil Texture and Organic Matter Estimation for Crop Suitability Assessment**
Hervek K. Kabengele, Alidor Mbayandjambe Masheke, Kevin T. Nguemdjom, Donald Mbouhom, Raphael Kpoghomou, Casimir Ilunga, Ange A. Ntokusi, Esther M. Matendo, Aser K. Itakala, Selain K. Kasereka
Presented by Kevin T. Nguemdjom — University of Kinshasa, Congo (DR) · **on-line**
▸ session starts 09:50 UTC−4

66 **Deep Learning-Based Semantic Segmentation of Buildings from High-Resolution Satellite Imagery for Chattogram Development and No-Development Zones**
Tanbir Islam, Mushfiq Azam, Aditi Basu, A.K.M. Muntasir Uddin Shawon, Mohammad Rashedur Rahman
Presented by Mohammad Rashedur Rahman — North South University, Bangladesh · **on-line**
▸ session starts 19:50 UTC+6

17:40–18:40

Machine Learning (II)

Chair: Yordanka Boneva

19 **Large Language Models in Mental Health Support and Psychotherapy Chatbots: Clinical Applications, Evidence Base, Ethical Risks, and Governance Priorities**

Shashank Agarwal

Presented by Shashank Agarwal — IEEE, United States · **on-line**

▸ session starts 10:40 UTC−4

73 **Why Formal Monitors Fail: Attack Distribution Entropy as a Coverage Bound for LTL-Based LLM Agent Safety**

Ruiyang Zhang

Presented by Ruiyang Zhang — Ryonix Labs, Canada · **on-line**

▸ session starts 10:40 UTC−4

8 **LLM-Augmented Data Engineering Agents for Schema Evolution Handling in Streaming and Batch Pipelines**

Akhilesh Rao Meesala, Abhilash Rao Mesala

Presented by Abhilash Rao Mesala — Independent Researcher, United States · **on-line**

▸ session starts 07:40 UTC−7

DAY 2

Friday, 4 September 2026

09:30–10:00 Registration desk open

10:00–10:40 **Invited Talk — Prof. Guy De Tré · host Lyubka Doukovska · Hall A · Cherno More**

Future-Proof Data Management: Making Data Veracity a First-Class Principle

10:40–11:00 Coffee break

HALL A **Cherno More** HYBRID

11:00–13:00

Invited Session „Intelligent Agriculture Risk Modeling and Optimization“

Chair: E. Trichkova-Kashamova

42 **An Explainable Risk Assessment and Portfolio-Based Resource Allocation Framework for Dairy Farm Management**

Elisaveta Trichkova-Kashamova

Presented by Elisaveta Trichkova-Kashamova — Institute of Information and Communication Technologies, Bulgarian Academy of Science, Bulgaria

84 **Agricultural Risk Assessment in Bulgarian Farms Based on Semi-Structured Interview**

Boriana Vatchova, Yordanka Boneva

Presented by Boriana Vatchova — Institute of Information and Communication Technologies, Bulgarian Academy of Sciences, Bulgaria

94 **Explainable AI for Smart Agricultural Risk Management Decisions**

Yordanka Boneva, Boriana Vatchova

Presented by Yordanka Boneva — Institute of Information and Communication Technologies, Bulgarian Academy of Sciences, Bulgaria

115 **Development of a Methodology for Assessing and Analyzing Financial Risk in an Agricultural Enterprise**

Stanislav Dimitrov

Presented by Stanislav Dimitrov — Institute of Information and Communication Technologies, Bulgaria

1 **A system of key indicators for risk analysis and assessment in agriculture**

Kristina Pavlova

Presented by Kristina Pavlova — Institute of Information and Communication Technologies (BAS), Bulgaria · **on-line**

13:00–14:20 Lunch break

14:20–16:20

Intelligent Pattern & Signal Processing

Chair: Ivan Garvanov

31 **Enhanced YOLOv12m-Based Infrared Rocket Detection and Tracking with Hybrid Conventional Preprocessing**
Muhammed Said Eğilmez, Murat Taskiran
Presented by Muhammed Said Eğilmez — Roketsan Inc., Turkey · **on-line**
▸ session starts 14:20 UTC+3

