

34th International Conference on Robotics in Alpe-Adria-Danube Region

18 - 20 June, 2025
Belgrade, Serbia

Organized by:

School of Electrical Engineering, University of Belgrade
Faculty of Technical Sciences, University of Novi Sad
Mihajlo Pupin Institute, Belgrade

	Wednesday, 18th June, 2025		Thursday, 19th June, 2025		Friday, 20th June, 2025	
8:00	Registration (08:00-08:45)					
	Opening (08:45-09:00)		Registration (08:45-09:00)			
9:00	Plenary session I: Arash Ajoudani (09:00-10:00)		Plenary session II: Alin Albu-Schäffer (09:00-10:00)		Plenary session III: Katja Mombaur (09:00-10:00)	
10:00	Coffee break (10:00-10:30)		Coffee break (10:00-10:30)		Coffee break and Palace of Science tour (10:00-10:45)	
	WS1.1 (6) (10:30-12:00)	WS1.2 (6) (10:30-12:00)	TS1.1 (6) (10:30-12:00)	TS1.2 (6) (10:30-12:00)	FS1.1 (7) (10:45-12:30)	FS1.2 (7) (10:45-12:30)
11:00						
12:00	Keynote session I: Zoran Obradović (12:00-12:30)		Keynote session II: Strahinja Došen (12:00-12:30)			
	Meeting of RAAD ISC (12:30-14:00)	Lunch break (12:30-14:00)	Lunch break (12:30-13:30)		Closing ceremony and lunch (12:30-14:00)	
13:00						
14:00	WS2.1 (7) (14:00-15:45)	WS2.2 (7) (14:00-15:45)	TS2.1 (6) (13:30-15:00)	TS2.2 (6) (13:30-15:00)		
15:00			“Robotics in the “Fertile Crescent” of RAAD – Past and Future” Moderator: Uwe Haass (15:00-16:30)			
16:00	Coffee break (15:45-16:30)					
	Sponsor keynote session: Renex (16:30-17:00)		Coffee break (16:30-17:30)			
17:00	WS3.1 (7) (17:00-18:45)	WS3.2 (7) (17:00-18:45)	City tour and visit to Museum of Science and Technology (17:30-20:15)			
18:00						
19:00	Break (18:45-19:30)					
20:00	Welcome reception: Beli dvor (White Palace) (19:30-22:00)					
21:00			Gala dinner: Restaurant Ambar (20:15-23:00)			
22:00						

Detailed Technical Program

Wednesday, 18th of June, 2025

Plenary session I: Arash Ajoudani		09:00-10:00
Chair: Mirko Raković		Central HOL
09:00-10:00	Title: <i>The AI continuum: From Human Monitoring to Autonomous Robots in Contact-Rich Applications</i>	

WS1.1: Cognitive Intelligence in Industrial Robots and Manufacturing I			10:30-12:00
Chair: Zoran Miljković ; Co-chair: Bojan Nemec			Room REČ
	Time	Paper ID	Title and Authors
1	10:30 – 10:45	3	<i>Towards Using Natural Language to Perform Robotic Tasks</i> , Bojan Nemec, Mihael Simonič, Boris Kuster, Leon Žlajpah, and Aleš Ude.
2	10:45 – 11:00	17	<i>Implementing IoT Technology on Mobile Platform: Edge-Cloud Integration and Data Handling</i> , Jakub Krejčí, Marek Babiuch, Rostislav Wierbica, and Vaclav Krys.
3	11:00 – 11:15	18	<i>Vision-based Robot System for Object Manipulation</i> , Bogdan Momčilović, Nikola Slavković, Milica Petrović, and Zoran Miljković.
4	11:15 – 11:30	27	<i>A General Peg-in-Hole Assembly Policy Based on Domain Randomized Reinforcement Learning</i> , Xinyu Liu, Aljaz Kramberger, and Leon Bodenhagen.
5	11:30 – 11:45	31	<i>Concept of a reconfigurable CNC machine with distributed control</i> , Dusan Nedeljkovic, Zivana Jakovljevic, Lazar Matijasevic, and Miroslav Pajic.
6	11:45 – 12:00	85	<i>A Cognitive Robotics Approach for Manipulation of Freeform Objects Using CNN-based Perception and Soft Gripping</i> , Nikola Ivačko, Ivan Čirić, Dušan Stojiljković, Žarko Čojbašić, and Dušan Jevtić.

