

SACI 2024 Preliminary Program

Venue: Conference Center, Politehnica University of Timisoara

Address: 2, Vasile Parvan Blvd., 300223 Timisoara, Romania

May 23, Thursday

9:00 – 9:20 **Opening Ceremony** Auditorium

9:20 – 9:55 **Plenary Talk I** Auditorium
Session chair: Imre J. Rudas

124	Hamido Fujita	Views on Artificial Intelligence and Machine Learning perspectives
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9:55 – 10:30 **Plenary Talk II** Auditorium
Session chair: Levente Kovács

128	Haibin Zhu	E-CARGO and Role-based Collaboration
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10:30 – 10:50 Coffee break

10:50 – 11:25 **Plenary Talk III** Auditorium
Session chair: Péter Galambos

101	Swaswati Purkayastha, Kandarpa Kumar Sarma and Nikos Mastorakis	Spread Spectrum Modulation Combined with AI in for Jamming Resistant Communication
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11:25 – 12:00 Plenary Talk IV

Auditorium

Session chair: Marius Marcu

129	Mihai Udrescu	Turning the tables in hybrid classical-quantum systems—classical optimization of quantum algorithms
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12:00 – 13:20 Lunch

Restorant Universitar (address: Aleea FC Ripensia no. 1)

13:20 – 14:40 [T1a] Special session on Nonlinear Mathematical Problems: Theory and Applications I

Auditorium

Session organizer and chair: Alexandru Kristály

103	Timea Melinda Személy Fülöp and Diana Ioana Borlea	Integral Characterizations of Uniform h-Dichotomy in Mean for Stochastic Skew-Evolution Semiflows
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Ana Şirianţu: Zabczyk type theorems for stability of variational systems - an ergodic theory approach

Dhivya Prabhu K: A third order iterative algorithm for inversion of cumulative central beta distribution

Árpád Baricz: Generalized gamma convolutions and modified Bessel distributions

13:20 – 14:40 [T1b] Session on Systems Engineering I

Room K1 Amphitheater

Session chair: Péter Kádár

70	Cezara-Liliana Rat, Octavian Prostean and Catalin Ichim-Burlacu	Simplified DC-DC converter models for interconnecting loads to a DC microgrid
31	Róbert Štefko and Marek Bobček	Artificial Intelligence and Energy Efficiency Revolution in Electric Consumption Management
65	Peter Kadar and István Bendiák	Laboratory Studies of Artificial Inertia
126	László Horváth	Multidisciplinary and Multiphysical Model Represents Complex Research in Applied Informatics

14:40 – 15:00 Coffee break

15:00 – 16:20 [T2a] Special session on Nonlinear Mathematical Problems: Theory and Applications II

Auditorium

Session organizer and chair: Alexandru Kristály

108	Ariana Gaina and Mihail Megan	On Uniform Dichotomy with Growth Rates of Skew-Evolution Cocycles in Banach Spaces
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Carmen-Florinela Popa: Discrete Characterizations of h-Dichotomy for Linear Discrete-Time Systems in Banach Spaces

Csaba Farkas: A fourth-order nonlinear eigenvalue problem with singular and sublinear potential

Alexandru Kristály: Clamped plates on curved spaces

15:00 – 16:20 [T2b] Special session on Digitalisation, Generation Research, Consumer Trends

Room K1 Amphitheater

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

2	Krisztian Balint	Comparison of the Consumer Blockchain (CB) and the Óbuda Ethereum Private Blockchain (ÓEPB) to Store Even More Secure Consumer Habits
33	Máté Prorok and István Takács	The Impacts of Artificial Intelligence and Knowledge-Based Systems on Corporate Decision Support
48	Kornelia Lazanyi	Exploring Social Dynamics in the Information Society
89	Rozalia Hanna Szatmary	Generational Differences in Online Behavior - Exploring Attitudes Towards Privacy, Trust, and Social Interaction

15:00 – 16:20 [T2c] E-poster session on Computational Intelligence and Systems Engineering

