

IEEE INTERNATIONAL CONFERENCE AUTOMATICS AND INFORMATICS'2026 (ICAI'26),

08 - 10 October 2026, VARNA (Technical University – Varna)

<http://icai-conf.org>

PROGRAM – IN PERSON

THE GIVEN TIME IS ACCORDING TO THE BULGARIAN TIME ZONE - SOFIA UTC+3 HOURS

Thursday, October 8th

In the NUK gallery

08:00 – 09:00 REGISTRATION OF PARTICIPANTS

Stream 1 (Conference Hall NUK)

09:00 – 09:20 WELCOME AND OPENING CEREMONY

Stream 1 (Conference Hall NUK)

09:20 - 10:50 PLENARY SESSION (PS)

Chair: Kosta Boshnakov

1.The Hybrid Intelligence Scenario as a Potential Partnership between Humans and Artificial General Intelligence (AGI)



Arthur Kordon
Kordon Consulting LLC

2.Industrial AI: Unlocking the Next Level of Engineering Productivity



Tomasz Hofler
Siemens

Stream 1 In attendance (In-person)
(Room A – Hall 109TV)

11:00 - 12:30 SESSION A11: Control Theory: Stability and Learning-Based Control of Dynamical Systems

Chair: Kosta Boshnakov

- 1 New Delay-Independent Global Stability Criteria for Linear Neutral Systems Involving Multiple Delays**, Muhammet Mert Ketencigil, Ozlem Faydasicok and Sabri Arik (2950)
- 2 Novel Results for Stability of Neutral Cohen-Grossberg Neural Networks**, Melike Solak Altuntas, Ozlem Faydasicok and Sabri Arik (7762)
- 3 A Biologically Plausible Spiking Actor-Critic for Acrobot Control**, Borislav Markov (8081)
- 4 Optimization of Control Parameters in Cold Nuclear Fusion Systems via Deep Learning Surrogates**, Todor Malchev, Milena Lazarova, Yordan Paunov, Dimitar Alexandrov and Dilyana Gospodinova (0075)

12:30 – 13:30 LUNCH in the UNIVERSITY CANTEEN

13:30 - 15:00 SESSION A12: Advanced Algorithms and Computational Methods

Chair: Kosta Boshnakov

- 1. Gate-Based Quantum Optimization of Lattice Protein Folding: An Efficient NISQ-Compatible Framework**, Ayushi and Madhvi Shakya (5828)
- 2. Fast Linear Iterations for Noise Mitigation in Multi-agent Systems**, Martin Kenyeres, Jozef Kenyeres, Ján Mojžiš, Ján Zelenka and Nayden Chivarov (4543)
- 3. Associative ART: Learning of Weighted Category Relations**, Ilia Atanasov and Rumyana Topalova (8540)
- 4. Stratified Specification Search: A Three-Criterion Decision Algorithm under Model Uncertainty**, Mariya Tsoleva (2645)

15:00 - 16:30 SESSION A13: Robotics

Chair: Milena Karova

- 1. Comparative Evaluation of Classical Bug0 Navigation and Deep Reinforcement Learning Using PPO for Mobile Robots,** Vasil Ninov (1035)
- 2. Curriculum learning framework for training a mobile robot for autonomous navigation using Proximal Policy Optimization in ROS2 and Gazebo,** Vasil Ninov, Ivan Chavdarov and Kaloyan Yovchev (4793)
- 3. Conditions for Maintaining the Orientation of a Gripper on a Planar Redundant Robot,** Bozhidar Naydenov, Ivan Chavdarov and Georgi Drenski (8211)

16:30 – 17:00 COFFEE BREAK

17:00 - 18:30 SESSION A14: Measurement, Signal Processing and Monitoring of Technical Systems

Chair: Nikola Nikolov

- 1. Operating-State Classification of Flowmeters Using Time-Domain Signal Signatures,** Pavel Dimitrov, Mariela Alexandrova, Reneta Parvanova, Ivan Grigorov and Radi Dobrev (3961)
- 2. Electrode Shape Reconstruction via a Dual-Channel 1D Convolutional Neural Network,** Murad Redzheb, Plamen Pekov and Dimiter Prodanov (9840)
- 3. Data as a Sensor for Transparent Ranking of Monitoring Positions on the A1 Sofia-Plovdiv Corridor,** Oleg Asenov and Panayot Panayotov (6706)
- 4. Analysis and optimization of power supply modules for data centers,** Elena Nikolova, Nikolay Yordanov, Viktor Dimitrov, Martin Tarlev, Viktoria Hristova and Vassilena Adamova (9134)