WS1.2: Grasping and Manipulation			10:30-12:00
Chair: Giuseppe Quaglia ; Co-chair: Leon Žlajpah			Room HORIZONT
	Time	Paper ID	Title and Authors
1	10:30 – 10:45	6	<i>RobotBlockSet (RBS) - Path and Trajectory Generation</i> , Leon Žlajpah and Tadej Petrič.
2	10:45 – 11:00	10	<i>Robot Path and Trajectory Planning Considering a Spatially Fixed TCP</i> , Bernhard Rameder, Hubert Gattringer, Andreas Müller, and Ronald Naderer.
3	11:00 – 11:15	42	<i>Robot Learning to Catch Objects in Flight using an LSTM Deep Neural Network</i> , Lazar Milić, Jefimija Borojević, Tanja Berisavljević, Srđan Savić, and Mirko Raković.
4	11:15 – 11:30	43	<i>Sensor-Based Contact Point Estimation for Extended Robotic Structures</i> , Jan Šifrer and Tadej Petrič.

5	11:30 – 11:45	36	<i>LSTM-based hand motion recognition for myoelectric control of a compliant robot gripper</i> , Gorana Milovanović, Goran Kvašček, and Kosta Jovanović.
6	11:45 – 12:00	46	<i>Soft Pneumatic Sensing Chambers for Robotic Grasping</i> , Simone Duretto, Giovanni Colucci, Andrea Botta, Luigi Tagliavini, Mohammad Jabari, Lorenzo Baglieri, Lorenzo Toccaceli, Francesco Amodio, and Giuseppe Quaglia.

Keynote session I: Zoran Obradović			12:00-12:30
Chair: Maja Trumić			Room HORIZONT
12:00-12:30	Title: <i>Autonomous navigation for swarms of unmanned aerial vehicles in severe environments</i>		

WS2.1: Cognitive Intelligence in Industrial Robots and Manufacturing II			14:00-15:45
Chair: Milica Petrović; Co-chair: Žarko Čojbašić			Room REČ
	Time	Paper ID	Title and Authors
1	14:00 – 14:15	40	<i>Neural Network-based Visual Servoing of Wheeled Mobile Robot with Fish-eye Camera</i> , Aleksandar Jokić, Milica Petrović and Zoran Miljković.
2	14:15 – 14:30	57	<i>Deep Learning for Visual Inspection of Ball Bearings</i> , Tea Tepavčević, Saša Lazović, and Vladimir M. Petrović
3	14:30 – 14:45	58	<i>Assessing the Feasibility of Deep Lagrangian Networks for Industrial-Level Control of a Parallel Kinematic Manipulator</i> , Marcel Lahoud, Daniel Gnad, Gabriele Marchello, Ferdinando Cannella, and Andreas Müller.
4	14:45 – 15:00	68	<i>Danger of AI in Robotics: A Systematic Analysis of Ethical, Regulatory, and Economic Challenges</i> , Jacob Otasowie, Alexander Blum, Mohamed El Sayed Ahmed, and Mathias Brandstötter.
5	15:00 – 15:15	74	<i>Evolutionary Approach to Time-Limited Profit-based Traveling Salesman Problem in Mobile Robotics</i> , Jelena Ćurčić, Željko Kanović, Milutin Nikolić, and Srđan Savić.
6	15:15 – 15:30	87	<i>Intelligent Sensor Integration in Robotic Systems for High-Precision Automation in the Automotive Industry</i> , Pavle Stepanić, Predrag Nikolić, Nedeljko Dučić, Nebojša Mitrović, and Žarko Čojbašić.
7	15:30 – 15:45	32	<i>Enhancing Safe Navigation in Industrial Environments via Vision-Language Human-Robot Interaction</i> , Sepideh Valiollahi, Chen Li, Emil Frydenholm, Jonas Thorhauge-Hansen, San Sami Hanona, Yacine Abdelsadok, Shahab Heshmati-Alamdari, Stefan Nordborg Eriksen, and Preben E. Mogensen.

