

**Category: B1 – Systems Modeling, Sensors, and Signal Processing I.**

**Room: SA6.34 (UEEN)**

**Chairman: prof. Ing. Milan Sigmund, CSc.**

**Vice-chairman: Ing. Miroslav Jirgl, Ph.D.**

**Secretary: Ing. Lukáš Zdražil (186600@vutbr.cz)**

**Committee members: Ing. Ondřej Mokrý, Ing. Jan Kufa Ph.D.**

**Martin Fajkus (Vitesco Technologies Czech Republic s.r.o.)**

**Vojtěch Miček (Thermo Fisher Scientific Brno s.r.o.)**

**Jindřich Chaloupek (Valeo Autoklimatizace k.s.)**

Time	Authors	Title
9:00	Ondřej Nesvadba	Detection of gunshots from small arms
9:15	Tomáš Dvořák Tomáš Sýkora	Digitization of teaching models
9:30	Vít Šimeček Ondřej Mihálik	Compression of vehicle-driving data by means of orthogonal bases
9:45	Tomáš Marcina	Comparison of parallel optimization methods
10:00	Mikhail Smolnikov Tomas Horvath	Event detection in camera recording
10:15	Peter Balušík	Image demosaicing using Deep Image Prior
10:30	Štěpán Černý Dominik Friml	Adaptive angle tracking observer

**Category: B2 – Systems Modeling, Sensors, and Signal Processing II.**

**Room: SA6.19 (UEEN)**

**Chairman: doc. Ing. Zdeněk Bradáč, Ph.D.**

**Vice-chairman: Ing. Václav Vyčítal, Ph.D.**

**Secretary: Ing. Peter Mičian (xmicia01@vut.cz)**

**Committee members: Ing. Nikola Papež, Ph.D., Ing. Jan Koudelka**

**Jaroslav Lepka (NXP Semiconductors Czech Republic, s. r. o.)**

**Milan Snížek (Thermo Fisher Scientific Brno s.r.o.)**

**Luděk Závodný (Garrett Motion Czech Republic s.r.o.)**

Time	Authors	Title
9:00	Adam Kečkéš	Analysis of BLDC motor Six-step and field oriented control
9:15	Jan Hejna, Petr Musil Milan Bubniak	Quantification of the temperature increment produced by solar radiation on telecommunication devices
9:30	Jan Sedlar Karel Jurik	System for measurement and control of pressure in vacuum apparatus
9:45	David Zimniok Jan Mikulka	Analog-digital module for electrical impedance tomography
10:00	Tereza Havlíková	Compatibility of piezoelectric semicrystalline polymer and osteoblastic cells
10:15	Tomáš Fryšták	Utilization of photovoltaic energy for heating the family house utility water
10:30	Libor Pavlík Martin Paar	Design of the energy community concept
10:45	Martin Ošťádal Lukáš Radil	Daily load profile and flexibility aggregation



**Category: B4 – Communication and Information Systems**

**Room: SC3.63 (UTEE)**

**Chairman: doc. Ing. Petr Cíka, Ph.D.**

**Vice-chairman: Mgr. Ing. Pavel Seda, Ph.D.**

**Secretary: Ing. Karel Juřík (187537@vut.cz)**

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Marek Papoušek (HELLA AUTOTECHNIK NOVA, s.r.o.)  
David Neumann (HELLA AUTOTECHNIK NOVA, s.r.o.)  
Veronika Štekerová (ŠKODA AUTO, a.s.)**

