



VYSOKÉ UČENÍ FAKULTA ELEKTROTECHNIKY
TECHNICKÉ A KOMUNIKAČNÍCH
V BRNĚ TECHNOLOGIÍ



STUDENT
EEICT

Category: B1 – Biomedical Engineering

Room: SE4.166 (UBMI)

Chairman:

Vice-chairman:

Secretary: Lukáš Zdražil(Lukas.Zdrzil1@vut.cz)

Committee members:

Time	Authors	Title
9:00	Jan Cícha, Pavel Horský, David Haisman	Detection of Stress using Short-Time Energy Dispersion of Speech Signal
9:15	Alena Dudíková	Influence of electrical and magnetic field on growth of biomaterial upon PVDF with magnetic dopant
9:30	Jevhenij Vorochta, Helena Vítková, Roman Jakubíček	Direct Gene Detection in Raw Nanopore Signals Using Transformer Neural Networks
9:45	Tereza Lusková, Wolfram Weckwerth, Jana Schwarzerova	Concept drift detection in metabolomics-based predictions under cold-stress conditions in plants
10:00	Jakub Kovář, Stěpán Zelníček, David Vavroušek	Tepovka: A mobile application for heart rate measurement using photoplethysmography
10:15	Nikola Jordánová, Andrea Němcová	Stress detection/classification in multimodal data
10:30	Dan Nguyen	Hand gesture recognition from EMG signal using machine learning
10:45	Eliška Bachorecová	Forensic Verification of Author of Handwritten Character “k” Using Artificial Intelligence



VYSOKÉ UČENÍ FAKULTA ELEKTROTECHNIKY
TECHNICKÉ A KOMUNIKAČNÍCH
V BRNĚ TECHNOLOGIÍ



STUDENT
EEICT

Category: B2 – Communication and Information Systems

Room: SD3.102b (UAMT)

Chairman:

Vice-chairman:

Secretary: Ing. Karel Jurík (karel.jurik@vut.cz)

Committee members:

Time	Authors	Title
9:00	David Maňásek, Ladislav Polák	Portable Measurement System for monitoring of LoRa Radio Links in the 2.4 GHz ISM Band
9:15	Dominik Rechterík, Antonín Boháčik	Interactive Web Management Interface for the Energy Polygon
9:30	Jan Kusák, Šimon Sloboda	CubeSat model for image data transmission
9:45	Jan Kříž	Measurement of combustion boiler operating parameters
10:00	Matěj Hrdlička	Water level sensor
10:15	Šimon Remper, Jan Dvořák	Detection of Problems in an Industrial Network Using the Concept of Edge Computing

Category: B3 – Generation and Transmission of Electrical Energy

Room: SD2.100 (FEKT)

Chairman:

Vice-chairman:

Secretary: Ing. Viktor Jurák (jurakv@vut.cz)

Committee members:

Time	Authors	Title
9:00	Denis Šaman, Lukáš Radil	Method for Calculating the Allocation Key for Community Energy
9:15	Tomáš Brychta, Lukáš Radil	Energy balance in water treatment plants
9:30	Michaela Tichá	Use of aerogel in combination with high entropy materials as anode material for Li-ion batteries
9:45	Luboš Franěk	Electrification of agricultural operations in the fields
10:00	Vojtěch Paták	Energy balance of a farm using agrovoltaic systems
10:15	Vojtěch Gabryš, Daniel Janík	Analysis and suggestion of measure system for measuring quality and consumption of electrical power in campuses CEITEC and FIT BUT



VYSOKÉ UČENÍ FAKULTA ELEKTROTECHNIKY
TECHNICKÉ A KOMUNIKAČNÍCH
V BRNĚ TECHNOLOGIÍ



STUDENT
EEICT

Category: B4 – Industrial Automation, Instrumentation and Engineering

Room: SC4.81 (UTEE)

Chairman:

Vice-chairman:

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

Committee members:

Time	Authors	Title
9:00	Carlos Javier Valles Salas, Roman Vaněk, Jan Mikulka	Study of the design possibilities of an electrical impedance tomography system
9:15	Antonín Pospíšil	Display device for archery competitions
9:30	Adam Hrezo	DeltaBot construction for presentation and study of kinematics.
9:45	Ondřej Michalčík, Petr Petyovský	Visualization tool for industrial production data
10:00	Michal Blažík, Matěj Kantor, Soňa Michalková, Kryštof Wojnarowský, Tomáš Janoušek, Jakub Arm	Testbed 4.0: The cooling system incorporating AAS
10:15	Jan Suchánek	PV surplus management
10:30	Ondřej Dušek, Kryštof Doležal, Oliver Drga, Vít Fousek	Linear Deltabot: Design, Kinematics and Trajectory Generation
10:45	Jakub Prvý, Jan Klouda	Autonomous precision landing of unmanned aerial vehicles using fiducial optical markers