51 **Explainable Wildfire Detection from Remote Sensing Imagery**
Gelayol Golcarenarenji, Amanda Peart, Alexander Gegov
Presented by Gelayol Golcarenarenji — University of Portsmouth, United Kingdom

46 **Vehicle Detection and Damage Identification for Automated Automotive Dataset Creation**
Jack Pears, Gelayol Golcarenarenji, Alaa Mohasseb, Mohamed Bader-El-Den
Presented by Jack Pears — University of Portsmouth, United Kingdom · **on-line**
▸ session starts 12:20 UTC+1

23 **Hybrid Algorithm for Efficient Real-Time Object Detection and Tracking Using YOLOv3 and GMM**
Miroslav Tomov, Magdalena Garvanova, Zdravko Yankov, Ivan Garvanov, Daniela Borissova, Radoslav Yoshinov
Presented by Miroslav Tomov — University of Library Studies and Information Technologies, Bulgaria · **on-line**

80 **LAHE enhanced multi-label Ocular Disease Recognition in Fundus Images**
Matilde Teixeira, Carolina Silva, Petia Georgieva
Presented by Matilde Teixeira — University of Aveiro, Portugal · **on-line**
▸ session starts 12:20 UTC+1

36 **From SST Forecasting to Marine Heatwave Prediction in the Black Sea**
Stoyan Nikolov, Ensiye Kiyamousavi, Boris Kraychev, Vassil Vassilev
Presented by Stoyan Nikolov — GATE Institute, Bulgaria

HALL B Galata HYBRID

11:00–12:20

Intelligent Cybersecurity

Chair: Alexander Gegov

70 **Causal Reasoning Framework for 6G Network Security**
Koycho Georgiev, Alexander Gegov, Hamidreza Khaleghzadeh, Mo Adda, Eirini Kanaki, Periklis Chatzimisios, Aikaterini Kanta
Presented by Koycho Georgiev — University of Portsmouth, Bulgaria · **on-line**

102 **The Cybersecurity Insurance: Beyond the Risk Transfer**
Rumen Ketipov, Lyubka Doukovska, Mariya Ketipova, Atanas Dukovski, Georgi Markov, Ivan Draganov
Presented by Rumen Ketipov — Bulgarian Academy of Sciences, Institute of Information and Communication Technologies, Bulgaria · **on-line**

146 **Trustworthy Digital Evidence in Distributed Cloud Environments: A Survey and Research Directions for Policy-Driven SpiderNet**
Neelum Raffique, Mo Adda, Bander Alrimy, Aikaterini Kanta, Nancy Scheidt
Presented by Neelum Raffique — University of Portsmouth, United Kingdom · **on-line**
▸ session starts 09:00 UTC+1

85 **Adversarial Robust Spacecraft Navigation AI: A Framework of Multi-layer Multi-explicit Defense**
Prathamesh Shinde, Vrushabh Salunke, Manoj Rohokale, Satwik Shirsat, Prof. Jyoti More
Presented by Prathamesh Shinde — Dr. D. Y. Patil Institute of Technology, Pimpri, Pune, India · **on-line**
▸ session starts 13:30 UTC+5:30

12:20–13:00

Energy & Power Systems

Chair: Tatyana Radeva-Stoilova

136 **Simulation-Based Performance Assessment of a 400 kWp Grid-Connected Photovoltaic Power Plant Using PVsyst: A Case Study from Bulgaria**

Iliya Kolarov, Tatyana Radeva-Stoilova

Presented by Iliya Kolarov — Intelligent Systems Department Institute of Information and Communication Technologies Bulgarian Academy, Bulgaria

137 **Experimental Investigation and 3D FEM Analysis of the Thermal Field in a Single-Pole Power Distribution Terminal Block**

Ivan Hadzhiev, Ekaterina Ivanova, Georgi Dobrev

Presented by Ivan Hadzhiev — Technical University of Sofia, Plovdiv Branch, Bulgaria

13:00–14:20 Lunch break

14:20–15:35

Explainable AI (XAI)

