

CONFERENCE PDES2024

program 2024-06-12

Wednesday		2024-06-19	
9:00	10:00	Registration	
10:00	11:00	Registration	Plenary session 1 (room Kongresový sál)
11:00	11:15	Caffe break	
11:15	12:15	Registration	Plenary session 2 (room Kongresový sál)
12:15	13:30	Lunch	
13:30	14:50	Session A1 (room Kongresový sál)	Session B1 (room Malý sál 1)
14:50	15:10	Caffe break	
15:10	16:50	Session A2 (room Kongresový sál)	Session B2 (room Malý sál 1)
18:00	19:00	Dinner	

Thursday		2024-06-20	
9:00	10:20	Session A3 (room Velký sál)	Session B3 (room Meeting room 1)
10:20	10:40	Caffe break	
10:40	12:00	Session A4 (room Velký sál)	Session B4 (room Meeting room 1)
12:00	13:00	Lunch	
13:00	18:00	Social program	
19:00	0:00	Dinner/Degustation/Music	

Friday		2024-06-21	
9:00	10:20	Poster session (room Meeting room 1)	
10:20	10:40	Caffe break	
10:40	12:00	Poster session (room Meeting room 1)	
12:00	13:00	Lunch	
13:00		Closing conference	

----- Conference Programme -----

Wednesday 2024-06-19

REGISTRATION

Wednesday 2024-06-19 9.00AM-12.15PM

Plenary session 1

Room: „Kongresový sál“/Congress room

Wednesday 2024-06-19 10.00AM-11.00AM

10.00AM Conference organisation
Petr Fiedler

10.15AM Brno University of Technology - Getting to know the university
Petr Fiedler

10.30AM Brno: A Journey through the Centuries 1/2
Přemysl Dohnal

Coffee break

Wednesday 2024-06-19 11.00AM-11.15AM

Plenary session 2

Room: „Kongresový sál“/Congress room

Wednesday 2024-06-19 11.15AM-12.15PM

11.15AM Brno: A Journey through the Centuries 2/2
Přemysl Dohnal

11.45AM BECKHOFF Automation company – Future of Industrial Automation

Lunch

Wednesday 2024-06-19 12.15PM-13.30PM

Session A1: Industrial Programmable Controllers; industrial PCs and PLCs

Room: „Kongresový sál“/Congress room

Wednesday 2024-06-19 13.30PM-14.50PM

Chair: **Václav Kaczmarczyk**

13.30PM Algebraic Tools in Autotuning Design
Roman Prokop*, Jiri Korbek

13.50PM Multimodal Low-Cost Device for AI Projects Deployment and PoC Validation
Martin Bulín*, Petr Neduchal, Jan Švec

14.10PM Fault Detection Algorithm for Pneumatic Measuring and Sorting Station
Albena Taneva*, Michail Petrov, Antoniy Petrov

14.30PM From Detection to Action: Implementing Deep Learning Inference in PLC Systems via Docker Services
Ladislav Körösi*, Slavomir Kajan, Martin Berki, Jaromír Skirkanič, Michal Lúčný, Aleš Melichar, Jakub Mihálik

Session B1: Biomedical systems	
Room:	„Malý sál 1“/Small meeting room 1
Wednesday 2024-06-19 13.30PM-14.50PM	
Chair:	Michal Husák
13.30PM	Design and Analyses of Tendon-Driven Continuum Robot for Minimally Invasive Surgery Ivan Virgala*, Martin Varga, Peter Jan Sincak, Tomas Merva, Peter Marcinko, Lubica Mikova, Erik Prada, Marek Schnitzer
13.50PM	Development of an IoT Platform for Wearable Biosignal Monitoring Systems Hizza Waseem*, MD ABDUR RAHMAN, Janina Montonen, Teemu Salo, Aki Pekka Halme, Jukka Vanhala
14.10PM	A Method of Tactile Resistive Sensor Array Calibration Michal Husák*, Ondrej Mihalik, Petr Dvorský, Zdenek Bradac
14.30PM	Computer Vision Approaches for Automated Bee Counting Application Simon Bilik*, Ilona Janáková, Adam Ligocki, Dominik Ficek, Karel Horak

Coffee break	
Wednesday 2024-06-19 14.50PM-15.10PM	

Session A2: Control Theory	
Room:	„Kongresový sál“/Congress room
Wednesday 2024-06-19 15.10PM-16.50PM	
Chair:	Pavol Bistak
15.10PM	Neuro-Evolution of Frequency Controllers in the Power-Electricity System Island Filip Zúbek*, Martin Ernek, Ivan Kenicky, Ivan Sekaj
15.30PM	Open Source Embedded System Approach for Decreasing Carbon Footprint of Oldtimers Adis Dedic*, Dejan Jokic, Jasmin Kevric, Slobodan Lubura
15.50PM	Application of Quasi-Fractional Order PI Controller to IPDT Plant Control Igor Bélaï*, Igor Belai
16.10PM	Industry 4.0 Demonstrator: COMBED Vlastimil Braun, Frantisek Zezulka, Petr Marcon*, Jan Jirsa, Petr Fiedler, Václav Kaczmarczyk, Jakub Arm, Zdenek Bradac, Přemysl Dohnal
16.30PM	Practice-Oriented Controller Design of a Simple Nonlinear System Mikulas Huba*, Pavol Bistak, Peter Tapak, Damir Vrancic

