

SACI 2025 Preliminary Program



May 20, Tuesday

Venue: Óbuda University (address: Bécsi út 96/b, H-1034 Budapest, Hungary)

8:00 – 9:30 [TU1a] Session on Applied Research on Computer Science and Mathematics I

Room F09

Session chair: Zsombor Zrubka

111	Lehel Dénes-Fazakas, Barbara Simon, Ádám Hartveg, Szabolcs Csaholczi, György Eigner, Levente Kovács and László Szilágyi	Exploring Vision Transformer Architectures for Brain Tumor Classification: A Comprehensive Study
124	Enze Shao, Qian Liu and Tibor J. Goda	Autocorrelation and its Effects on Biomechanical Data of the Knee Joint
143	Balázs Házi, Balázs Benyó and Ákos Szlávecz, Omer	EIT Image Reconstruction of Mathematical Phantoms and Patient Recordings for Supporting Mechanical Ventilation
153	Ameer B Alsultani, Omer S Alkhafaf, J. Geoffrey Chase and Balázs Benyó	A Multi-Feature Quantile Regression Approach for Insulin Sensitivity Prediction
154	Omer S Alkhafaf, J. Geoffrey Chase and Balázs Benyó	Specific Transfer Learning to Improve Quantile Registration Neural Network Performance for Insulin Sensitivity Temporal Forecasting
17	József Bencsik, Zsolt Conka and Marek Bobcek	Modbus-Based Communication for Low-Voltage Grid Monitoring and Control

8:00 – 9:30 [TU1b] Session on Applied Research on Computer Science and Mathematics II

Room F02

Session chair: Dániel András Drexler

13	Gábor Paczolay and Istvan Harmati	Making Experience Replay Useful in Multiagent Scenarios
23	Anh Tuan Hoang and Zsolt János Viharos	Robust Superiority of the MICS-EFS Configuration Search Algorithm through Modular Extensions of Complex Neural Architectures
68	Attila Érchegyi and Ervin Racz	Running and Optimizing an FDM Heat Conduction Modell in CUDA Enviroment

118	Szilárd Sipos, Mirtill-Boglárka Naghi and Levente Kovács	Evaluating the applicability of self-tuning algorithms in diverse clustering scenarios: an ST-PFCM case study
122	Mostafa Gadelmoly	A Numerical Approach to Dead-beat Control Using Controlled Newton's Method
155	Mark Wendler, Márta Takács and József Kopják Gergely Sebestyén	Analysis of Fuzzy technologies potential usage in Sensorless PMSM FOC control

8:00 – 9:30 [TU1c] Special Session on Digitalisation, Generation Research, Consumer Trends I

Room F03

Session organizer and chair: **Mónika Garai-Fodor**

69	Melissza Salling, Monika Garai-Fodor and Orsolya Szigeti	Eating patterns of Hungarians towards pig meat
115	Linfei Ma and Anikó Kelemen-Erdős	Examining Consumer Perceptions of Traceable Meat
90	Csilla Mile and Zoltán Bodrog	Sustainability strategies starting from organic farming
84	Krisztina András and Tünde Máté	Olympics and Economy: Paris 2024
129	Mariann Bekesy, Laszlo Gulacsi and Orsolya Szigeti	Age as a factor influencing attitudes towards artificial intelligence use: Protocol for a systematic literature review

8:00 – 9:30 [TU1d] Session on Research on Innovation Management

Room F04

Session chair: **László Gulácsi**

10	Yuqing Guan and Andrea Tick	Numerical Analysis of the Dynamic Adjustment Model of the Phillips Curve: The Relationship Between Unemployment and Inflation
123	Viktória Buday, György Eigner and Magnus Klofsten	How do future Science parks tend to grow?
127	Barbara Tóth and Zsombor Zrubka	University Processes and Global Rankings: A Strategic Management Perspective
135	Richárd Veres, János Varga and György Györök	An Example of the Triple Helix Model Operation—A Case Study
139	László Személyi and István Szabó	External Business Environment in Innovation: Protocol for a Systematic Review of the Literature
142	Csaba Árendás and Zsombor Zrubka	Research Protocol: Scoping Review on Venture Capital Investment Strategies