Time	Authors	Title
9:00	Marek Szymutko Pavel Šeda	Plagiarism detection in software projects using abstract syntax trees
9:15	Jiří Jílek, Radek Možný Petr Musil	The design of NB-IoT connected rain gauge
9:30	Alex Wittner, Marek Sikora, Sara Ricci	Dictionary search algorithm for job ads profiling
9:45	David Carboch Petr Dejdar	Real-time temperature measurements in the experimental nuclear reactor: A data analysis and graph creation
10:00	Natalie Vychodilova Radovan Juran	Rule-based engine for position data: low-code/no-code approach to process logic
10:15	Jan Sevcik Radovan Juran	Back to the future: developing an on-board system for a vintage motorcycle
10:30	Miroslav Babel'a, Petr Musil, Radek Možný	OBD diagnostic tool
10:45	Leida Ioani Radovan Juran	Multi-sensor data fusion methods for localization in complex environments
11:00	Pavol Repa, Milan Bubniak, Petr Musil	Principle behavior of the compensation algorithm with respect to the input data

**Category: B5 – Industrial Automation, Robotics and Artificial Intelligence**

**Room: SD3.102b (UAMT)**

**Chairman: doc. Ing. Václav Jirsík, CSc.**

**Vice-chairman: Ing. Tomáš Macho, Ph.D.**

**Secretary: Ing. Tomáš Sýkora (Tomas.Sykora2@vut.cz)**

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 Pavel Pokorný (Honeywell, spol. s r.o.)**

**Dalibor Kopp (ABB s.r.o.)**

**Petr Machač (ŠKODA AUTO, a.s.)**

Time	Authors	Title
9:00	Martin Sukdolák Tomáš Beneš	Greenhouse manipulator
9:15	Martin Major Tomáš Sýkora	Model of hot water exchanger station
9:30	Tomáš Pečinka Petr Marcoň	Design of asset administration shell testbed for Industry 4.0
9:45	Jan Holba Michal Husák	Creation of a digital twin and its control based on the ANSI/ISA-S88 standard
10:00	Tomáš Martiník Václav Kaczmarczyk	Manufacturing system for Industry 4.0 demonstrator
10:15	Peter Bránecký, P. Petyovský, M. Pončák	Graphical user interface for embedded applications
10:30	David Mlejnek Jakub Arm	Automated system for creation of gigapixel images
10:45	Jiří Šiška	Creation of knowledge base
11:00	Tomáš Rotrekl Petr Kadlec	Automatic robot path planning tool
11:15	Michal Marčonek Tomáš Beneš	New home procedure on scara manipulator



**Category: M1 – Microelectronics and Technology**

**Room: SC4.81 (UTEE)**

**Chairman: Ing. Josef Máca, Ph.D.**

**Vice-chairman: doc. Ing. Vilém Kledrowetz, Ph.D.**

**Secretary: Ing. Edita Hejátková (hejatka@vut.cz)**

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 Lubomir Plavec (ASICentrum spol. s r.o.)**

**Dušan Zošiak (ABB s.r.o.)**

**Pavel Bartoš (SCG CZECH DESIGN CENTER, s.r.o.)**

Time	Authors	Title
9:00	Jan Klouda	Design of an integrated energy self-sufficient power supply for residential building consumption
9:15	Vladimír Trojan	Soft-switching methods and optimization of output stage of MOSFET driver
9:30	Ngoc Nam Pham, J. Leuchter, J. Háze	Acquisition module for non-destructive testing of aircraft composite structures
9:45	David Trochta Ondřej Čech	Preparation of inversely vulcanized sulfur for use in post lithium-ion batteries
10:00	Petr Zach	Design of a hardware accelerator of demanding computations with multiple FPGAs
10:15	Tadeáš Zbožínek	Optical fibres for ionising radiation measurements
10:30	Petr Ohnút Jakub Arm	Testbed for simulation of MCU application using RISC-V soft-core
10:45	Hana Hálová Ladislav Chladil	Spray-dry synthesis of perspective cathode materials for Li-ion batteries with low cobalt content

**Category: M2 – Industrial Automation, Robotics and Artificial Intelligence**

**Room: SD3.102a (UAMT)**

**Chairman: doc. Ing. Petr Blaha, Ph.D.**

**Vice-chairman: Ing. Václav Kaczmarczyk, Ph.D.**

**Secretary: Ing. Radim Kadlec, Ph.D. (kadlec@vut.cz)**

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**Ing. Šimon Bilík, Jiří Czipszer (Honeywell, spol. s r.o.)**