Chair: Ivan Lambov

119 **GLAD: GLobal-features Active Disentangler for Self-Explainable Tabular Data Learning**

Emanuel Covaci, Fabian Galiș, Radu Balan, Daniela Zaharie, Darian Onchis

Presented by Fabian Galiș — West University of Timisoara, Romania · **on-line**

▸ session starts 14:20 UTC+3

71 **Frugal and interpretable timeseries anomaly detection with Adaptive N-HiTS**

François Xavier Sikounmo, Alexandre Benoit, Mickael Bettinelli, Olivier Passalacqua

Presented by François Xavier Sikounmo — LISTIC, Pfeiffer-Vacuum, France

▸ session starts 13:20 UTC+2

32 **Risk-Controlled AML Triage Under Temporal Drift on the Elliptic Bitcoin Transaction Graph**

Joel Chapman, Jeremiah Owolabi, Hamidreza Khaleghzadeh

Presented by Joel Chapman — University of Portsmouth, United Kingdom · **on-line**

▸ session starts 12:20 UTC+1

113 **Explainable Anomaly Classification of Generated Aviation Safety Clarifications Using LIME, SHAP, and Counterfactual Explanations**

David Musinguzi, Alexander Gegov, Gelayol Golcarenarenji, Mo Adda

Presented by David Musinguzi — University of Portsmouth School of Computing, United Kingdom · **on-line**

▸ session starts 12:20 UTC+1

88 **EXPLAIN-SOC: An Explainable Graph-Driven Framework for Threat Attribution and Security Operations Center Automation**

David Onoja, Chijioke Okoye, Kemisola Adalumo, Akintunde Akinbo, Taiwo Akinbolaji, Brian Aboze, Godswill Chukwu, Ololade Anthonia Amidu

Presented by David Onoja — Independent researcher, United Kingdom · **on-line**

▸ session starts 12:20 UTC+1

15:35–16:20

Internet of Things

Chair: Edita Djambazova

128 **Heterogeneous Edge AI: Robust Decentralized Federated Learning across Devices**

Achref Rihani, Aftab Hussain, Alois Ferscha

Presented by Achref Rihani — Johannes kepler University, Austria

▸ session starts 14:35 UTC+2

114 **SNN-NeuroEdge: Federated Continual Learning on Neuromorphic Edge**

Aftab Hussain, Alois Ferscha

Presented by Aftab Hussain — Johannes Kepler University Linz, Austria

99 **Mission-Phase-Aware Deterministic TinyGRU Inference: A Distilled, Static-Memory INT8 Framework for Real-Time Activity-Log Classification on Microcontrollers**

Tavishi Gupta, Samridhi Shreya, Risu Kumari Nayak, Prajwala T R

Presented by Tavishi Gupta — Department of Computer Science and Engineering, PES University, Bengaluru, India · **on-line**

▸ session starts 18:05 UTC+5:30

HALL C Odessos HYBRID

11:00–12:00

Knowledge Representation & Reasoning

Chair: Guy De Tré

69 **A Vectorized GPU Implementation of the Self-Organizing Multi-Stage Selection Procedure**

Angel Marchev Jr., Darin Ivanov

Presented by Angel Marchev Jr. — University of National and World Economy, Bulgaria

20 **User Profile Fragmentation and Fusion in Personalized Systems: A Survey of Approaches, Challenges, and Future Directions**

Mahe Rammeh, Nizar Omheni, Ahmed Hadj Kacem

Presented by Mahe Rammeh — Faculty of Economics and Management of Sfax (FSEGS), Tunisia · **on-line**

▸ session starts 09:00 UTC+1

93 **Conflict-Aware RAG Routing: Balancing Cost and Accuracy via Context Contradiction**

Dang Phuong Nam, Tran Huy Tuan, Doan Duy Long, Cao Van Mai

Presented by Dang Phuong Nam — FPT University, Viet Nam · **on-line**

▸ session starts 15:00 UTC+7

12:00–12:40

Bio-Inspired & Evolutionary Intelligence

Chair: Valentina Terzieva

150 **Generalized Genomic Networks with Flows on Arcs and Vertices**

Lyubka Doukovska, Vasil Sgurev

Presented by Lyubka Doukovska — IICT – Bulgarian Academy of Sciences, Bulgaria

155 **The Tri-Lineage Competition Network: A Tristable Model of Neural Stem Cell Fate**

