



3rd International Conference on Cognitive Mobility at Bosch Innovation Campus, Budapest

7th October 2024

8:30-9:00		Registration						
9:00-9:10		Opening						
Auditorium		Prof. Máté Zöldy / Bosch / Energotest						
		Plenary Lectures						
		Dr. Marko Babic: Digital Fuel Twin in practice						
		Prof. Dr. Barna Hanula: The potential of intelligent vehicle control and traffic management for energy consumption						
9:10-11:00		Prof. Dr. Dhinesh Balasubramanian: Enhancing Safety in Hydrogen Mobility: Data-driven Prediction of Leaks						
Auditorium		Csongor Horváth: Analysis of development trends in the electric powertrain sector						
		Session Chair: Prof. Ádám Török						
11:00-11:20		Coffee Break						
11:20-12:50		11:20-12:50		11:20-12:50		11:20-12:50		
Auditorium		VIP 1 room		Parallel Session II.		VIP 2 room		
Parallel Session I.						Parallel Session III.		
Session: Pedestrian mobility		Session: Intelligent logistics		Session: Cognitive networks and their intelligent capabilities				
Session Chair: Prof. Melih Yıldız		Session Chair: Prof. Dr. Szabolcs Fischer		Session Chair: Prof. Ádám Török				
7	Emese Mako and Zhiger Kurmangaliyev	Evaluating stakeholder opinion on traffic engineering devices to improve pedestrian crossing safety around small village schools	27	Gulmira Mukhanova and Nazerke Tolkyzbek	Quantitative and qualitative indicators of a reverse supply chain strategy	5	Furkan Kaya, Şevket Aslan, Mohammad Fahad, Klaudia Madarász, et al	The Usability of Polymethyl Methacrylate in Marshall Pavements Using in Railway Supplementary Layers
9	Ziyad N. Aldoski and Csaba Koren	Standardized Assessment, LiDAR-Based Measurements, and Human Perception of Traffic Signs	33	Olga Kisselyova and Natalya Tokmurzina-Kobernyak	Ensuring secure transport infrastructure in supply chains	11	András Brautigam, Dóra Harangozó, Mykola Sysyn, Dmytro Kurhan and Szabolcs Fischer	Field Application of Austenitic Filler Metals for Repairing Rail Surface Defects in Paved Tracks
12	Nóra Krizsik and Tibor Sipos	The Role of Cognitive Skills in Human-Vehicle Interactions at Designated Pedestrian Crossings	48	Saule Bekzhanova and Kuralay Yussupova	Cognitive technologies of transporting waste from mining industry	21	Olga Nabochenko, Mykola Sysyn and Szabolcs Fischer	Void geometry identification with track-side rail deflection measurements
13	Gabriella Kosztolányi-Iván, Csaba Koren and Bayasgalan Nemekh	Where do pedestrians look, when crossing suburban railway lines with right- and left-hand traffic?	57	Petra Molnár-Major and Máté Zöldy	Investigation of path planning algorithms using artificial intelligence in intralogistics	25	Zsolt Berki and Áron Bede	Rail freight route choice and costing model for transport modelling
14	Souvanthone Phetoudom and Emese Mako	Effect of legal and illegal pedestrian crossing manoeuvres on road capacity	79	Abdulhamit Sevgi, Alpaslan Durmuş and Ahmet Murat Kadioğlu	Using of Robotic Systems in Transportation	28	Csaba Tóth and Szabolcs Fischer	The road pavement structure as a forgotten element of the transport infrastructure system
23	Laura Dietl and Christian Facchi	Is Maximum Entropy Deep Inverse Reinforcement Learning suitable for Pedestrian Path Prediction?	68	Aybuke Nacak and Melih Yıldız	Digital Twin in Aircraft Design	82	Andrej Dávid, Andrei-Angelo Midan, Maciej Klosak and Yasser Douimia	Sustainability of inland water transport on the Rhine-Main-Danube Waterway
16	Zhazira Tymbaeva and Daulet Bakytzhan	Ensuring passenger mobility in the urban environment (on the example of Almaty)						
12:50-13:30		Lunch Break						
13:30-14:15		Roundtable discussion at Auditorium						
		Student competitions as the witch's kitchen of future mobility						
		Hosted by HUMDA-Lab, Hungarian Mobility Agency, member of Foundation for Szeged University						
		Gábor Sipos (HUMDA-Lab), Zalán Demeter (HUMDA-Lab), Péter Balog (Bosch), Alex Dudás FS East, ?? BME motorsport						
14:15-14:35		K8 Logistics small container - cognitive sustainability in logistics (Energotest Ltd)						
14:35-14:55		Bosch technology presentation - Wiper systems (Robert Bosch Ltd)						
14:55-15:15		Mobility as an experience: transport and design (MOME Mobility lab)						
15:15-15:30		Coffee Break						
15:30-17:00		15:30-17:00		15:30-17:00		15:30-17:00		
Auditorium		VIP 1		Parallel Session V.				
Parallel Session IV.								
Session: 6 Advanced drives		Session: Smart vehicles						
Session Chair: Dr. Peter Harth		Session Chair: Dr. Laszlo Lovas						
2	Mihály Katona and Tamás Orosz	Parameter Sensitivity Analysis and Rotor Topology Optimisation of a Synchronous Reluctance Machine	31	Áron Fésűs, Bálint Kóvári, Tamás Bécsi and László Leginusz	Dynamic Prompt-Based Approach for Open Vocabulary Multi-Object Tracking			