**Ondřej Zeman (Valeo Autoklimatizace k.s.)**

**Tomáš Bordovský (Vitesco Technologies Czech Republic s.r.o.)**

Time	Authors	Title
9:00	Grégoire Issassis, P. Marcoň, J. Janoušek	Analysis of UAV sensors data
9:15	Denys Khmil Jakub Arm	The crane manipulator for the 3D printer
9:30	M. Mesárošová Ondrej Mihálik	Sparse representation for classification of posture in bed
9:45	Ondřej Matula Tomáš Benešl	Industrial data logger
10:00	Petr Klement Václav Kaczmarczyk	Manufacturing control algorithms for Industry 4.0 demonstrator
10:15	Martin Štípek Tomáš Benešl	SCARA robot, program functions and use case
10:30	Van Phi Nguyen, J. Bajer, V. Křivánek	Precision landing of multicopter drones using computer vision
10:45	Martin Žiačik Václav Kaczmarczyk	Multiagent systems for distributed production
11:00	Jan Wójcik	Emotion recognition system
11:15	Eliška Homzová Petr Petyovský	Speech generator for advanced embedded systems





**Category: M4 – Network Security, Cryptography, Services, and Technologies**

**Room: SC7.53 (UTKO)**

**Chairman: doc. Ing. Zdeněk Martinásek, Ph.D.**

**Vice-chairman: Ing. Petr Dzurenda, Ph.D.**

**Secretary: Ing. et Ing. Petr Musil (musilp@vutbr.cz)**

**Committee members: Ing. Radek Fajdiak, Ph.D., doc. Ing. Jan Jeřábek, Ph.D.**

Time	Authors	Title
9:00	Willi Lazarov Tomas Stodulka	Multi-level approach to cybersecurity education
9:15	Viet Anh Phan Jan Jeřábek	Network toolkit for exploiting Internet protocol version 6 security vulnerabilities
9:30	Matyáš Horký Adrián Tomašov	Secure transfer of digital messages
9:45	Vladyslav Shapoval Petr Musil	Secure smart electrical socket for power metering
10:00	Kristián Klasovitý Sara Ricci	Blind issuance for fast keyed-verification anonymous credentials
10:15	Norbert Lövinger	How can privacy enhancing technologies solve car sharing privacy issues?
10:30	Veronika Fisarova Tomas Stodulka	Cyber arena automation component modernization including backup and recovery processes
10:45	Vladimír Spurný Petr Munster	Enhancing the efficiency of fibre optic eavesdropping
11:00	Minh Tran Petr Dzurenda	Deployment of threshold signatures for securing Bitcoin transactions
11:15	Michal Baránek Kufa Jan	Multifunction speaker with wireless connectivity