8:00 – 9:30 [TU1e] Session on Research on Innovation Management

Room 401

Session chair: **István Szabó**

71	Márk Zrubka, Márta Alexy and Katalin Takácsné György	Behavior Analysis of Ducks in Confinement Housing Systems: Protocol for a Scoping Review
92	Janos Czere and Márta Péntek	Towards Leveraging Prompt Engineering in the Stage Gate Innovation Process
141	Bence Márk Szeszák, István Gergely Kerékjártó, László Soltész and Péter Galambos	Qualitative research on the social and economical impact of innovative manufacturing automation
157	Tóth Bence and Szabó István	The Innovation Paradox: Regulatory Challenges of Drone Spraying Technology in Hungarian Agriculture
145	József Kovács, Zsombor Zrubka and Mónika Garai-Fodor	Microplastics and their human health effects - systematic review of systematic reviews in research of microplastics
158	Kovács József, Takács Márta and Garai-Fodor Mónika	Application of Soft Computing in waste management technology development: calculation of equipment capacity and consumption

9:30 – 10:00 Coffee break

10:00 – 11:30 [TU2a] Session on Applied research on Computer Science and Mathematics

Room F09

Session chair: **Ervin Rácz**

51	Daniel Tamas Gujiczer and Adam Szabo	Modeling and Verification of an LPV Off-Road Lateral Vehicle Model on Various Terrains
121	Massimo Stefanoni, Peter Sarcevic, Gábor Fodor and Ákos Odry	Evaluation of 2D Localization Performance in Wheeled Robots Based on the Fusion of Odometry and Absolute Positioning Systems
126	Artúr I. Károly, Ármin Károly and Péter Galambos	Digital Twin for Robotic Vision: A Blender-based Approach
138	Dániel Horti, Péter Galambos and Artúr I. Károly	Fine-Tuning Large Language Models for Mobile Robot Navigation
130	Milán Balázs and György Eigner	Innovating with the BlackAnt Platform: A Scoping Review on Trends, Challenges, and Resource Optimization Opportunities
66	Richard Pesti, Peter Sarcevic, Dominik Csík, Marta Takacs and Akos Odry	Adaptive Neuro Fuzzy Inference System-based error compensation for MEMS accelerometers

10:00 – 11:30 [TU2b] Session on Research on Security Sciences

Room F02

Session chair: **Andrea Pap**

50	Tímea Páhi and András Tóth	Evaluating National Cyber Exercise Programs
93	Tunde Kaufman and Jozsef Katona	Time-Series Anomaly Detection of Mozi Malware in IoT Devices Using ARIMA and Local Outlier Factor
110	Zoltán János Trenka, Viktória Varsányiné Szeredi and Monika Pogatsnik	What can artificial intelligence do to reduce CO2 emissions in a city?
171	Bálint Antal Csanyk, Szandra Anna Laczi and Valéria Póser	AI-manipulated Reality: Generation and Detection of Deepfake Content
161	Andrea Edit Pap, Dániel Réső and Daniel A Lowy	Energy-Efficient Electrolytic Hydrogen Manufacturing: a protocol for a systematic review of the methodology and reporting quality
116	Catalin Ichim-Burlacu, Cezara Liliana Rat, Adela Berdie and Raluca Rob	Technical advancements in urban wind energy harvesting

10:00 – 11:30 [TU2c] Special Session on Digitalisation, Generation Research, Consumer Trends II

Room F03

Session chair: **Ágnes Csiszárík-Kocsir**

100	Attila Balogh	Financial Technology Innovations in Corporate Supply Chain Ecosystems: a Practical Framework based on Academic Review and Case Studies
102	Albert Molnár	Stagnating productivity as a driver of technical recessions in Hungary between 2000-2024: measuring hysteresis
120	Balázs Deák and István Szabó	Marketing Digital Shift: How Has Traditional Marketing Transformed into Digital Marketing and Why?
133	Enikő Nagy, Károly Farkas, Zoltán Balogh and György Molnár	The Role of Robotics in Digital Education: A STEAM-Based Approach for Curriculum Development
173	Ákos Botos and József Fogarasi	Algorithmic Trading in Financial Markets: A Systematic Review