WS2.2: Compliant robot design			14:00-15:45
Chair(s): Tadej Petrič; Co-chair: Maja Trumić			Room HORIZONT
	Time	Paper ID	Title and Authors
1	14:00 – 14:15	61	<i>Velocity-Level Kinematics of a Continuously Variable Transmission System for pHRI</i> , Emir Mobedi, and Mehmet İsmet Can Dede.
2	14:15 – 14:30	92	<i>Design and Kinematics of Cable-driven Underactuated Manipulators with Variable Stiffness Devices</i> , Qizhi Meng, Ruijie Tang, Xin-Jun Liu, and

			Andres Kecskemethy
3	14:30 – 14:45	59	<i>Open-source Design of Hardware and Software for a Modular Testbed for Highly-elastic Tendon-driven Soft Robots</i> , Miloš Rašić, Cosimo Della Santina, Kosta Jovanović, and Maja Trumić.
4	14:45 – 15:00	7	<i>Requirements and design problems for a new LARMbot humanoid from testing a prototype</i> , Chloé Gabarren, Marco Ceccarelli, and Matteo Russo.
5	15:00 – 15:15	54	<i>A Review of Some Mechanical Metamaterials for Building Robotic Devices and Sensors</i> , Jaroslav Hricko and Stefan Havlik.
6	15:15 – 15:30	44	<i>robotblockset_python: Python version of the RobotBlockSet</i> *, Mihael Simonič, Boris Kuster, Matija Mavsar, Peter Nimac, and Leon Žlajpah.
7	15:30 – 15:45	45	<i>Optimal Control for Human Vertical Jump Motion</i> , David Mesaroš, Maxime Sabbah, Vincent Bonnet, and Filip Bečanović.

Sponsor keynote session: Renex		16:30-17:00
Chair: Nikola Knežević		Room HORIZONT
16:30-17:00	Title: <i>TBC</i>	

WS3.1: Medical and Assistive Robots			17:00-18:45
Chair: Doina Pislă ; Co-chair: Daniela Tarnita			Room REČ
	Time	Paper ID	Title and Authors
1	17:00 – 17:15	9	<i>Virtual modeling, static and dynamic analyses of an orthotic device used for human elbow rehabilitation</i> , Cristian E. Chihaiă, Daniela Tarnita, Ionut Geonea, and Danut N. Tarnita.
2	17:15 – 17:30	13	<i>Kinematic modelling and design of a parallel robot for wrist rehabilitation</i> , Paul Tucan, Alin Horsia, Calin Vaida, Iosif Birlescu, Pislă Adrian, Jose Machado, and Doina Pislă.
3	17:30 – 17:45	23	<i>Descriptive Ontology for Home-Based Smart Rehabilitation Environments for Motor and Cognitive Therapy in Patients with Neurological Disorders</i> , Fabio Zanoletti and Alberto Borboni.
4	17:45 – 18:00	51	<i>Functional Design and Kinematic Analysis of a Novel 3RS End-Effector Robot for Wrist Rehabilitation and Assistance</i> , Andrea Botta, Luigi Tagliavini, Giovanni Colucci, Lorenzo Baglieri, Simone Duretto, Lorenzo Toccaceli, Francesco Amodio, and Giuseppe Quaglia.
5	18:00 – 18:15	63	<i>Evaluation of facial landmark localization performance in a surgical setting</i> , Ines Frajtag, Marko Švaco, and Filip Šuligoj.
6	18:15 – 18:30	66	<i>Development of an Optimal Prototype of an Exoskeleton Robotic System for Locomotor Rehabilitation</i> , Ionut Geonea, Nicolae Dumitru, and Daniela Tarnita.
7	18:30 – 18:45	86	<i>An Intelligent Optimized Reduced Model of the Musculoskeletal System for the Head-Neck Joints</i> , Ismail Raslan, Mohammad A. Jaradat, and Lotfi Romdhane.