Room K2 Amphitheater

Session chair: Ladislav Főző

8	Hairong Chen, Qiaolin Zhang and István Bíró pending	A Comparative Analysis of Different Longitudinal Bending Stiffness Shoes on Running Biomechanics in Adolescent Amateur Runners
10	Qiaolin Zhang, Hairong Chen, Xinyan Jiang and Bíró István pending	Prediction and effectiveness verification of Chevron osteotomy surgical plan using finite element method
23	Xinyan Jiang, Qiaolin Zhang and István Bíró pending	Effects of long-distance running on lower limb joint kinematics in recreational runners
62	Rudolf Andoga, Ladislav Főző and Ján Vaščák	Fuzzy adaptive speed controller for a small turbojet engine
80	Dániel Kovács and Éva Hajnal	Current and Potential New Methods to Prevent Damage Caused by Wild Animals in Agricultural Areas

85	Ágnes Gerse, Adrienn Dineva and Rita Fleiner	The Impact of Spatial Distribution on Wind Power Availability: A Model-based Analysis for Hungary
98	Jozef Pavlinský, Peter Gašparovič, Ladislav Főző and Rudolf Andoga	Various wing end plates and their effect on the two-dimensionality of airflow
20	Monika Pogatsnik, Éva Beke and Rita Bodáné Kendrovics	Essential Teambuilding Skills For Project Work In Engineering Studies

16:20 – 18:00 [T3a] Session on Computational Intelligence I

Auditorium

Session chair: János Grantner

16	Vladik Kreinovich, Olga Kosheleva and Ahnaf Farhan	Fuzzy Ideas Explain Fechner Law and Help Detect Relation Between Objects in Video
28	Mohsen Mohaidat, Fatemeh Rashidi Fathabadi, Koloud N. Alkhamaiseh, Janos Grantner, Saad A. Shebrain and Ikhlas Abdel-Qader	A Systematic Approach to The Development of An Automated Assessment System for Laparoscopic Surgery Fundamentals
39	Alexandru M. Pescaru and Mihai V. Micea	Driving behavior extraction based on eyes movement patterns
112	Ildar Batyrshin and Imre Rudas	New Similarity Correlation Functions for Sets and Binary Data based on Jaccard Similarity Measure
18	Esra Çakir	Multi-Criteria Evaluation of Battery Electric Vehicles via Circular Intuitionistic Fuzzy PROMETHEE

16:20 – 18:00 [T3b] Session on Computational Intelligence II

Room K1 Amphitheater

Session chair: László Lindenmaier

26	Gábor Knyihár and Kristóf Csorba	Utilizing Transfer Learning in In Vitro Dissolution Prediction based on Raman Maps
52	George-Vlăduț Popescu, Mihai Antonescu, Alexandra-Mihaela Enescu and Teodor Mărgineanu	Evaluation of DarkNet19 and DarkNet53 Inference Time on CPU, GPU, and FPGA
13	Wei Liu, Kaiwen Li, Wenhua Li, Rui Wang and Tao Zhang	Multi-agent Deep Reinforcement Learning for Multi-modal Orienteering Problem
37	László Lindenmaier, Szilárd Aradi and István Ferenc Lövétei	Real-Time Rail Energy Consumption Minimization: Optimal Speed Profile Planning
81	Domonkos Csuzdi, Olivér Törő and Tamás Bécsi	Differentiable Particle Filtering using Optimal Placement Resampling

