

# SAMI 2024 Preliminary Program

## January 25, Thursday



9:00 – 9:20 Opening Ceremony

9:20 – 10:00 Plenary Session I  
Session chair: **Dániel András Drexler**

*Conference Room*

92	<b>Antonio Visioli</b>	Closed-Loop Control of Total Intravenous Anesthesia
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10:00 – 10:20 Coffee break

10:20 – 11:00 Plenary Session II  
Session chair: **Imre J. Rudas**

*Conference Room*

105	<b>Zsombor Zrubka</b>	Economic and Societal Benefits of Advanced Digital Technologies in Medicine
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11:00 – 11:40 Plenary Session III  
Session chair: **Péter Galambos**

*Conference Room*

96	<b>Dániel András Drexler</b>	Personalizing Chemotherapy based on Mathematical Modeling
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11:40 – 13:00 Lunch

*Restaurant*

12:40 – 14:40 [T1a] Session on Intelligent Robotics and Man-Machine Systems  
Session chair: **Ján Vaščák**

*Conference Room*

103	<b>Márton Cserni and András Rövid</b>	Mono-Camera Based Vehicle Orientation Detector for Autonomous Driving
82	<b>Matúš Smolko, Peter Papcun and Ján Vaščák</b>	OMICRON - Design of a Swarm Robot with Wireless Communication
72	<b>Levente Tamas, Stefan Gubo and Tibor Lukic</b>	Vine Diseases Detection Trials in the Carpathian Region with Proximity Aerial Images
17	<b>Nada El Yasmine Aichaoui</b>	Enhancing Safety Protocols for Human-Robot Collaboration in Welding Environments: Investigation Review into Augmenting Worker Safety within Robot Hazard Zones

58	<b>Ján Magyar, Martina Szabóová and Peter Sincak</b>	Enhancing Museum Visitor Engagement: Personalized Learning with Adaptive Robot Tutor
104	<b>Mihály Csonthó and András Rövid</b>	Mapping Lane Markings with Multi-Sensor Data

**13:00 – 14:40 [T1b] Session on Artificial Intelligence I**

*Business Lounge*

Session chair: Péter Galambos

40	<b>Taichi Megumi and Takayuki Kawahara</b>	Circuit Optimization of Ternary Sparse Neural Net
7	<b>Nevena Rankovic and Dragica Rankovic</b>	Power of LSTM and SHAP in the Use Case Point Approach for Software Effort and Cost Estimation
53	<b>Artúr István Károly, Imre Nádas and Péter Galambos</b>	Synthetic Multimodal Video Benchmark (SMVB): Utilizing Blender for rich dataset generation
41	<b>Akari Endo, Taichi Megumi and Takayuki Kawahara</b>	Fabrication and Evaluation of a 22nm 512 Spin Fully Coupled Annealing Processor for a 4k Spin Scalable Fully Coupled Annealing Processing System
66	<b>Gergő Bogacsovics, Balazs Harangi, Marcell Beregi-Kovács, Dávid Kupás, Róbert Lakatos, Norbert Serbán, Attila Tiba and János Tóth</b>	Assessing Conventional and Deep Learning-Based Approaches for Named Entity Recognition in Unstructured Hungarian Medical Reports

**13:00 – 14:40 [T1c] Special Session on Digitalisation, Generation Research, Consumer Trends I**

*e-poster*

Session organizers and chairs: Mónika Garai-Fodor, Ágnes Csiszárík-Kocsir and János Varga

110	<b>Dobos Oszkár and Ágnes Csiszárík-Kocsir</b>	Internal stakeholders' views on the management and success factors of RDI projects in Hungarian, Polish and Romanian enterprises
111	<b>Berényi Csaba and Ágnes Csiszárík-Kocsir</b>	Approach to the digital world with a security perspective through an agile lens
112	<b>Ágnes Csiszárík-Kocsir and István Márk Tóth</b>	Exploring knowledge of the agile approach through primary research
113	<b>Ágnes Csiszárík-Kocsir and Oszkár Dobos</b>	The place of innovation-driven project management in the life of Hungarian and Slovak enterprises
114	<b>János Varga and Ágnes Csiszárík-Kocsir</b>	The emergence of sustainability in the practices of Hungarian and Slovak micro, small and medium-sized enterprises
115	<b>Monika Garai-Fodor and Katalin Jäckel</b>	Aspects of Generation Z job choice in 2023 based on the results of primary research among Chinese and Hungarian youth
116	<b>Patrik Viktor and Monika Garai-Fodor</b>	Examining Internet of Things (IoT) Devices: A Comprehensive Analysis
117	<b>Patrik Viktor</b>	Analyzing the Relationship Between MOOC Family Systems and the Financial Status of Local College Students
118	<b>Ágnes Csiszárík-Kocsir, János Varga, Anett Popovics and Mónika Garai-Fodor</b>	Generation-specific perception of competences leading to agility