WS3.2: Design, Kinematics and Dynamics				17:00-18:45
Chair: Andreas Müller ; Co-chair: Giuseppe Carbone				Room HORIZONT
	Time	Paper ID	Title and Authors	
1	17:00 – 17:15	8	<i>Design Exploration of Planar Continuum Parallel Robots with Constrained Platform Orientation</i> , Congjian Gao, Quentin Peyron, and Sébastien Briot.	
2	17:15 – 17:30	14	<i>Dynamic Analysis of a 5-DOF Parallel-Serial Manipulator Using Kane's Method</i> , Anton Antonov.	
3	17:30 – 17:45	20	<i>Kinematic structure optimization of a modular planar 3DOF robotic manipulator for a given task</i> , Rostislav Wierbica, Tomáš Kot, Jakub Krejčí, and Václav Krys.	
4	17:45 – 18:00	34	<i>Extended URDF: Accounting for parallel mechanism in robot description</i> , Virgile Batto, Ludovic DeMatteis, and Nicolas Mansard.	
5	18:00 – 18:15	82	<i>Kinematic Modeling of the End-Effector of a Plum-Picking Robot using the Rodrigues' Rotation Formula</i> , Uroš Ilić, Mihailo Lazarević, Ilija Stevanović, and Aleksandar Rodić	
6	18:15 – 18:30	83	<i>Robotic Gripper Mechanism for Plum Harvesting: Mechanical Design and Actuation</i> , Ilija Stevanovic, Uroš Ilić, Aleksandar Milenkovic, and Aleksandar Rodić.	
7	18:30 – 18:45	84	<i>The influence of wrist design on the inverse kinematics of a 6-axis robot</i> , Boštjan Baras and Marko Munih.	

Thursday, 19th of June, 2025

Plenary session II: Alin Albu Schäffer		09:00-10:00
Chair: Kosta Jovanović		Central HOL
09:00-10:00	Title: TBC	

TS1.1: Interoperable AI-Based Robotics for the Factory of the Future I			10:30-12:00
Chair: Achim Wagner ; Co-chair: Sotiris Makris			Room REČ
	Time	Paper ID	Title and Authors
1	10:30 – 10:45	11	<i>A digital twin procedure for the design, simulation, and optimization of machine tending layout</i> , Francesco Aggogeri and Nicola Pellegrini.
2	10:45 – 11:00	15	<i>Simulation-Based Evaluation of Adaptive Safety Zones for Human-Robot Interaction Driven by Deep Reinforcement Learning and LSTM</i> , Mohammad-Ehsan Matour and Alexander Winkler.
3	11:00 – 11:15	38	<i>Sustainable Transfer Learning for Adaptive Robot Skills</i> , Khalil Abuibaid, Vinit Hegiste, Nigora Gafur, Achim Wagner, and Martin Ruskowski.
4	11:15 – 11:30	49	<i>Digital Twin-Enabled Robotic Automation of Electrolyzer Assemblies for Power-to-X Solutions</i> , Erik D. Lindby, Henrik G. Petersen and Aljaz Kramberger.
5	11:30 – 11:45	60	<i>Optimizing Camera Placement in Agile Robotic Cells for Visual Inspection</i> , Miha Deniša, Timotej Gašpar, Leon Žlajpah, and Aleš Ude.
6	11:45 – 12:00	64	<i>Isaac Sim Integrated Digital Twin for Feasibility Checks in Skill-Based Engineering</i> , Hossam Khalil, Aleksandr Sidorenko, Maciej Kolek, Martin Ruskowski, and Achim Wagner.

TS1.2: Collaborative Robotics			10:30-12:00
Chair: Luka Peternel ; Co-chair: Aljaž Kramberger			Room HORIZONT
	Time	Paper ID	Title and Authors
1	10:30 – 10:45	5	<i>Human-Human Teleoperated Interaction for Sit-to-Stand Assistance with Humanoid Robots</i> , Tilen Breclj, Ana Gabriela Kostanjevec, and Tadej Petrič.
2	10:45 – 11:00	24	<i>Integrated Control Strategy for Nonholonomic Mobile Robots with Anthropomorphic Manipulators</i> , Tadej Petrič, Tilen Breclj, and Leon Žlajpah.
3	11:00 – 11:15	25	<i>Embodiment of AI-Driven Collaborative Awareness with Industrial Service Robots</i> , Aleksandar Rodić.
4	11:15 – 11:30	26	<i>Vision Transformer-based Multimodal Fusion of Gesture and Object Classification in Human-Robot Collaboration</i> , Selma Subašić, Lejla Banjanović-Mehmedović, Haris Subašić, Isak Karabegović, and Ermin Husak.
5	11:30 – 11:45	55	<i>Human-Robot Assembly of 3D-printed Building Components Combining Motion Planning and Dynamic Movement Primitives</i> , Arwin Hidding, Tom Lim, Henriette Bier, and Luka Peternel.
6	11:45 – 12:00	56	<i>Comparative Analysis of Loss Functions for LSTM-Based Motion Prediction</i> , Matija Mavsar, Andraž Čepič, and Aleš Ude.