18:30 - 19:30 SESSION A15: COMPANY PRESENTATIONS

Chair: Nikola Nikolov

- 1. Siemens, From Data to Decision: Unlocking Industrial AI with Siemens Industrial Edge,** Rostislav Rusev, Nikola Petkov
- 2. Rittal, RITTAL RAS – from the idea to a real product,** Alexander Georgiev

19:30 COCKTAIL in the NUK Gallery

Friday, October 9th

Stream 1 In attendance (In-person)
(Room A – Hall 109TV)

09:00 - 10:30 **SESSION A21: Communication Systems and Distributed Architectures**

Chair: Mario Angelov

1. **Architecture and Enabling Technologies for Adaptive Radio Communication Nodes in Multisensor Platforms**, Ivan Ivanov and Mario Angelov (3738)
2. **Design and Implementation of a DSSS Mode for an SDR-Based Adaptive Radio Link in Multisensor Platform**, Ivan Ivanov and Mario Angelov (3983)
3. **Provisioning-Assisted Directed Forwarding Initialization for Bluetooth Mesh**, Yordan Yordanov (8672)
4. **Design, Prototyping, and Preliminary Evaluation of an Event-Driven Microservice Architecture for a Content Management System**, Plamenna Petrova and Juliana Dochkova-Todorova (4733)

10:30 - 12:00 **SESSION A22: Machine Learning: Spam Detection and Federated Learning**

Chair: Hristo Nenov

1. **Arbitration Strategies for Hybrid Spam Detection: A Controlled Experimental Comparison**, Stefka Popova, Hristo Bozhidarov Nenov and Velislav Kolesnichenko (5365)
2. **From Monolingual to Multilingual Spam Detection: Extending Hybrid Machine Learning Models Across Languages**, Stefka Popova, Hristo Bozhidarov Nenov and Velislav Kolesnichenko (6075)
3. **A Scenario-Driven Framework for Threshold Cheon-Kim-Kim-Song Federated Learning with Phase-Aware Client Availability**, Dinko Dinkov, Veneta Aleksieva and Hristo Valchanov (5354)
4. **Predictive Quorum Adaptation in Threshold Cheon-Kim-Kim-Song Federated Learning**, Dinko Dinkov, Veneta Aleksieva and Hristo Valchanov (7409)

12:00 - 13:30 SESSION A23: Human Factors and Digital Maturity in the Age of AI

Chair: Ivaylo Tsanov

- 1. Confidence Accuracy Gap in Phishing Detection: An Online Human Factors Study**, Ivaylo Tsanov (2834)
- 2. AI Related Productivity Pressure, Psychological Detachment and Work Related Exhaustion**, Ivaylo Tsanov (9380)
- 3. Linearizing Behavioral Metrics for Scalable User Happiness Assessment**, Svetlana Syarova, Genadiy Gospodinov, Teodora Nikolova, Yoana Hadzhiyska, Miglena Molhova-Vladova and Stefka Toleva-Stoimenova (8570)
- 4. Determinants of Digital Maturity of Small and Medium-sized Enterprises**, Kamen Spasov and Nikolay Netov (9118)

13:30 – 14:30 LUNCH in the UNIVERSITY CANTEEN

14:30 – 16:00 SESSION A24: Generative and Agentic AI

Chair: Ani Epitropova

- 1. Legal and Ethical Boundaries of AI-Based Computer Vision for Water Safety: A Regulatory Analysis of an “AI Lifeguard” System in Bulgaria**, Vasil Zagorchev and Nikolay Netov (6754)
- 2. A Product-Based Framework for Evaluating Visible Human Contribution in AI-Assisted Educational Content Development**, Ani Epitropova (5859)
- 3. Application of Linear Regression Analysis to Predict Global Trends and User Dynamics of ChatGPT**, Desislava D. Angelova and Zheyno I. Zheynov (6256)
- 4. Systematic literature review on Agentic AI in Business Process Management**, Vanesa Filisyan (8267)

16:00 – 16:30 COFFEE BREAK

16:30 - 18:00 SESSION A25: Applied Software Engineering

Chair: Ventsislav Nikolov

- 1. Good Enough, Until It Isn't: The Debt of Frugal Process Automation**, Mahendrawathi Er, Karina Filza Aafiyah, Kesya Lintang Syawalani, Naila Ramadhani, Nikolaos Nousias, George Tsakalidis and Kostas Vergidis (7422)
- 2. Automating BPMN Model Generation of Public Services through RPA and AI Agents**, Panagiotis Drakopoulos and Kostas Vergidis (8166)
- 3. Interactive Web-Based Exploration of High-Resolution ICON-LAM Precipitation Forecasts Using Client-Side Spatial Filtering**, Catalin-Stefan Rucareanu (8469)
- 4. An empirical and comparative study of Agile and Waterfall approaches to IT project management and their application in corporate organizational structures**, Ivaylo Petrov (7936)