10:00 – 11:30 [TU2d] Session on Research on Innovation Management

Room F04

Session chair: Márta Péntek

52	Meriem Fgaier, Zsombor Zrubka and Hana Alabdulkarim	Feasibility of Health Technology Assessment in the MENA Region Using Transferred Costs: Analysing the Feasibility of Four Imputation Strategies of Published Costs
63	Áron Hölgyesi, Zsombor Zrubka, Levente Kovács, László Gulácsi, Dóra Szerencsés and Márta Péntek	Parental self-efficacy in pediatric type 1 diabetes management and device use: a literature review
64	Marcell Erdős, István Vassányi and István Kósa	Characterizing the healthcare system using networks: a comparison of provider and patient behaviors
137	Dóra Szerencsés and Zsombor Zrubka	Do patients need new digital skills for Health 4.0?
140	Kornélia Lazányi	How do Age and Partner Support Affect the Psychological Impact of ART
148	Rozália Szatmáry and Johanna Sápi	Psychological Burden of Assisted Reproductive Technologies: A Comparative Analysis

10:00 – 11:30 [TU2e] Session on Research on Material Sciences

Room 401

Session chair: Péter Galambos

72	Zoltan Varga and Ervin Racz	Optimizing Dye-Sensitized Solar Cell Manufacturing with Machine Learning Algorithms
166	Tamás Kloknicer, Dániel Benjámin Sándor and Anita Szabó	Determining biofilm biomass based on image processing for PVA based media
162	Zsuzsa Olesnyovicsné Szabadi, Mária Marosné Berkes, Mihály Réger and Richárd Horváth	Thermodynamic Analysis of EOS Maraging MS1 Components Produced by SLM Technology Using DSC Testing at a Constant Heating Rate
164	Ferenc Oláh, Mihály Réger and Richárd Horváth	Modelling the surface hardness testing of a nitrided layer
169	Judit Lukács	Demand for acoustic materials and the contrast between human perception in automotive applications
172	Attila Széll, Fruzsina Fülöp, Richárd Horváth and Maria Berkes Maros	A Brief Overview of the Mechanisms Underlying the Superlow Friction Behaviour of DLC Coatings

11:30 – 12:30 [TU2f] e-poster session

Session chairs: **Zsombor Zrubka and Gábor Molnár**

Pre-functional area of Room F09

42	Miriam Čurillová, Norbert Ferenčík, William Steingartner, Katarína Dudová, Petra Kolembusová and Radovan Hudák	StandUp Tracker: An Arduino-Based Monitoring System
27	Máté Gfellner and Éva Hajnal	Automatic Classification of Camera Trap Images Using a Convolutional Neural Network
29	Vanessa Tóke and Rozália Lakner	Development of an Intelligent Learning Assistant Using Large Language Models
98	Szilárd Dr. Horváth and Renáta Tóth	Habits of using artificial intelligence in the lives of university students
47	Lili Belkovics, Krisztina András and István Takács	How Formula 1 Uses Innovation to Engage Gen Z
70	Nikolett Huszak and Monika Garai-Fodor	Examining aspects of sustainability from a generational perspective
96	Ildikó Petőné Csuka and Zsuzsanna Kaposvári	Generations leading around value
49	Máté Prorok and István Takács	The Transformative Power of Artificial Intelligence and Machine Learning in Innovation Driven Management
38	Simona Poláková, Petra Kolembusová, Norbert Ferenčík, Mária Danko, William Steingartner and Zuzana Ballová	Design and construction of a system for dyeing 3D printed PA12
117	Szilárd Dr. Berke	Organizational problems that hungarian leaders frequently face
73	Norbert Ferenčík, Zuzana Naďová, Katarína Dudová, Petra Kolembusová, Radovan Hudák and Branko Štefanovič	Design and Development of an Arduino-Controlled Testing Machine for Measuring the Mechanical Properties of 3D-Printed Hydrogel Structures
163	Róbert Gábor Stadler and Richárd Horváth	Force analysis of the friction stir welding of dissimilar polymer plates
167	Róbert Gábor Stadler and Richárd Horváth	Appearance of defects in friction stir welded PP plates on CT images

12:30 – 13:30 Lunch

May 21, Wednesday

Travelling to Timisoara

8:00 Bus leaves from Budapest (please, let us know if you would like to join the ride) Sunday: backward journey

May 22, Thursday

Venue: Conference Center, Politehnica University of Timișoara
(address: 2, Vasile Parvan Blvd., 300223 Timișoara, Romania)