14:40 – 15:00 Coffee break

**15:00 – 17:40 [T2] Special Session on 5G and Cybersecurity**  
Session organizers and chairs: Anna Bánáti and Miklós Kozlovszky

*Conference Room*

31	<b>Yue Wu and Zoltán Rajnai</b>	5G Standardisation: case study in China
38	<b>Lourdes Ruiz and Rajnai Zoltan</b>	5G Networks in Spain: Status, Applications and Opportunities
52	<b>Silvana Qose and Rajnai Zoltan</b>	Supply Chain in the Context of 5G Technology Security and Legal Aspects
57	<b>Haya Altaieb and Zoltán Rajnai</b>	5G Evolution and Supply Chain Security in MENA Region: Challenges and Opportunities
69	<b>Esmeralda Kadena and Rajnai Zoltan</b>	5G Supply Chain: An overview of applications and challenges
93	<b>Szandra Anna Laczi and Valéria Póser</b>	From Playpens to Passwords: The Evolution of Digital Age Parenting
100	<b>Máté Érsok, Ádám Balogh, Laszlo Erdodi and Anna Bánáti</b>	Improving CTF Event Organization: A Case Study on Utilizing Open Source Technologies
101	<b>Balogh Ádám, Érsok Máté and Bánáti Anna</b>	Concept for real time attacker profiling with honeypots, by skill based attacker maturity model

18:00 Welcome Reception

*Restaurant*

## January 26, Friday

**9:20 – 10:40 [F1a] Session on Intelligent Manufacturing Systems and Systems Engineering**  
Session chair: Zsolt Čonka

*Conference Room*

119	<b>László Horváth</b>	Empowering Models for High Automation in Engineering
48	<b>Iman Sharifirad and Jalil Boudjadar</b>	A Computationally-efficient Semi-supervised Learning Model for the Estimation of State Degradation of a Milling Tool
120	<b>András Rácz-Szabó, Tamás Ruppert and János Abonyi</b>	Enhancing material supply for an automated production line by implementing a Markov Decision Process model for AGV-based material handling
62	<b>Zsolt Čonka, Marek Bobcek, Róbert Stefko, Matej Karabinos, Judith Palfi and Ferenc Molnar</b>	GUI interface design in matlab app designer environment for electronic load in hybrid systems

**9:40 – 10:40 [F1b] Session on Engineering Education and Biomedical Engineering***Business Lounge*Session chair: Dániel András Drexler

21	<b>István Dániel Sanda and Ildikó Holik</b>	Attempts at Renewing Vocational Training and Education in Hungary in the 17th century
91	<b>Tamás Dániel Szűcs, Melánia Puskás, Dániel András Drexler and Levente Kovács</b>	Model predictive fuzzy control in chemotherapy with Hessian based optimization
27	<b>Chukwuemeka Malachi Ugwu, Carrine Pierrette Mukamakuza and Emmanuel Tuyishimire</b>	ECG Signals based Heartbeat Classification: A Comparative Study of Artificial Neural Network and Support Vector Machine Classifiers.

10:40 – 11:00 Coffee break

**11:00 – 12:00 [F2a] Special Session on Digitalisation, Generation Research, Consumer Trends II***Conference Room*Session organizers and chairs: Mónika Garai-Fodor, Ágnes Csiszárík-Kocsir and János Varga

106	<b>György Molnár, Enikő Nagy, Péter Ludik and Bálint Nagy</b>	On the effectiveness of MaxWhere 3D user interface
107	<b>László Kadocsa, István Gulyás and György Molnár</b>	VR supported outer space education
108	<b>Éva Karl, Enikő Nagy and György Molnár</b>	Designing assessment processes using the student involvement method by WTCAi system

**11:00 – 12:00 [F2b] Special Session on Recent PhD Research Achievements in Applied Informatics I***Business Lounge*Session organizer and chair: László Horváth