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

40	Lili Belkovics, Krisztina András and István Takács	Formula 1 - Information Solutions on and off the Racetrack
69	Mariann Bekesy, Laszlo Gulacsi and Orsolya Szigeti	Cultural differences in attitudes towards robots - based on negative attitude towards robots (NARS) scale: Protocol for a systematic literature review
113	Csilla Mizser	Tasks related to whistleblower protection. Integrity and organization
114	János Kosztolányi and Zsolt Téglá	Lean Management Knowledge Survey in Hungary
117	Izabella Krájnik and Róbert Demeter	QR code applications digital literacy skills in today's technology-driven world in the field of education
118	Ágnes Csiszárík-Kocsir, István Márk Tóth and János Varga	Aspects of successful teamwork on the road to agility
119	János Varga and Ágnes Csiszárík-Kocsir	Small business digital solutions for competitive advantage in operations
120	Ágnes Csiszárík-Kocsir, Bernadett Revák and Serkan Savas	The use of artificial intelligence in learning on social networking sites among Hungarian and Turkish youth
121	Attila Balogh	The role of Top Management in Corporate Innovation Projects
122	Katalin Jaeckel and Monika Garai-Fodor	AI as viewed by Generation Z. Advantages, disadvantages and challenges of AI based on primary findings.

18:30 Welcome Reception

Restorant Universitar (address: Aleea FC Ripensia no. 1)

May 24, Friday

8:40 – 10:40 [F1a] Session on Informatics I

Auditorium

Session chair: Ryszard Klempous

27	Raul Brumar, Mihai-Alexandru Grosu, Stelian Nicola and Horia Ciocarlie	Streamlining Serious Game Development: An extensible system for unifying controls in cross-platform serious game development
63	Rajmund Drenyovszki and Zsolt Csaba Johanyák	Development of an Attack Detection Module for Vehicular Ad-hoc Networks
71	Oana Sorina Chirila, Denis Avram, Mihaela Monica Szilagyi, Ciprian-Bogdan Chirila and Lăcrămioara Stoicu-Tivadar	Enhancing Patient Care: Achieving Interoperability between General Practitioners' and Stomatologists' information systems using FHIR standard and Firebase cloud
130	Akihiro Yorita, Mario Radke, Matthias Rättsch and Naoyuki Kubota	Self-Categorization Theory with 3D Emotional Model for Chatbot Emotional Support Systems
84	Ciprian-Bogdan Chirila and Ioana Sora	Java single vs. platform vs. virtual threads runtime performance assessment in the context of key class detection
116	Marek Kulbacki, Zenon Chaczko, Sophie Barton, Peter Wajs-Chaczko, Jan Nikodem, Jerzy Rozenblit, Ryszard Klempous, Atsushi Ito and Michał Kulbacki	Weaponization of IoT

8:40 – 10:40 [F1b] Session on Informatics II

Room K1 Amphitheater

Session chair: Zoltán Rajnai

6	Awudu Atinga, Krisztián Krisztián Kósi and József K Tar	Improving the Tracking Precision of a Robust Sliding Mode Controller using Steffensen's Convergence Accelerator Strategy
30	Mario-Mihai Mateas and Cosmin Marsavina	Pie: A General-Purpose Code Editor Focused on Simplicity
22	Attila Nagy, Szilvia Ács, Anikó Horváth-Kiss, Beatrix Fregan and Zoltán Prof Dr. Rajnai	Machine Learning Used In Cyber Security
74	Toraş-Mihnea Jipianu and Iulian Aciobanitei	An implementation for secure data deduplication on end-to-end encrypted documents
51	Dorottya Mandic, Gabor Kiss and Zoltan Rajnai	Password usage among users of smart devices in Hungary and Serbia
127	Attila Biro	Gamification, GenAI and Reinforcement Learning as Motivational Assets in Performance Sports

8:40 – 10:40 [F1c] Session on Computational Intelligence III

Room K2 Amphitheater

Session chair: Dániel András Drexler

29	Krisztian Búza	Activity Recognition Based on Accelerometer Data with Enhanced ROCKET Algorithm
86	Vivien Roxána Patakvolgyi, Levente Kovács and Dániel András Drexler	Artificial neural networks based cell counting techniques using microscopic images: A review
42	Tamás Tompa and Szilveszter Kovács	Integrating Expert Knowledge into Fuzzy Reinforcement Learning
88	Lilla Kisbenedek, Melánia Puskás, Levente Kovács and Dániel András Drexler	Noise reduction with wavelet transform for clustering time series of tumor volumes

Bálint Varga: Toward Adaptive Cooperation: Model-based Shared Control Using LQ-Differential Games