9:00 – 9:20	Opening Ceremony	Auditorium
9:20 – 10:00	Plenary Talk I Session chair: Levente Kovács	Auditorium
174	Peng Shi Consensus and Formation Control for Multi-agent Systems	
10:00 – 10:40	Plenary Talk II Session chair: Dániel András Drexler	Auditorium
1	László Gulácsi AI-backed Advanced Medical Technology; Insights, Value, Innovation	
10:40 – 11:00	Coffee break	
11:00 – 11:40	Plenary Talk III Session chair: László Gulácsi	Auditorium
176	Shuai Li Online Iterative Learning Enhanced Sim-to-Real Transfer for Efficient Manipulation of Deformable Objects	
11:40 – 12:20	Plenary Talk IV Session chair: Marius Marcu	Auditorium
177	Razvan Stanica Spatio-Temporal Analysis of Mobile Traffic Data	
12:20 – 14:00	Lunch	Restaurant Universitar

14:00 – 15:40 [TH1a] Session on Systems Engineering

Auditorium

Session chair: **József Kopják**

89	Marian-Emanuel Ionascu, Sebastian-Ioan Petru, Iasmina Gruicin, Razvan Bogdan and Marius Marcu	Optimizing Low-Cost Air Quality Networks: Advanced Applications for Calibration, Health Insights, and Real-Time Monitoring
104	Márk Tamás Baross, Miklós Mezei, József Kopják, Sándor Gyányi, Tibor Wührl and Péter János Varga	Testing NFC tags in laboratory environment
5	Hunor Simon, Aron Feher and Lorinc Marton	Comparative analysis of attitude estimation algorithms on embedded systems
4	Mohammed Al-Okby, Thomas Roddelkopf and Kerstin Thurow	Tow Way Ranging-based Real Time Tracking System for Indoor Environments
44	Alexandra Florea and Štefan-Daniel Achirei	Text Classification on Software and Hardware Requirements Using Natural Language Processing Techniques

14:00 – 15:40 [TH1b] Special Session on 5G and Cybersecurity I

Room K1 Amphitheater

Session organizers and chairs: **Anna Bánáti and Miklós Kozlovszky**

88	Otilia Maria Muntean and Ciprian Pungila	Unmasking Blockchain Fraud: A Review of AML Challenges and Regulatory Shortcomings
54	István Oláh and Sándor Magyar	Code security audit based on regulations at a financial institution
79	Paul-Cristian Banu-Taran, Marius Marcu and Razvan Bogdan	Bare-Metal Development Setup for Highly-Accurate Energy Measurements of Mobile Radio Interface
40	Mate Galambos, Ángeles Vázquez-Castro and Laszlo Bacsardi	Hardware Supported Crypto-Agility in Quantum Key Distribution and Physical Layer Security
85	Kristóf Zsombor Kövesi and Anna Bánáti	From Attack to Defense: Automotive Cyber Range for CAN BUS Security Research

15:40 – 16:00 Coffee break

16:00 – 17:20 [TH2a] Special Session on Nonlinear Mathematical Problems: Theory and Applications

Auditorium

Session organizer and chair: **Alexandru Kristály**

8	Adina Luminita Sasu and Ana Sirianu	Zabczyk-Rolewicz type conditions for stability - a new approach to variational dynamics
19	Genet Assefa and Arpad Baricz	Bounds for an integral involving Whittaker functions of the second kind
	Csaba Farkas	Singular (N,p)-Lapacian equation on Riemannian manifolds
	Alexandru Kristály	Sharp volume growths versus Sobolev inequalities

16:00 – 17:20 [TH2b] Special Session on 5G and Cybersecurity II

Room K1 Amphitheater

Session organizers and chairs: **Anna Bánáti and Miklós Kozlovszky**

103	Szandra Anna Laczi, Szabolcs István Szabó and Valéria Póser	Comparative analysis of cybersecurity awareness games
105	Benedek Máté Tóth and Anna Bánáti	Autoencoder based CAN BUS IDS system architecture and performance evaluation
108	Máté Érsok, Balogh Ádám, Eszter Kail and Anna Bánáti	Adaptive Deception Architectures: Conceptual Foundations for LLM-Powered Honeypot Systems
109	Balogh Ádám, Érsok Máté, Dr. Kail Eszter and Vörösné Dr. Bánáti-Baumann Anna	Possibilities for Optimization of Real Time Attacker Profiling with Honeypots