20:00 GALA DINNER

Saturday, October 10th

Stream 1 In attendance (In-person)

(Room A – Hall 109TV)

09:00 - 10:30 SESSION A31: Decision Support Systems under Uncertainty

Chair: Valeriy Kolesnikov

- 1. Favourable Dynamic Change as a Proxy of Difference in Values of Utility**, Mohamed Daboos, Natalia Nikolova, Gabriela Petrova and Kiril Tenekedjiev (0261)
- 2. A Novel Classification Approach for Disasters in Intelligent Decision Support Systems**, Martin Bakardzhiev (7328)
- 3. Hazard-Aware Routing to Civil Protection Shelters Using Dijkstra's Algorithm and Multi-Layer Geospatial Graphs**, Valeriy Kolesnikov, Kateryna Abramova and Maksym Ovcharenko (6861)
- 4. User adoption of AI decision support systems**, Krasimira Georgieva and Iskra Karaivanova (6892)

10:30 - 12:00 SESSION A32: Machine Learning for Finance and Business Analytics

Chair: Yanka Alexandrova

- 1. Modeling Borrower Repayment Performance in Consumer Credit Lending**, Dimitre Tomov, Alexander Efremov and Atanas Atanasov (0475)
- 2. Machine Learning for Corporate Distress Prediction across Information Environments: Evidence from Bulgaria**, Yanka Alexandrova (2170)
- 3. Combining Statistical and Machine Learning Forecasts for Erratic Retail Demand**, Yanka Alexandrova, Yordan Atanasov and Violeta Dimitrova (0651)
- 4. A Business Intelligence-Centered Framework for Explainable and Actionable Machine Learning**, Yanka Alexandrova and Mihaela Muntean (0528)

12:00 - 13:30 SESSION A33: Educational Data Analytics and E-Learning

Chair: Valeria Simeonova

- 1. A Case Study Comparison of Logistic Regression, Random Forest, and Gradient Boosting for Predicting Computer Science Student Placement: Evidence from a Single Institution Dataset**, Ivo Vladimirov Rakitin, Evgeniya Vladimirova Rakitina-Qureshi, Hristo Bozhidarov Nenov, Neli Ananieva Arabadzhieva-Kalcheva, Donika Georgieva Stoyanova and Daniela Ivanova Petrova (0300)
- 2. Impact of Dataset Scale on Predictive Performance in Educational Analytics: A Learning Curve Analysis of Random Forest for Student Placement Prediction**, Ivo Vladimirov Rakitin, Evgeniya Vladimirova Rakitina-Qureshi, Milen Georgiev Angelov, Donika Georgieva Stoyanova, Dimitrichka Zheleva Nikolaeva and Stefka Popova (1490)
- 3. ROTLA: A Temporal Learning Analytics Core Combining Behavioral, Psychological and Affective Indicators in Moodle-Based Courses**, Maria Garbova, Krassen Stefanov, Valeria Simeonova and Dafinca Miteva (7555)
- 4. ACRA-ROTLA: An Integrated Affective-Cognitive Risk Analysis Framework for Early Detection of At-Risk Students in E-Learning**, Maria Garbova, Krassen Stefanov, Valeria Simeonova and Dafinca Miteva (9176)

13:30 – 14:30 LUNCH

14:30 - 16:00 SESSION A34: Image Analysis for Environmental Monitoring

Chair: Monika Bedzheva

- 1. A methodology for studying temperature changes in the marine areas of the Republic of Bulgaria using thermal satellite imagery**, Monika Bedzheva, Daniel Draganov and Yordanka Yordanova (0621)
- 2. A methodology for monitoring of sea beaches using multispectral satellite imagery**, Monika Bedzheva, Tatyana Moneva, Naylyan Salieva, Stanimira Stoyanova and Andriana Ivanova (6873)
- 3. Comparative Assessment of Classical Machine Learning and Temporal Neural Networks for SAR-Based Forest Disturbance Detection in the Burgas Region**, Philipa Aleksandrova, Chavdar Alexandrov and Miroslav Tsvetkov (8372)
- 4. A system for analysis of digital images of underwater objects**, Ventsislav Nikolov and Daniel Hernández-Sosa (1272)

17:00 – 17:15 CLOSING CEREMONY