47	Emil Nagy, Árpád Török and József Pázmány	Design factors for the electric power distribution system of EVs	4	Vivien Jóvér, Szabolcs Kocsis Szürke, Bence Hermán, Péter Böröcz, Miklós Kuczmann and Szabolcs Fischer	Vehicle Dynamics Measurements with a Unique Measuring System for Trams
64	Aleksandr Šabanovič, Jonas Matljosius, Arturas Kilikevicius and Aleksandras Chlebnikovas	Assessment of Particle Dynamics in Electric Air Filters: The Role of Ionic Wind in Air Quality Improvement	8	Symbat Zhanguzhinova and Emese Mako	Assessment of pedestrian confidence in LED interface communication tools in VR and real traffic situations
87	Ádám Nyerges and Dávid Tollner	Battery Electric Vehicle Powertrain Behavior on a High-Speed Handling Course	63	István Lerchner	Application of Cognitive Mobility approach in highlighted areas
89	István Szászi, Vilmos Paiss, Richárd Csaba Kovács, Csongor Horváth and Tibor Vajsz	A New Type of Motor Topology for Reducing the Torque Ripples in Synchronous Reluctance Motor Drives of Electric Vehicles	69	Ebru Bahcecioglu and Melih Yildiz	WING-in-GROUND (WIG) AIRCRAFT for EUROPEAN AIRSPACE
90	Kristof Bukovac, Gábor Sipos, László Sebestyén and Gergely Bári	Comparative Analysis of Hydrogen Storage Methods for Racecars	80	Alpaslan Durmuş, Ahmet Murat Kadioğlu, Abdulhamit Sevgi and Erol Duymaz	Using of Novel Ground Effect UAV Systems in Defence
86	Mahmoud Said Jneid, Péter Harth and Árpád Török	Vector Control of Special 24-Phase Protean In-Wheel-Motor Used In EV Applications			

19:00- Banquet at Vakvarjú Pest (Budapest V. Paulay Ede 7 street)

8th of October 2024

8:00-9:30	Parallel Session VI.	8:00-9:30	Parallel Session VII.
Room VIP 1		Room VIP 2	
Session: Enchanted safety		Session: Environmental perception 1	
Session Chair: Dr. Árpád Török		Session Chair: Prof. Dr. Tamás Becsi	