18:00 Welcome Reception

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May 23, Friday

9:00 – 10:20 [F1a] Session on Mechatronics
Session chair: **Dan Ionescu**

Auditorium

25	Alexandra-Iulia Szedlak-Stinean, Radu-Emil Precup and Karina-Gabriela Filipescu	Nonlinear Controllers Dedicated to Modular Servo System Laboratory Equipment
59	Elena-Lorena Hedrea, Radu-Emil Precup, Gila-Roxana Vasile and Ciprian Hedrea	Closed-loop Controllers for Angular Speed and Angular Position Control of Lego Robots
37	Darius-Octavian Negirla, Radu-Emil Precup, Paul-Onut Negirla and Raul-Cristian Roman	Thermal Image Calibration Method for Temperature Measurement Using Sensor Fusion
26	Fabian Fulga, Diana Velcioiu and Alexandru Topirceanu	On the Impact of Data Visualization in Understanding Risk Factors for Lung Cancer Detection

9:00 – 10:20 [F1b] Session on Manufacturing Systems
Session chair: **Csaba Biró**

Room K1 Amphitheater

80	Judit Horváth, Tamás Ruppert and András Darányi	Risk-Based Maintenance Optimization of Production Tools in a Dynamic Environment
147	László Horváth	Research Using Reactive Autonomous Model Representation
57	Patricia D. M. Plentz, Thaynara M. M. Ribeiro, Heinz F. C. Rahmig, Renato F. Bulcão-Neto, Iwens Gervasio Sene Jr. and Analucia S. Morales	Digital transformation: challenges about IoT and AI in High Pressure Die Casting (HPDC)
60	Gergely Halász, Tibor Medvegy, Gábor Bohár and Tamás Ruppert	Digital shadow implementation for intelligent maintenance application - A case study

10:20 – 10:40 Coffee break

10:40 – 12:00 [F2a] Session on Computational Intelligence I

Auditorium

Session chair: Dániel András Drexler

56	Mircea Trifan, Bogdan Ionescu and Dan Ionescu	Generative AI for Diagrams as Code and Code as Diagrams
156	Melánia Puskás, Tamás Ferenci, Levente Kovács and Dániel András Drexler	Systematic Errors in Tumor Volume Estimation: Noise Modeling in Digital Caliper Measurements
3	Amalia Farcane and Ciprian Orhei	Urban landmark identification from Timisoara using YOLO architecture
77	Andrei Razvan Joldea, Diana Cernazanu Glavan, Vlad Sarbu and Andrei Bulzan	Chatbots for Romanian Academic Institutions

10:40 – 12:00 [F2b] Special session on PhD Student Research in Applied Informatics and Numerical Mathematics

Room K1 Amphitheater

Session organizer and chair: László Horváth

16	Balázs Vígh and Sándor Szénási	Comparison of 2D Stochastic and Probabilistic Cellular Automata based on Unique Rules in Terms of Runtime and Convergence
65	Peter Mogyorosi and Sandor Szenasi	GPU-Accelerated Database Model Based on HDF5
160	Márta Takács, József Kopják and István Szűcs	Relative SoC and Charging Session Duration Estimation for Electric Vehicle Charge Points Using Adaptive Neuro-Fuzzy Inference System (ANFIS)
81	Patrik Czakó, Gábor Kertész and Sándor Szénási	Turning LLM Activations Quantization-Friendly

10:40 – 11:00 [F2c] e-poster session

Room K2 Amphitheater

Session chairs: Tamás Nógrádi, Miklós Mezei and Gábor Molnár

24	Gergő Tolnai, Rita Fleiner, Zsolt Bringye and Ágnes Gerse	Comparison of energy cost optimisation algorithms for local energy communities
150	Eleftherios Trivizakis, Eugenia Mylona, Katerina Nikiforaki, Dimitrios Zaridis, Manolis Tsiknakis, Dimitrios Fotiadis, Nikolaos Tachos, Daniele	Texture Preserving Deep Learning-based Noise Reduction for Anatomical Magnetic Resonance Images and Its Impact on Imaging Features