**Category: M6 – Sensors, Measurement Systems, and Signal Processing**

**Room: SE6.121 (UREL)**

**Chairman: doc. Ing. Vladislav Skorpil, CSc.**

**Vice-chairman: Ing. Tomáš Vičar, Ph.D.**

**Secretary: Ing. Jiří Fialka, Ph.D. (fialka@vut.cz)**

**Committee members: Marek Štěpán (Valeo Autoklimatizace k.s.)**

**Petr Lacman (Honeywell, spol. s r.o.)**

**Jakub Šťastný (ASICentrum spol. s r.o.)**

**Petr Novák (Yunex, s.r.o.)**

Time	Authors	Title
9:00	Martin Kubásek Václav Kaczmarczyk	Visualization of system real-time data using software modules
9:15	Filip Dušek Jaroslav Láčik	3D scanner of electromagnetic field
9:30	Jakub Lukaszczyk	Influence of dataset on anomaly detector performance estimation
9:45	Dominik Klement, Jun Wang, Jiri Janousek	Design of a three phase fault tolerant nested neutral point piloted converter with active capacitor voltage balancing and space-vector modulation
10:00	Milan Hornik, J. Puskely, T. Mikulasek	Mutual coupling reduction techniques in microstrip patch phased arrays
10:15	Jakub Nevláčil, Šimon Bilík, Karel Horak	Raspberry Pi bee health monitoring device
10:30	Daniel Haluška Martin Ruzs	Intelligent wattmeter with network communication option
10:45	Jakub Kočka Jakub Arm	Indoor monitoring system for well-being
11:00	Libor Matějek Tomas Fryza	Video summarization using deep learning approach
11:15	Adam Budac Jan Kufa	Comparison of compression and decompression speeds for 360° 8K images using conventional and deep learning algorithms



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**Category: D1 – Biomedical Engineering**

**Room: SD4.111 (UBMI)**

**Chairman: Ing. Vratislav Harabiš, Ph.D.**

**Vice-chairman: doc. Ing. Radim Kolář, Ph.D.**

**Secretary: Ing. Jiří Chmelík, Ph.D. (chmelikj@vut.cz)**

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**Ing. Jan Odstrčilík, Ph.D.**

**Petr Walek (Thermo Fisher Scientific Brno s.r.o.)**

Time	Authors	Title
13:00	Anzhelika Mezina Radim Burget	Chest X-ray image analysis using convolutional vision transformer
13:15	Richard Ředina Marina Ronzhina	Estimation of myocardial conduction velocity using a coronary sinus catheter
13:30	Inderjeet Bhogal, V. Pankaj, Sudeep Roy	Exploration of potential inhibitors of CrtM enzyme of Staphylococcus aureus using squalene synthase inhibitors: An in-silico study
13:45	Michal Ciatka, Jan Lancos, Radim Burget	Approaches to clustering of microbial colonies on agar plates
14:00	Michal Ciatka, Jan Lancos, Radim Burget	Improvement of microbial colony segmentation using synthetic data
14:15	Vaishali Pankaj, I. Bhogal, Sudeep Roy	Computational approaches to find potential phytochemical for ADHD treatment
14:30	Michal Nohel Radim Kolář	Segmentation of optic disc and cup in retinal images using of deep learning approaches
14:45	J. Schwarzerová, Bartoň, Walther, Weckwerth	Comprehensive analysis of putrescine metabolism in A. thaliana using GWAS, genetic risk score, metabolic modelling and data mining
15:00	Michal Gavenčíak	Comparing Hough transform to other automated methods of feature extraction and matching for document correction
15:15	Mohammad Umair Karel Sedlář	DNA methylation detection with Pacific biosciences sequencing and Oxford Nanopore sequencing Technology
15:30	Lukáš Hrbotický	Accuracy of cycling power meters
15:45	Martin Hemzal	A simplified 2D model of reentry in cardiac tissue using the FHN model





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STUDENT  
EEICT

**Category: D3 – Power Electronics and Electrical Machines**

**Room: SA7.10 (UEEN)**

**Chairman: doc. Ing. Radoslav Cipín, Ph.D.**

**Vice-chairman: Ing. Dalibor Cervinka, Ph.D.**

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**Committee members: Ing. Jiří Valenta, Ph.D., Ing. Jan Martiš, Ph.D., Ing. Martin Mach**