Session B2: Industrial applications	
Room:	„Malý sál 1“/Small meeting room 1
Wednesday 2024-06-19 15.10PM-16.50PM	
Chair:	Jakub Arm
15.10PM	Usage of IoT Devices As Progressive Technology in the Era of Digitization: Case Study Marek Vagaš*, Ondrej Majerčák
15.30PM	KNX-ZigBee Gateway Dominik Grzegorz*, David Vala
15.50PM	Laboratory Tester for Relay Contacts Lifespan Milan Skula*, David Vala, Petr Bilík

16.10PM	A Data-Driven Approach to Reliability and Fault Analysis in Industrial Maintenance Petr Semotam*
16.30PM	Assessment of 5G Connectivity for UAV Operations in Urban Environments: An Analysis of Network Performance and UAV Communication Architecture Van Phi Nguyen*, Josef Bajer, Markéta Vršecká

Dinner

Wednesday 2024-06-19 18.00PM-19.00PM

Thursday 2024-06-20

Session A3: Embedded Systems, Microprocessors and Microcontrollers	
Room:	„Velký sál“/Large conference room
Thursday 2024-06-20 9.00AM-10.20AM	
Chair:	Zdeněk Slanina
9.00AM	Enhancing Microcontroller Programming Education with a 3D Virtual Factory Simulator Tomas Buchta*, Tomas Martinec, Jaroslav Buchta, Jaroslav Hlava, Petr Tuma
9.20AM	Advanced Preliminary Screening for PD Detection for Overhead Distribution Lines with Covered Conductors Lukáš Klein*, Seidl David
9.40AM	Comparison of Split Computing Scenarios for Object Detection Petr Neduchal*, Jakub Straka, Matěj Sieber, Ivan Gruber
10.00AM	The Influence of Recursive Filtering Methods on Bluetooth-Based Localization Mateusz Sumorek*, Adam Idzkowski

Session B3: Signal Processing	
Room:	„Meeting room 1“/Meeting room 1
Thursday 2024-06-20 9.00AM-10.20AM	
Chair:	Ondrej Mihálik
9.00AM	Event Driven Phase-Locked Loop with Application to Atomic Force Microscopy Oscillation Non-Resonant Modes Sergey Belikov*
9.20AM	Road Pavement Monitoring and Analysis Approaches Using Gyroscope and Accelerometer Data Yegor Boyarchikov*, Tomas Martinec
9.40AM	A Comparison of Methods Recovering Signals from Non-Uniform Samples Ondrej Mihalik*, Michaela Mesárošová, Tomáš Sýkora, Zdenek Bradac
10.00AM	Mechatronics System for Solving SuDoKu Puzzle Based on Cartesian Robot Radosław Tomaszewski*, Wojciech Walendziuk, Roman Trochimczuk, Adam Wolniakowski, Kacper Jaroszewicz, Zdenek Slanina

Coffee break	
Thursday 2024-06-20 10.20AM-10.40AM	

Session A4: Embedded Systems, Microprocessors and Microcontrollers	
Room:	„Velký sál“/Large conference room
Thursday 2024-06-20 10.40AM-12.00AM	
Chair:	Zdeněk Slanina
10.40AM	MICRORISC Company presentation
11.00AM	Experimental Kit and Digital Model to Support an Agile Design Process of an Industrial Multihead Weigher Felix Profe*, Christoph Ament, Lucas Kostetzer
11.20AM	Generic Model of IoT Edge Device for Object Monitoring Via LoRaWAN Peter Peniak, Emilia Bubenikova*, Peter Holecko

11.40AM	Overview of Current Technical Adaptations to the Mechanical Lung Simulator xPulm for Use As an Alternative Method to Animal Testing Andreas Drauschke*, Richard Pašteka
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Session B4: Signal Processing	
Room:	„Meeting room 1“/Meeting room 1
Thursday 2024-06-20 10.40AM-12.00AM	
Chair:	Ondrej Mihálik
10.40AM	Effects of Binary Similarity Metrics for the Relevance Component of Serendipity-Oriented Clustering Method in Collaborative Filtering Edip Senyurek*, Jasmin Kevric
11.00AM	Phase-Based Video Magnification on a Single Board Computer Dominik Rícanek*
11.20AM	Mecanum Wheel Mobile Platform for Rapid Prototyping of the Autonomous Control Algorithms Kacper Jaroszewicz*, Wojciech Walendziuk, Roman Trochimczuk, Adam Wolniakowski, Radoslaw Tomaszewski, Zdenek Slanina
11.40AM	Contribution to the Dimensioning of Measurement Station for DC Motors Ján Briežnik*, Katarina Zakova