92	Martin Ferenc Dömény, Melánia Puskás, Levente Kovács and Dániel András Drexler	A review of multi-objective optimization algorithms in the field of chemotherapy optimization
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10:40 – 11:00 Coffee break

11:00 – 13:00 [F2a] Session on Informatics III

Auditorium

Session chair: Bálint Varga

24	Daniel Ferenczi and Melinda Tóth	Safe process state upgrades through static analysis
53	Sára Szatmáry	Analysis of optimization task running results on D-Wave and IBM quantum computers
75	George Andronache and Iulian Aciobanitei	DAnke - An application for promoting a healthy lifestyle using gamification and blockchain
78	Márk Tamás Baross, András Németh, Balázs Gábor Szatmári, Tibor Ágoston and Péter János Varga	Implemented University practical course for 5G Stand Alone system with Augmented Reality
91	Judit Szucs and Tibor Guzsvinecz	A Preliminary Analysis of E-sports Game Reviews
76	Bianca-Daniela Ionașcu and Iulian Aciobanitei	Enriching an Open-Source Access Management Platform using Multi-Factor Authentication

11:00 – 12:40 [F2b] Session on Systems Engineering II

Room K1 Amphitheater

Session chair: Zsolt Čonka

57	Marek Bobcek, Zsolt Čonka and Judith Palfi	Neural Network-Based Fault Learning using Artificial Intelligence and Kalman's Filter
102	Atlanta Choudhury, Kandarpa Kumar Sarma and Nikos Mastorakis	AI- based Text to Scene Generation as part of a Pandemic Compliant Infrastructure
54	Károly Tamás Dr. Beneda and Bendegúz Balázs Bánfi	Electronic Rotor Speed Control for a Sustainable Aviation Fuel Pump Test Bench
115	Mariann Váraljai, Enikő Nagy, Bálint Nagy, Zoltán Balogh and György Molnár	Mindset-Shaping Solutions with Innovative IT and PM technologies in Higher Education
79	Mhd Bashar Al Kazzaz and Károly Tamás Beneda	Implementing supplemental fuel system for testing sustainable aviation fuel on TKT-1 micro turbojet engine

11:00 – 12:00 [F2c] e-poster session on Informatics and Intelligent Robotics

Room K2 Amphitheater

Session chairs: Miklós Mezei, Tamás Nógrádi and Gábor Molnár

15	Sara Kishan Roodbari, Saeed Beheshtian, Hamzeh Ghorbani, Mohammadreza Azodinia and Mohammed Mudabbir	Machine Learning-Based Prediction of Gas Hydrates Phase Equilibrium in Porous Medium Leveraging Big Data
58	Sándor Szénási, Gábor Légrádi and Balázs Vígh	Machine Learning-Assisted Approach for Optimizing Step Size of Hill Climbing Algorithm
64	Jean Rosemond Dora, Hluchy Ladislav and Jean Rosemond Dora	Exploitation of Thick Client Application Vulnerabilities and a Synopsis of Mitigation
125	Ákos Antal, Bálint Szabó, Ákos Szlávecz, Katalin Kovács, J. Geoffrey Chase and Balázs Benyó	Applying NeuralODE-based Cardiovascular Model Identification for Experimental Data Analysis
123	Szava Bansaghi, Laszlo Gulacsi, Marta Pentek and Tamás Haidegger	Digital Medical Devices in Infection Prevention and Control

12:30 – 14:00 Lunch

Restorant Universitar (address: Aleea FC Ripensia no. 1)