	Regge, Nikolaos Papanikolaou and Kostas Marias	
151	Eleftherios Trivizakis, Emmanouil Koutoulakis, Vassilis Koutoulidis, Lia Moulopoulos, Evangelos Terpos, Ioannis Ntanasis-Stathopoulos, Panagiotis Malandrakis, Panagiotis Grigoropoulos, Panagiotis Papadopoulos, Katerina Nikiforaki, Nikolaos Papanikolaou, Dimitrios Fotiadis and Kostas Marias	Radiocytogenetics in Multiple Myeloma: Predicting Cytogenetic Aberrations from WBCT Imaging Features
152	Emmanouil Koutoulakis, Eleftherios Trivizakis, Vassilis Koutoulidis, Lia Moulopoulos, Evangelos Terpos, Ioannis Ntanasis-Stathopoulos, Panagiotis Malandrakis, Panagiotis Grigoropoulos, Panagiotis Papadopoulos, Katerina Nikiforaki, Nikolaos Papanikolaou, Dimitrios Fotiadis and Kostas Marias	Label-Free Machine Learning-based Segmentation of Whole-Body Bone Marrow Imaging in Multiple Myeloma
14	Iosif Szeidert, Ioan Filip, Dorin Bordeasu and Cristian Vasar	Experimental Stand for Testing a Home Automation Solution
28	Cristian Paul Chioncel and Ciucurita Samuel	CONTROLLING WIND SYSTEMS OPERATING AT TIME-VARYING WIND SPEEDS

12:00 – 13:30 Lunch

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13:30 – 15:30 [F3a] Session on Informatics
 Session chair: **Iosif Szeidert**

Auditorium

43	Gabriel Pojoga, Victor Teslaru, Otilia Zvorișteanu and Ștefan-Daniel Achirei	Predicting Age from Brain Connectivity Matrix: A Stacked Regression Approach
18	András Mihály and László Bacsárdi	High efficiency quantum communication for quantum satellites using hyperentanglements
74	David Pava, Razvan Bogdan, Cosmin Marsavina and Marius Marcu	Collecting and Analyzing Bitcoin Blockchain Transaction Data with Machine Learning
83	Csaba Biró	Structural Sensitivity in Graphs: An Entropy-Based $k\$$ -hop Metric and Its Applications
9	Rares George Diaconu and Stefan Daniel Achirei Ciprian Olaru	Fine-Tuning LLaMA 3.2-1B for Long-Text Summarization: A Case Study on Book Summarization
62	Péter Rubint	Influence of ransomware attacks in the healthcare industry

13:30 – 15:10 [F3b] Special session on Applied Computational Tools in Research of the Built Environment
 Session organizers and chairs: **Viktória Sugár and Zsuzsanna Fáczányi**

Room K1 Amphitheater

132	Ágnes Telek, András Sipos and András Horkai	Archiving 3D Digital Reconstructions: a Collaborative Approach to Cultural Heritage Preservation
136	Hanna Szennér and Csontos Györgyi	“Brownfields and Reuse – Industrial Heritage-Based Revitalization Opportunities Along the North-Pest Railway Line”
134	Martin Kolman, Marcell Nánási, Attila Kerekes, Donát Fridrich, Viktória Sugár and István Kistelegydi	Applied Informatics in Urban Climate Assessment Methods – Status Quo, Challenges, Potentials
112	András Horkai and Viktória Sugár	Application of Digital Techniques in an Interdisciplinary Context: Modeling Historical Buildings in Budapest
175	Zsuzsa Fáczányi and Andrea Keresztes-Sipos	Questionnaire-based Surveys and Data Processing in Research of Community Urbanism

11	Yue Wu and Katalin Dr. Takácsné Prof. Dr. György	The application of computational intelligence in food safety awareness level: clustering algorithms among Chinese respondents
46	Cornel Barna, Flavius-Maxim Percut and Anca-Adriana Petcut-Lasc	Measurement of Uncertainty in artificial neural networks classification
35	Benedek Máth, Ádám Nemes and Balázs Varga	Iterative GNN-based traffic flow prediction and sensor placement optimization
12	Ciprian Timotei Olaru and Stefan Daniel Achirei	STEM Education Framework: Learning Rubik's Cube Solving with NAO

18:00 Banquet

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Thank you for your contribution!