Draga Toncheva, Vasil Sgurev

Presented by Draga Toncheva — Department of Biological Sciences, Bulgarian Academy of Sciences, Bulgaria

13:00–14:20 Lunch break

14:20–15:20

Industrial & Manufacturing Systems

Chair: Tatyana Radeva-Stoilova

125 **Corrosion, a Global Problem in the Operation and Maintenance of Wastewater Treatment Plant Facilities**

Ivaylo Zafirov, Tatyana Radeva-Stoilova

Presented by Ivaylo Zafirov — Intelligent Systems Department Institute of Information and Communication Technologies Bulgarian Academy, Bulgaria · **on-line**

124 **Predictive Modelling of Soil Water Retention Curves Using Machine Learning Methods**

Jennifer Yche Mordi, Farzad Arabikhan, Arash Azizi, Alireza Tatari, Benyamin Ebrahimpour, Gelayol Golcarenarenji

Presented by Farzad Arabikhan — Univerisity of Portsmouth, United Kingdom · **on-line**

▸ session starts 12:20 UTC+1

141 **How Many Advisors Are Enough? Predicting Useful Majority-Vote Ensemble Size under Correlated Decision Errors**

Ahsan Habib Shihab, Aman Mussa, Madina Mansurova

Presented by Ahsan Habib Shihab — Al-Farabi Kazakh National University, Kazakhstan · **on-line**

▸ session starts 16:20 UTC+5

15:20–16:20

Intelligent Control & Measurement

Chair: Tatyana Radeva-Stoilova

86 **Intelligent Optimization of Polarization Sampling in Rotating Polarization Wave via Multitask Deep Learning for IoT Applications**

Youssef Alaa Abou Almagd, Muhammad Moazzam Ali, Muhammad Adnan, Muhammad Akmal Chaudhary

Presented by Youssef Alaa Abou Almagd — Communication and Information Engineering, University of Science and Technology, Egypt · **on-line**

▸ session starts 15:20 UTC+3

140 **Intelligent Tuning of PID Controllers Based on AI Agents and LLM Models Applied to a Water Distribution System**

Laís Mangueira, Juan Villanueva, Gabryel Martins Raposo de Alencar, Ivanovitch Medeiros D. da Silva

Presented by Gabryel Martins Raposo — Federal University of Paraiba, Brazil · **on-line**

▸ session starts 09:20 UTC−3

108 **Safe Virtual Coupling Under Adhesion Loss: Embedding Backward-Reachable Sets in MPC**

Mehdi Zangeneh, Qusay Hawari, Peter Hubbard, James Fleming

Presented by Mehdi Zangeneh — Wolfson School of Mechanical, Electrical and Manufacturing Engineering, Loughborough University, United Kingdom · **on-line**

▸ session starts 13:20 UTC+1

19:30 Conference Dinner · Restaurant „Cherno More“

DAY 3

Saturday, 5 September 2026

09:30–10:00 Registration desk open

10:00–10:40 **Invited Talk — Prof. Alexander Gegov · host Lyubka Doukovska · Hall A · Cherno More**

Explainable Artificial Intelligence: A Surrogate Modelling Approach

10:40–11:00 Coffee break

HALL A **Cherno More** HYBRID

11:00–12:00

Education & Intelligent Tutoring

Chair: Valentina Terzieva

56 **Quizzi: Automatic Quiz Generation via Iterative BERT Fine-Tuning**
Darius-Robert Diculescu, Paul Stefan Popescu, Marian Cristian Mihăescu
Presented by Darius-Robert Diculescu — University of Craiova, Romania

57 **Multi-Task Intent and Difficulty Classification for a Romanian Programming Chatbot for Children: A BERT Approach**
Andreea-Roxana Leţu, Paul Stefan Popescu, Marian Cristian Mihăescu
Presented by Andreea-Roxana Leţu — University of Craiova, Romania