14:20 – 16:00 [F3a] Session on Intelligent Mechatronics and Intelligent Robotics

Auditorium

Session chair: Enikő Nagy

77	Krish K. Raj, Jiuta Tamata, Litili Waisale, Mansour H. Assaf, Voicu Groza and Rahul R. Kumar	Enhancing Reliability in Induction Machines: A Focus on Stator Inter-Turn Fault Diagnosis
87	Zoltán Farkas, Viktor Vass and György Györök	Electric vehicle battery fault detection using statistical methods
17	Stefania-Mihaela Firiza, Alfred-Marius Scornea and Alexandru Topirceanu	Visualizing the COVID-19 Pandemic: Retrospective Insights and Implications for Public Health Strategies
25	Aleksandar Rodić and Jelena Kljajić	Motion Planning of Tree Fruit Robot Picker in Presence of Obstacles Using Heuristic Approach
46	Lucian Sosdean, Loredana Stanciu and Adriana Albu	Automatic System for Learning the Process of Solving Rubik's Cube

14:00 – 16:00 [F3b] Special Session on PhD Student Research in Applied Informatics and Numerical Mathematics I

Room K1 Amphitheater

Session organizer and chair: László Horváth

21	Massimo Stefanoni, Dominik Csík, Peter Sarcevic, Ákos Odry and József Tar	Adaptive Control Lyapunov Function-based Controller Using Fixed Point Iteration
43	Róbert Paulik, Miklós Kozlovsky and Béla Molnár	Tissue Block and Digital Slide Registration Method for Microscopic Samples
44	Árpád Varga, János Fricz and Zoltán Braun	Experiments with a One Parameter Computed Torque Position Control Method Using a PLC and a Simple Linear Actuator
50	Judit Sörfőző Szügyi, Edit Szügyi and Márta Takács	Evaluating the Use of ChatGPT by University and High School Students
59	Balázs Vígh and Sándor Szénási	Development of Smart Electromechanical Clock
61	Masoumeh Vali, Levente Kovacs and Amir Hossien Gandomi	A New Mutation Operator for Tabu Search Algorithm for Continuous Optimization
82	István Szűcs and József Kopják	NB-IoT based IoT gateway reference design for energy metering
95	Zoltan Varga and Ervin Racz	A Comprehensive Statistical Assessment of the Maximum Power Point of Dye-Sensitized Solar Cell

16:00 – 16:20 Coffee break

16:20 – 17:40 [F4a] Special session on 5G and Cybersecurity

Auditorium

Session organizers and chairs: Anna Bánáti and Miklós Kozlovsky

34	Norbert Sámson and Andrea Tick	Digital Defense: Investigating Human Aspects of Cybersecurity
36	Yuqing Guan and Andrea Tick	Literature Review on Security of Personal Information in Electronic Payments
60	Szandra Anna Laczi and Valéria Póser	Navigating Children's Cybersecurity Landscape: Understanding the impact of cyberbullying, online harassment and identity theft on children
109	Dániel László Hegedüs, Ádám Balogh, Máté Érsok, László Erdődi, Lajos Olcsák and Anna Bánáti	Beyond Static Defense: Dynamic Honeypots for Proactive Threat Engagement

Session organizer and chair: László Horváth

99	Robert Paulik, Miklós Kozlovszky and Béla Molnár	Signal Detection in Three-Dimensional Confocal Microscopy Images through Deep Learning
105	Csaba Potyok, Barbara Simon, Ádám Hartveg, Máté Siket, Lehel Dénes-Fazakas, György Eigner, Milán Balázs, Levente Kovács and László Szilágyi	Mobile application development for diabetes patient
106	Lehel Dénes-Fazakas, Győző Dénes Fazakas, György Eigner, Levente Kovács and László Szilágyi	Review of Reinforcement Learning-Based Control Algorithms in Artificial Pancreas Systems for Diabetes Mellitus Management
107	Miklos Nagy, Barbara Simon, László Szász, Máté Siket, Lehel Dénes-Fazakas, György Eigner, Patrik Péter Süli, Levente Kovacs and László Szilágyi	Web application development for diabetes patients
110	Wendler Márk and József Kopják	Mechanical Brush Commutation Motor Drive Solution for Higher Education
111	Gergely Sebestyén and József Kopják	Mapping IQRF Wireless Networks Using Relative Addressing Technique

18:00

Banquet

Restorant Universitar (address: Aleea FC Ripensia no. 1)

Thank you for your contribution!

See you next year at SACI 2025!