**Zdeněk Oborný (ABB s.r.o.)**

Time	Authors	Title
13:00	Vitaliy Sizonenko Petr Hutak	Design adaptation of 5 phase outer rotor PMSM for faulty modes of operation with open phases
13:15	Iveta Lolova	Topology optimization of line-start synchronous reluctance machine with fully filled flux barriers
13:30	David Rura	Performance parameter identification and stability analysis of homopolar electrodynamic magnetic bearings for suspension system
13:45	Tomáš Lažek	Simulations of loss minimization control based on motor parameters for indirect field-oriented control of induction motor
14:00	Vladimír Bílek	Comparison of machine learning training sampling schemes for induction machine modeling
14:15	Daniel Pribulla Petr Klíma	Analysis of permanent magnet segmentation influence on eddy current losses in high speed PM synchronous machine
14:30	Martin Světlík	Comparing of evolutionary and non-parametric algorithms and data preparing
14:45	Miroslav Mrajca	Eddy currents additional losses comparison in oil distribution transformer windings
15:00	Miroslav Mrajca	Advanced Turowski's method for eddy loss calculation in transformer foil winding
15:15	Jan Miklas Petr Prochazka	2D physical modelling of semiconductor equations for verification of 1D lumped-charge model of bipolar power devices
15:30	Tomáš Macík	Control principles of a three-phase active rectifier and a three-phase DC/AC converter









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STUDENT  
EEICT

**Category: D6 – Audio, Image and Video Signal Processing**

**Room: SE6.121 (UREL)**

**Chairman: doc. Ing. Kamil Říha, Ph.D.**

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**Secretary: Ing. Pavel Závíška, Ph.D. (pavel.zaviska@vut.cz)**

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**Ondřej Pirochta (Honeywell, spol. s r.o.)**

**Robert Kalmár (NXP Semiconductors Czech Republic, s. r. o.)**

Time	Authors	Title
13:00	Martin Kiac, Kamil Říha, Ondřej Krajsa	Application of YOLOv7 neural network model for control of laboratory processes
13:15	Stepan Jezek Radim Burget	Visual defect detection in real-world industrial applications using convolutional neural networks
13:30	Šimon Skvaril	Development of loudspeaker enclosure with directional radiation of frequencies below 100 Hz
13:45	Daniel Kováč Dominik Cvetler	Digital biomarkers for assessing respiratory disorders in Parkinson's disease
14:00	Matej Liska	FPGA design with TDM module for real-time sound acquisition from MEMS microphone array
14:15	Juraj Lagiň Šimon Bilík	Structure analysis of the FRP rebar using computer vision techniques
14:30	Matěj Ištvanéek Štěpán Miklánek	Beat tracking: Is 44.1 kHz really needed?
14:45	Tomáš Zemčik Karel Horak	On hyperspectral analysis of water soluble writing inks





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STUDENT  
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**Category: D8 – Industrial Automation, Robotics and Artificial Intelligence**

**Room: SD3.102b (UAMT)**

**Chairman: doc. Ing. Petr Mlýnek, Ph.D.**

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**Secretary: Ing. et Ing. Petr Musil (musilp@vutbr.cz)**

**Committee members: Ing. Jakub Arm, Ph.D., Ing. Ján Sláčik,  
Ing. Radek Fudjiak, Ph.D.**

**Václav Paňko (SCG CZECH DESIGN CENTER, s.r.o.)**

Time	Authors	Title
13:00	Stanislav Svědih Luděk Žalud	Real-time autonomous vehicle sensor performance assessment in adverse weather conditions
13:15	Antonín Boháčik David Kohout	Model of distribution system for energy testbed
13:30	Eva Holasova Jan Pospisil	Workload tool for identifying communication bottlenecks in industrial networks
13:45	Karel Kuchar Petr Blazek	Identifying anomalies in industrial networks: A proposed testbed for experimental evaluation
14:00	Milos Cihlar, Tomas Lazna, Ludek Zalud	A comparison particle filter for searching a radiation source in real and simulated world
14:15	Tomas Horelican	Towards a modular multi-platform ROS2-based navigation system for mobile robots
14:30	Martin Ruzs Petr Mlýnek	Test polygon for the role of power line communication in ensuring ISO 15118 and IEC 61851 compliance in EVSE technology
14:45	Ondřej Pospíšil Radek Možný	Device behavior analysis based on OPC UA
15:00	Lukas Benesl Radovan Juran	Multiprotocol energy load management system: A customer-side approach
15:15	Lukáš Kratochvila	Point cloud obstacle detection with the map filtration