56	<b>Suryakant Tyagi and Sándor Szénási</b>	Exploring the Potential of Convolutional Neural Networks in Sequential Data Analysis: A Comparative Study with LSTMs and BiLSTMs
63	<b>András Kovács, Sándor Szénási and Robert Lovas</b>	Resource estimation for executing program codes using machine learning
73	<b>Attila Biró, Katalin Tünde Jánosi-Rancz and László Szilágyi</b>	Real-time Artificial Intelligence Text Analysis for Identifying Burnout Syndromes in High-Performance Athletes
79	<b>Attila Biró, Antonio Cuesta-Vargas and László Szilágyi</b>	AI-controlled training method for performance hardening or injury recovery in sports

12:00 – 13:00 Lunch

*Restaurant*

**13:00 – 15:00 [F3a] Session on Informatics I**  
Session chair: Jean Rosemond Dora

*Conference Room*

77	<b>Jean Rosemond Dora, Ladislav Hluchy and Karol Nemoga</b>	Detection and Exploitation of Intelligent Platform Management Interface (IPMI)*
8	<b>Michal Kvet and Marek Kvet</b>	Top data analysis performance – case study
33	<b>Thomas Hirsch and Birgit Hofer</b>	Predictive Reranking using Code Smells for Information Retrieval Fault Localization
30	<b>Ivan Škula and Michal Kvet</b>	URL and Domain Obfuscation Techniques - Prevalence and Trends Observed on Phishing Data
67	<b>Kristian Micko and Peter Papcun</b>	Indoor Localization System Using Smartphone Cameras and Sensors
34	<b>Michal Kvet</b>	Rapid Application Development and data management using Oracle APEX and SQL

**13:00 – 14:40 [F3b] Session on Intelligence Mechatronics and Computational Intelligence**  
Session chair: Ladislav Főző

*Business Lounge*

42	<b>Róbert Roman, László Dávid and László Szilágyi</b>	Development of A Novel Solar Photovoltaic Energy Converter To Increase Off-Grid Solar Powerplant Energy Efficiency, Decrease Energy Storage Costs And Increase Monetary Return On Investment
45	<b>Stephen Kimathi and Bela Lantos</b>	Simultaneous attitude and position tracking using dual quaternion parameterized dynamics
78	<b>Fodor Attila, Döníz Borsos and Tamás Sándor</b>	Fuzzy-based Gear Shifting Algorithm for Twin-drive in MATLAB Simulink model
14	<b>Tom Tuunainen, Olli Isohanni and Mitha Rachel Jose</b>	A comparative study on the application of Convolutional Neural Networks for wooden panel defect detection
71	<b>Dumitru-Cristian Apostol, Razvan Bogdan and Marius Marcu</b>	UML Diagrams in Teaching Software Engineering Classes. A Case Study In Computer Science Class

**13:00 – 15:00 [F3c] Session on Artificial Intelligence, Biomedical Engineering, Intelligent Robotics, Systems Engineering and Engineering Education**  
Session chair: Rita Fleiner

*e-poster*

26	<b>Simon-Johannes Burgdorf, Thomas Roddelkopf and Kerstin Thurow</b>	Automated colony detection in fluorescent images using U-Net models
65	<b>Martin Sarnovsky and Michal Kolarik</b>	Use of deep learning to automate the annotation of USG lung image data
89	<b>Pouria Maleki, Abbas Ramazani, Hassan Khotanlou, Sina Ojaghi, Milad Mousavi, Alexey Kalinin and Amir Mosavi</b>	Object Detection of Emergency Vehicles with Yolo
97	<b>Attila Varga, Rita Fleiner and Eszter Kail</b>	Review of precious metal exchange rates forecasts

75	<b>Adriána Špaková, Norbert Ferenčík, Veronika Sedláková, Petra Kolembusová, William Steingartner and Radovan Hudák</b>	Device for monitoring the vital functions of athletes using Arduino UNO development board
70	<b>Branislav Sobota, Milan Guzan, Simona Kirešová and Štefan Korečko</b>	XR Training Environment Using a Dataset for Trustworthy Human-Robot Interaction in an Unconventional Environment
80	<b>Petra Kolembusová, Norbert Ferenčík, William Steingartner, Radovan Hudák, Veronika Sedláková and Branko Štefanovič</b>	Design and construction of a medium chamber for a tissue bioreactor system
44	<b>Bertalan Beszédes</b>	Small-scale Off-grid Energy Supply System Architecture for Sustainable Greenhouses