1	Szabolcs Fischer, Mykola Kurhan and Dmytro Kurhan	Innovative Technologies and Cognitive Factors for Enhancing Safety of Train and Car Movement at Level Crossings	30	György Csippán, Bálint Kóvári, Tamás Bécsi and László Leginusz	Real-Time Media Synthesis from Speech: A New Era in Passenger Entertainment
18	Noura Hamdan and Tibor Sipos	Traffic Accidents Severity Prediction using Support Vector Machine Models	55	Áron Dávid Agg, Bence Gábor Péter and András Horváth	Adaptive vehicle trajectory clustering based on Computer Vision
22	Viktoria Otvos and Gábor Pauer	Road safety education in public education - What support do teachers need?	70	Ayşe Nur Dişlitaş, Melih Yıldız and Gyorgyi Kale-Halasz	Digital Twin Applications in Aircraft Design Process
26	Tent Vlad-Imre, Florin Bogdan Scurt, Tiberiu Vesselenyi, Horia Beleş, Bogdan Adrian Ţolea and Ştefan Iuliu Halasz	Considerations regarding design and construction of the rear underrun protective devices of trailers intended for the transport of wood material	88	Alpaslan Durmuş, Ahmet Murat Kadioğlu and Abdulhamit Sevgi	Precision Agriculture and Using of UAV Systems
52	József Répás	The main steps of the digital forensics examination methodology of modern transport vehicles	56	Balázs Benedek and Adrian Coleşa	CANComa: Shutdown Attack on Automotive Control Units over Controller Area Network

9:30-9:50 Coffee Break & Poster section

9:30-9:45 Poster section

Session Chair: Prof. Dr. Szabolcs Fischer

19	Eszter Tóth, András Pollák and Szabolcs Fischer	Exploring the Impact of Fiber Content on the Mechanical Performance of Steel Fiber Reinforced Concrete: Consistency and Compaction Time Analysis							
20	Hanna Csótár, Brigitta Fruzsina Szívós, Szabolcs Szalai and Szabolcs Fischer	Production and Testing of 3D Printed PLA Structures with DIC Technology for the Reinforcement of Concrete Elements							
6	Zoltán Major, Vivien Jóvér, Attila Németh and Szabolcs Fischer	Quantifying the effect of frame stiffness – the substitution inertia of Meier's calculation							
9:50-10:50 Roundtable discussion at Auditorium Cooperation of industry and academia for an efficient mobility Hosted by Energtest Ltd TBD Energotest, TBD Bosch, TBD BME, ? Vehicles and their environment in interaction - Interaction Design MA projects at MOME (MOME) 10:50-11:10 Micromobility - the driving force comes from Bosch (Robert Bosch Ltd) 11:10-11:30 Sensing and communication under attack (BME) 11:30-11:50 11:50-13:00 Room VIP 1 Parallel Session VIII. 11:50-13:00 VIP 2 Parallel Session IX.									
Session: 4 Learning techniques in cognitive mobility					Session: Environmental perception 2				
Session Chair: Dr. Kale Utku					Session Chair: Dr. Szilárd Aradi				
3	Sham Sundar Narasinga Rao	OUT-OF-DISTRIBUTION DETECTION IN SAFETYCRITICAL AUTONOMOUS DRIVING SYSTEMS: A HYBRID META-COGNITION LEARNING ASSESSMENT FRAMEWORK	15	Marko Perić, Aleksandar Miltenović, Milan Banić and Szabolcs Fischer	Visual Inspection in Transport Using Autonomous Robots				
36	Mehran Amini, Ahmet Mehmet Karadeniz and László T. Kóczy	Evaluating Deep Learning Algorithms for Freeway Mainstream Traffic Control	67	Cihan Gökçe, Melih Yıldız and Györgyi Kale Halasz	VTOL Craft Controller Design and Simulation Using Digital Twin				
50	Farkhad Gafiatullin and Gulmira Mukhanova	INTEGRATION OF MACHINE LEARNING AND COGNITIVE TECHNOLOGIES IN LOGISTICS: A COMPREHENSIVE ANALYSIS	54	A S M Ahsanul Sarkar Akib, N. M.Raziul Hassan Rishad and Salahin Sourav	IoT-based Autonomous Robot for Smart Farming				
53	Roland Nagy, Zsombor Pethő and Árpád Török	Effective anomaly intrusion detection system based on ML methods in vehicular networks	81	Alpaslan Durmuş, Ahmet Murat Kadioğlu and Abdulhamit Sevgi	Using of Novel UAV Systems in Precision Agriculture				
71	Farzad Zolfaghari, Györgyi Kale-Halasz, Omar Alharasees and Arturas Kilikevicius	Application of Deep Learning Models for Predicting Health Alerts in Pilots							