Keynote session II: Strahinja Došen		12:00-12:30
Chair: Filip Bečanović		Room HORIZONT
12:00-12:30	Title: <i>New trends in the control of bionic limbs</i>	

TS2.1: Interoperable AI-Based Robotics for the Factory of the Future II				13:30-15:00
Chair: Sotiris Makris; Co-chair: Achim Wagner			Room REČ	
	Time	Paper ID	Title and Authors	
1	13:30 – 13:45	73	Enabling Generic Robot Skill Implementation Using Object Oriented Programming, Abdullah Farrukh, Achim Wagner, and Martin Ruskowski.	
2	13:45 – 14:00	75	On a versatile production station using cognitive mechatronic devices coordinated by a multi-layer control framework, Panagiotis Karagiannis, Dionisios Andronas, Christos Giannoulis, George Michalos, and Sotiris Makris	
3	14:00 – 14:15	89	Advancements and Challenges in Emotion Extraction from Speech: A PRISMA-Guided Systematic Review of Machine and Deep Learning Techniques, Suryakant Tyagi and Sándor Szénási.	
4	14:15 – 14:30	90	A Modular Software Framework for Cost Effective Deployment of Robots in Manufacturing SMEs, Zaviša Gordić, Francisco Melendez-Fernandez, and Ali Muhammad.	
5	14:30 – 14:45	72	Improving Unfolding Success Rate through Cloth Pose Correction, Jan Jerićević, Peter Nimac, Domen Tabernik, and Andrej Gams.	
6	14:45 – 15:00	35	A Modular Approach to Motor Control: The CANopenDrivers Library, Natalija Topalovic, Jorge Playan Garai, Giancarlo D'Ago, and Eloise Matheson.	

TS2.2: Robot Sensing				13:30-15:00
Chair: Marko Munih ; Co-chair: Panagiotis Koustoumpardis ;			Room HORIZONT	
	Time	Paper ID	Paper and Authors	
1	13:30 – 13:45	21	<i>Improving position estimation of 3D gridboard with ArUco markers in robotic multi-camera systems</i> , Jan Maslowski, Jakub Chlebek, and Zdenko Bobovsky.	
2	13:45 – 14:00	77	<i>Generative Grasp Detection and Estimation with Concept Learning-based Safety Criteria</i> , Al-Harith Farhad, Khalil Abuibaid, Christiane Plociennik, Achim Wagner, and Martin Ruskowski.	
3	14:00 – 14:15	80	<i>Sensor placement determination of wearable device for a weight manipulation task</i> , Djordje Urukalo, Jelena Ilić, Marija Radmilović, Franco Munoz Nates, and Pierre Blazevic.	
4	14:15 – 14:30	39	<i>Initial-pose self-calibration for deployable overconstrained Cable-Driven Parallel Robots</i> , Filippo Zoffoli, Edoardo Idà, and Marco Carricato .	
5	14:30 – 14:45	48	<i>Estimating 2D position from magnetic sensor readings using artificial neural network</i> , Vladimir Sibinović, Mirko Raković, Milutin Nikolic, and Vladimir Mitić.	
6	14:45 – 15:00	62	<i>Evaluation of the K4PCS global registration algorithm</i> , Roč Stilinović, Bojan Šekoranja, and Filip Šuligoj.	

Honorable speakers, Session: Robotics in the “Fertile Crescent” of RAAD – Past and Future		15:00-16:30
Moderator: Uwe Haass		Room HORIZONT
15:00 – 15:03	Introduction	
15:03 – 15:21	Branislav Borovac , University of Novi Sad Title: Professor Vukobratović - personality and work that inspire	
15:21 – 15:39	Giuseppe Carbone , University of Calabria Title: Italian Distinguished IFToMMist Figures in Mechanism and Machine Science and Their Links with RAAD	
15:39 – 15:57	Jadran Lenarčič , Institute Jožef Stefan, Ljubljana Institute Jožef Stefan – Between Research, Development and use of Robots	
15:57 – 16:15	Péter Galambos , Obuda University, Budapest (TBC) <i>A Brief History of Robotics Development Efforts in Hungary</i>	
16:15 – 16:30	Discussion with the audience	