15:00 – 15:20 Coffee break

**15:20 – 17:00 [F4a] Session on Artificial Intelligence II**

*Conference Room*

Session chair: Lóránt Szabó

13	<b>Lixian Zhou, Hamza Salaar, Michael Schmidt and Georg Arbeiter</b>	Autoshuttle: A Novel Dataset for Advancing Autonomous Driving in Shuttle-Specific Environments
76	<b>Ruixuan Mao, Modafar Al-Shouha and Gábor Szűcs</b>	Spectral Generalized Category Discovery by training on combined labels
99	<b>Lóránt Szabó, Zoltán Weltsch and Andrea Ádámné Major</b>	A Comprehensive Review of Existing Datasets for Off-road Autonomous Vehicles
54	<b>Xufeng Bai, Tasmina Islam and M A Hannan Bin Azhar</b>	Transformer-based Models for Enhanced Amur Tiger Re-Identification
98	<b>Ajmal Shahbaz, Wenhao Zhang and Melvyn Smith</b>	A two-stage approach using YOLO for automated assessment of digital dermatitis within Dairy Cattle

**16:30 – 17:20 [F4b] Session on Informatics II**

*e-poster*

Session chair: Matúš Pleva

22	<b>Marek Horváth and Emília Pietriková</b>	An Experimental Comparison of Three Code Similarity Tools on Over 1,000 Student Projects
25	<b>Anna Biceková, František Babič and Michal Michňák</b>	Road Accidents Dataset Analysis through Attribute-oriented Induction
28	<b>Oliver Lohaj, Ján Paralič, Jakub Ivan Vanko and Daria Kushnir</b>	Usability of a synthetically generated data set for decision support

36	<b>Katarína Demčáková, Dávid Vaľko and Norbert Ádám</b>	Computational Paradigms for Heart Arrhythmia Detection: Leveraging Neural Networks
47	<b>Anton Balaz, Emilia Pietrikova, Branislav Mados and Roland Jansky</b>	ICT Security through Games
51	<b>Maroš Harahus, Zuzana Sokolová, Matus Pleva and Daniel Hladek</b>	Fine-tuning GPT-J for text generation tasks in~the~Slovak language
87	<b>Siyang Wu</b>	A Compact LSTM-SVM Fusion Model for Long-Duration Cardiovascular Diseases Detection

18:00 Banquet

*Restaurant*

## January 27, Saturday

**9:40 – 12:00 [S1a] Session on Informatics III**  
Session chair: György Molnár

*Conference Room*

29	<b>Andrea Tick and Nikolett Szabó-Harka</b>	Analysis of Information security in a corporate environment – a human perspective
50	<b>Tomáš Kormaník, Jaroslav Porubán and Matúš Čavojský</b>	Automated Testing of Over 1,000 Student Assignments: Benefits of Kubernetes
46	<b>Tibor Guzsvinecz, Judit Szűcs and Erika Perge</b>	Towards Understanding Exocentric Distance Estimation Skills of University Students in Virtual Reality
1	<b>Bálint Krisztián</b>	The Possibility of Creating an NFT (Non-Fungible Token) Based University Diploma
55	<b>Brúnó Krasnyánszki, Sándor Tihamér Brassai and András Németh</b>	UAV weaknesses against deauthentication based hijacking attacks
61	<b>László Ady, Daniel Tokody and Péter János Varga</b>	Possibilities of publication process automation
60	<b>Csaba Hajdu and Adam Csapo</b>	Hierarchical data extraction Hungraian Documents with Recurrent Neural Networks

**10:45 – 12:00 [S1b] Special Session on Recent PhD Research Achievements in Applied Informatics II**

*Business Lounge*

Session organizer and chair: **László Horváth**

86	<b>Marine Voskanyan, Hamzeh Ghorbani and Mohammadreza Azodinia</b>	Utilizing Citizen-Driven Scientific Endeavors for Freshwater Pollution Surveillance: A case report of Lake Sevan, Armenia
88	<b>Anatoliy Kulikov, Vladimir Kaverin and Amir Mosavi</b>	Simulation of an Electric Conveyor Drive Using Simulink Matlab
90	<b>Amirreza Jalili, Hamed Tabrizchi, Jafar Razmara and Amir Mosavi</b>	BiLSTM for Resume Classification
94	<b>Fereshteh Taramideh, Ramin Fazloulou, Bahram Choubin, Mehdi Masoodi and Amir Mosavi</b>	Ensemble Machine Learning for Urban Flood Hazard Assessment
95	<b>Saeideh Karimi, Mehdi Heidari and Amir Mosavi</b>	Machine Learning for Modeling Vegetation Restoration of Forests Using Satellite Images

12:00

Lunch

*Restaurant*

**Thank you for your contribution!**  
**See you at SAMI 2025!**