Lunch	
Thursday 2024-06-20 12.00PM-13.00PM	

Social program	
Thursday 2024-06-20 13.00PM-18.00PM	

Dinner + Banquet	
Thursday 2024-06-20 19.00PM-23.00PM	

Friday 2024-06-21

Poster session:	
Room:	„Meeting room 1“/Meeting room 1
Friday 2024-06-21	9.00AM-10.20AM, 10.40AM-12.00AM
9.00AM	Target-following Robotic Platform Based on UWB Localization and Depth Camera Zdenek Slanina*, Petr Janousek, Wojciech Walendziuk
9.00AM	Stand-Alone Solar Lighting System with Programmable Logic Controller Jasmina Bešić*, Emir Ajkunić, Jasna Hivziefendic, Dejan Jokic, Mirza Saric
9.00AM	Advanced IoT-Based Wireless Sensors for Remote Geotechnical Monitoring and Structural Diagnostics Martin Pies, Jan Velicka*, Radovan Hajovsky
9.00AM	A Simple State-Space Model of Human Driver Applicable to Windy Conditions Jakub Čelko*, Ondrej Mihalik, Michal Husák, Zdenek Bradac
9.00AM	Fuzzy-Logic-Based Techniques for Human Driver Behavior Modelling During a Simple Lane-Changing Task Miroslav Jirgl*, Michaela Mesárošová, Petr Fiedler, Jakub Arm
9.00AM	Evaluating the Effect of Fatigue on Driver's Performance Miroslav Jirgl*, Sona Sediva, Zdenek Bradac
9.00AM	Asset Administration Shell As the Key Enabler of the Industry 4.0 Phenomenon Jakub Arm*, Václav Kaczmarczyk, Tomáš Beneš, Petr Marcon, Miroslav Jirgl, Zdenek Bradac
9.00AM	Model and Data-Based Control of Self-Balancing Robots: Practical Educational Approach with LabVIEW and Arduino Abdelrahman Abdelgawad, Tarek Shohdy*, Ayman Ali Nada
9.00AM	Use of Multi-Agent System for Industrial Production Control Jan Jirsa*, František Zezulka, Petr Marcon, Tomáš Pečinka, Ladislav Nováček, Václav Kaczmarczyk, Jakub Arm
9.00AM	Utilization of G-Programming Language for Educational Control Application: Case Study of Magnetic Levitation of Elastic Beam Abdallah Saleh*, Mostafa Eshra, Ayman Ali Nada
9.00AM	CNN Architecture for Posture Classification on Small Data Michaela Mesárošová*, Ondrej Mihalik, Miroslav Jirgl
9.00AM	Digital Twin of Heat Exchange Station Tomáš Beneš*, Michal Husák, Ondrej Mihalik, Radim Vancl, Zdenek Bradac
9.00AM	Demand Response Method for the Domestic PV system Václav Kaczmarczyk*, Ondřej Baštán, Jakub Arm, Zuzana Kaczmarczykova
9.00AM	Analysis of requirements for teaching Industry 4.0 topics at universities Václav Kaczmarczyk*, Ondřej Baštán, Petr Marcon, Jan Jirsa, Jakub Arm, Zdenek Bradac, Zuzana Kaczmarczykova
9.00AM	The ABMS - Automatic Balancing Mechatronic System Jan Sefcik*, Katarina Zakova
9.00AM	Design and Implementation of the Reactive Asset Administration Shell Using JSON-Based Database Jakub Arm*, Petr Cernocky, Václav Kaczmarczyk, František Rusnák, Ondřej Baštán, Petr Fiedler
9.00AM	Innovative Device for Measuring Energy-Harvesters František Rusnák*, Jakub Arm, Petr Fiedler

9.00AM	Mobile Robot Perception System in ROS 2 on Embedded Computing Platforms Tomas Zemcik*, Lukáš Kratochvíla
9.00AM	Magnetic Levitation Remote Control Laboratory Based on Matlab and Websockets Pavol Bistak*, Mikulas Huba, Peter Drahoš, Damir Vrancic
9.00AM	Using Visual Odometry to Determine the Position of a UAV Marco Pinter, Jiri Janousek, Jan Klouda, Petr Raichl, Petr Marcon*
9.00AM	Multifunctional Street Lighting Lamp Dominik Grzegorz, Milan Skula*, David Vala, Veronika Zelenková

Coffee break

Friday 2024-06-21 10.20AM-10.40AM

Lunch

Friday 2024-06-21 12.00AM-13.00PM

Farewell

Friday 2024-06-21 13.00PM

Basic info

- **Presentation:** not more than 20 mins, including the discussion; preferred formats are PDF or PPTX. Please use a USB flash drive as the recording medium.
- **Poster:** printed on paper, max. size A1. The conference participants are asked to print the posters out individually.