Friday, 19th of June, 2025

Plenary session III: Katja Mombaur		09:00-10:00
Chair: Aleksandar Rodić		Central HOL
09:00-10:00	Title: TBC	

FS2.1: Robots and Arts				10:45-12:30
Chair(s): Maria Rita Canina; Co-chair: Ali Muhammad;				Room REČ
	Time	Paper ID	Title and Authors	
1	10:45 – 11:00	22	<i>Deployment of Robots for the Automation in the Composites Industry</i> , Simon Chris Vinkel, Ali Muhammad	
2	11:00 – 11:15	52	<i>Robotic Arm: Extension of Artistic Actions</i> , Miljan Stevanovic, Jelena Pejić, and Petar Pejić.	
3	11:15 – 11:30	53	<i>Robotic Fabrication of Spherical Joints for Freeform Structures</i> , Tamara Miljković, Igor Babić, Marko Jovanović, and Mirko Raković.	
4	11:30 – 11:45	65	<i>Agricultural Robotics for Carbon Emission Reduction: A Synergistic Perspective on Technology, Sustainability, and Art</i> , Giancarlo Furcieri, Giuseppe Culotta, Davide Gerbino, Antonio Franceschielli, and Adriano Fagiolini.	
5	11:45 – 12:00	79	<i>Comparative Analysis of Timber Joint Fabrication: Precision and Efficiency in Robotic and Augmented Reality-Assisted Methods</i> , Nikoleta Vitti, Evangelia Ioannou, Styliani Ioakeim, Anastasia Spyrou, and Odysseas Kontovourkis.	
6	12:00 – 12:15	81	<i>Streamlining Drywall Assembly: CAD-Driven Robotic Assembly</i> , Jovan Bajić, Milica Damnjanović, Nikola Knežević, Saša Jokić, and Kosta Jovanović.	
7	12:15 – 12:30	88	<i>Growing Futures: Mycelium - Robots - Human Ecosystem</i> , Daniela Amandolese, Zana Bosnic, Eduardo Loreto, and Francisco Kuhar.	

FS2.2: Autonomous Robots				10:45-12:30
Chair: Karsten Berns; Co-chair: Marko Švaco				Room HORIZONT
	Time	Paper ID	Title and Authors	
1	10:45 – 11:00	4	<i>Individual Psychological Characteristics of Operators When Controlling a Quadcopter-Type UAV with a Myographic Interface</i> , Ya. A. Turovsky, R. A. Tokarev, D. S. Ognev, V. A. Tishchenko, L. A. Rybak, and D. I. Malyshev.	
2	11:00 – 11:15	12	<i>Autonomous UAV Navigation for Search and Rescue Missions Using Computer Vision and Convolutional Neural Networks</i> , Luka Šiktar, Branimir Čaran, Bojan Šekoranja, and Marko Švaco.	
3	11:15 – 11:30	19	<i>Telescopic Landing System for Drones: A Solution for Uneven Terrain Operations</i> , Giovanni Di Leo, Benedetto Perrone, Antonio Mancuso, Antonio Agrelli, Lorenzo Montuori, Stefano Branca, Simone Leone, and Giuseppe Carbone.	

4	11:30 – 11:45	33	<i>Cooperative Control of Rope-Tethered Quadcopters for Grasping and Transporting Objects</i> , Aris Morsink Paloumpas, and Panagiotis Koustoumpardis.
5	11:45 – 12:00	47	<i>Towards Real-World Deployment of Reinforcement Learning for Autonomous Bus Navigation in Pedestrian Zones</i> , Abdalla Ahmed Roshdi Mohamed and Karsten Berns.
6	12:00 – 12:15	71	<i>Optimizing Multi-Robot Autonomous Crop Collection</i> , Sumbal Malik, Nikola Ruzic, Majid Khonji, Kosta Jovanovic, Jorge Dias, Nikola Knezevic, and Lakmal Seneviratne.
7	12:15 – 12:30	69	<i>CODEL: Collaborative Multi-Robot Parcel Delivery for Last-Mile Logistics</i> , Sumbal Malik, Majid Khonji, Khaled Elbassioni, and Jorge Dias.