50 **Developing Intelligent Learning Assistants: Automatic Identification of Research Paper Structure via Fine-Tuned BERT Models**
Monica Emilia Văruicu, Paul Stefan Popescu, Marian Cristian Mihăescu
Presented by Monica Emilia Văruicu — University of Craiova, Craiova, Romania

54 **EasyBio AR: Integrating 3D Augmented Reality into Biology Education — A Unity-Vuforia Approach**
Anika Hossain, Mohsin Mullik, Abu Huraira, Mohammad Rashedur Rahman
Presented by Mohammad Rashedur Rahman — North South University, Bangladesh · **on-line**
▸ session starts 14:00 UTC+6

HALL B **Galata** HYBRID

11:00–12:00

Digital Health & Bioengineering (II)

Chair: Katharina Wasilew

72 **Application of InterCriteria Analysis for Evaluating Factors Influencing Quality of Life after Rehabilitation in Patients with Hemorrhagic Stroke**

Bistra Zaharieva, Lyubka Doukovska, Lyubomira Encheva

Presented by Bistra Zaharieva — IIKT Ban, Bulgaria · **on-line**

160 **MultiFusion AI Agent: An AI-Powered Multilingual Virtual Receptionist for Healthcare Appointment Automation**

Swapnil Gulbhile

Presented by Swapnil Gulbhile — Vishwakarma Institute of Technology (VIT), Pune, India · **on-line**

▸ session starts 13:30 UTC+5:30

60 **Exploring Telesurgery-Related Content on Video-Sharing Platforms: Public Engagement and Sentiment Analysis**

Samer Muthana Sarsam, Ahmed Isam Al-Hatem, Abdul Samad Shibghatullah, Lubna A. Hussein

Presented by Samer Muthana Sarsam — School of Management, Coventry University, United Kingdom · **on-line**

▸ session starts 09:00 UTC+1

68 **Predicting Dengue Severity and ICU Admission: An Interpretable Machine Learning Approach Using Integrated Clinical, Behavioural, and Environmental Data**

Otuekongabasi Umoudoh, Nasreen Anjum, Mahreen Kiran, Mahreen-Ul Hassan

Presented by Otuekongabasi Umoudoh — University of Portmouth, United Kingdom · **on-line**

▸ session starts 09:00 UTC+1

HALL C **Odessos** HYBRID

11:00–12:00

Intelligent Transportation Systems

Chair: Yordanka Boneva

10 **Intelligent Urban Parking Management System**

Kristina Pavlova, Yordanka Boneva

Presented by Kristina Pavlova — Institute of Information and Communication Technologies (BAS), Bulgaria · **on-line**

14 **CausalDrive: Causal Reasoning Supervision for Interpretable Vision-Language-Action Driving**

Xiuyuan Yu, Zuwei Lin, Chongxiao Liu, Zicheng Zhou, Fan Zhang

Presented by Xiuyuan Yu — University of Sussex, United Kingdom · **on-line**

▸ session starts 09:00 UTC+1

78 **Budgeted and Fair Incentive Allocation for Route Choice in Mobile Urban Sensing: A Comparative Evaluation of Heuristic, Greedy, and UCB-Style Mechanisms**

Daniel Mutembesa, Filipe Miguel Gonçalves de Almeida, Engineer Bainomugisha

Presented by Daniel Mutembesa — Makerere University, Uganda · **on-line**

▸ session starts 11:00 UTC+3

79 **Randomised Controlled Evaluation of Incentive Mechanisms for Route-Choice Pricing in Mobile Urban Sensing**

Daniel Mutembesa, Filipe Miguel Gonçalves de Almeida

Presented by Daniel Mutembesa — Makerere University, Uganda · **on-line**

▸ session starts 11:00 UTC+3

12:00–12:15 Closing of IS'26 · Hall A · Cherno More

Practical information

DATES	Thursday 03 — Saturday 05 September 2026
VENUE	Hotel Cherno More bul. Slivnitsa 33, Varna, Bulgaria
REGISTRATION	Please register at the reception desk in the conference centre.
FORMAT	On-site and online sessions Online participants receive their joining details by e-mail.
QUESTIONS	ieee-is@bas.bg

The conference site

Venue, travel, committee, fees and registration

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