VYSOKÉ UČENÍ FAKULTA ELEKTROTECHNIKY
TECHNICKÉ A KOMUNIKAČNÍCH
V BRNĚ TECHNOLOGIÍ



STUDENT
EEICT

Category: B5 – Systems Modeling, Control and Measurement

Room: SA4.37 (UVEE)

Chairman:

Vice-chairman:

Secretary: Ing. Zoltán Szabó, Ph.D. (szaboz@vut.cz)

Committee members:

Time	Authors	Title
9:00	Veronika Junasová	The Methods of Accurate Measurement of Tilt Azimuth within Small Angles of Tilt
9:15	Vít Kejhar	Testing conductive layers on flexible and elastic substrates
9:30	Jiří Strnad, Pavel Tomíček	Verification of buck converter efficiency determination and its optimalization
9:45	Josef Sikula, Tomas Fryza	System for Counting the Number of People in a Room
10:00	Jakub Mahdal	Implementation of Launch Control on Formula Student monopost
10:15	Dominik Bortlík, Václav Kaczmarczyk	Efficiency Analysis of an Automatic Production Line
10:30	Ekaterina Gerasina	Soil water flow modeling for irrigation control
10:45	Valeriia Orlova	Thermal Model of a Smart Home
11:00	Kryštof Wojnarowský, Ondřej Mihálik	Statistical Learning-Based Analysis of Human Driver Model Parameters
11:15	Matěj Kantor	Predictive maintenance with digital model

Category: M1 – Audio, Image and Biomedical Signal Processing

Room: SD4.111 (UBMI)

Chairman:

Vice-chairman:

Secretary: Ing. Michal Svento (michal.svento@vut.cz)

Committee members:

Time	Authors	Title
9:00	Anar Davaajargal, Krystof Novotny	Analysis of Temporal Speech Impairments in Prodromal Dementia with Lewy Bodies
9:15	Benjamin Nimmerrichter	System for Measuring Directional Responses of Sound Sources
9:30	Richard Ladislav, Zoltán Galáž	Comparative Analysis of Pitch Detection Algorithms for Machine Learning Supported Parkinson's Disease Diagnosis
9:45	Vít Šimeček, Ondrej Mihálik	Compression Techniques for 4D STEM data in Electron Microscopy
10:00	Iveta Štetinová	Particle Size Measurement Using Acoustic Emission and Octave Band Analysis
10:15	Lenka Blažková	Segmentation of hip joint anatomy structures from radiographic images
10:30	Oliver Jaroš	Application of Neural Networks in Cardiovascular Load Analysis
10:45	Martina Daňková, Stanislava Košková, Filip Plešinger	Bloody Forecast: Daily Blood Demand Prediction Using Various Modeling Approaches
11:00	Jan Hýl, Aneta Pchálková	Predicting Mortality in Patients with Chronic Heart Failure

Category: M2 – Communication and Information Systems, Networks

Room: SC7.53 (UTKO)

Chairman:

Vice-chairman:

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

Committee members:

Time	Authors	Title
9:00	Alexander Bekeč, Jiří Veverka, Jan Gromeš	Design of an inter-satellite communication and ranging payload for a rendezvous and proximity operations mission
9:15	Jan Ševčík, Radovan Juráň	Energy harvesting for UWB IIoT devices
9:30	Alžbeta Kostelanská, Petr Mlýnek, Lukáš Beneš, Ondřej Krajsa, Michal Mahút	Multi-RCAT modem for Small-Scale PV Systems and Renewable Energy Communities
9:45	Jakub Zdražil, Pavel Paluřík	Wildlife Tracking System
10:00	Jan Bukovský, Petr Münster	Distributed Acoustic Sensing System Based on Dual Polarization 90-degree Optical Hybrid
10:15	Maxim Nikulcha, Viet Anh Phan	IPv6 OSINT Network Analyzer
10:30	Ondřej Dohnal, Jan Jerabek	Tool for analysis of domain records collected from open sources
10:45	Patrik Horcicka	Wireless node with WiFi Halow technology



VYSOKÉ UČENÍ FAKULTA ELEKTROTECHNIKY
TECHNICKÉ A KOMUNIKAČNÍCH
V BRNĚ TECHNOLOGIÍ



STUDENT
EEICT

Category: M3 – Machine Learning and Wireless Communication

Room: SD6.76 (UREL)

Chairman:

Vice-chairman:

Secretary: Ing. Pavel Kopriva (Pavel.Kopriva@vutbr.cz)

Committee members:

Time	Authors	Title
9:00	Martin Knob, Jan Kufa	Diagnostic oscilloscope with artificial intelligence
9:15	Jan Hejna, Petr Musil, Matěj Ištváněk	Opportunistic ambient temperature sensing using commercial microwave links
9:30	Oliver Varga, Petr Musil	Anomaly Detection in Networks Using Noise Spectrum Analysis of Network Devices
9:45	Filip Stryk, Aleš Povalač	Evaluation of Energy Consumption in Different LoRaWAN End Device Classes
10:00	Marek Černý, Roman Maršálek, Radek Závorka	Experiments with the 5G beam search in millimeter waves - raytracing and practical indoor measurements
10:15	Radim Macho, Petr Musil	Platform for detection and monitoring of the devices connected to the power grid
10:30	Matej Gradoš, Christof Paar, Muhammad Bilal Zafar, Gregor Leander	Can Neural Networks spot the Sponge?
10:45	Ondrej Lengal, Jiri Haze	Implantable Medical Device for Measuring Vital Signs of Animals - Proof of Concept

Category: M4 – Network Security and Cryptography

Room: SE6.121 (UREL)

Chairman:

Vice-chairman:

Secretary: Ing. Marek Sikora (marek.sikora@vut.cz)

Committee members:

Time	Authors	Title
9:00	Vít Horký, Tomáš Caha	Web application for secure file transfer
9:15	Martina Molnárová, Willi Lazarov	Strategic Threat Intelligence in Cyberspace
9:30	Adam Tuček, Willi Lazarov	Aggregation and Evaluation of Vulnerabilities from CVE Databases for Effective Security Assessment
9:45	Tomáš Nagy	Methods for securing Linux-based embedded systems
10:00	Bruce L'Horset, Elodie Chen, Charles Mailley	Privacy-Preserving Face Recognition Using Noised Eigenvectors
10:15	Filip Wagner	Post-Quantum Cryptography in V2X Communication
10:30	Daniel Kluka	Design of a secure data transmission system in NB-IoT environment



VYSOKÉ UČENÍ
TECHNICKÉ A KOMUNIKAČNÍCH
V BRNĚ TECHNOLOGIÍ
FAKULTA ELEKTROTECHNIKY



STUDENT
EEICT

Category: M5 – Electrical Energy: Generation, Transmission, Optimization

Room: SA7.10 (UEEN)

Chairman:

Vice-chairman:

Secretary: Ing. Filip Novák (xnovak1x@vut.cz)

Committee members:

Time	Authors	Title
9:00	Adam Kečkéš	Online recursive least square parameter estimation for PMS machine
9:15	Jan Sedlář	Efficient Optimization through Normalized Variable Scaling and Selective Term Pruning
9:30	Martin Martinec	Semi-Automatic Spot-Welding Machine for contacting battery cells
9:45	Vojtěch Šibor, Petr Vyroubal	Digital Twin of a Battery
10:00	Daniel Moravčík, Petr Vyroubal	Extraction of RC parameters for the ECM model of the Li-Ion battery
10:15	Jakub Rosendorf, Petr Chmelíček, Jan Bárta	Evaluation of Eddy Effects in Winding of High-Speed Synchronous machines for EV Systems
10:30	Tomáš Vaculík	Simulation of electrical energy demand across various types of users for energy communities
10:45	Libor Pavlík, Lukáš Radil	Predictive model of household consumption in conjunction with complementary electricity generation
11:00	Tomáš Fryšták	Availability of railway frequency converter to provide ancillary services



VYSOKÉ UČENÍ FAKULTA ELEKTROTECHNIKY
TECHNICKÉ A KOMUNIKAČNÍCH
V BRNĚ TECHNOLOGIÍ



STUDENT
EEICT

Category: M6 – Industrial Automation, Control, Machine Vision, UAVs

Room: SD3.102a (UAMT)

Chairman:

Vice-chairman:

Secretary: Ing. Zdeněk Roubal, Ph.D. (roubalz@vutbr.cz)

Committee members:

Time	Authors	Title
9:00	Tereza Havlíková	Surface Engineering of Piezoelectric Semi-Crystalline Polymer Scaffolds via Plasma Treatment for Improved Adhesion and Integration of Osteoblasts
9:15	Silvia Bátorová, Miroslav Zatloukal	Evaluation Possibilities of the Tafel Extrapolation Method
9:30	Samuel Bielik, Šimon Bílík	Towards Varroa destructor mite detection using a narrow spectra illumination
9:45	Marek Paták, Pavel Škrabánek	MediaPipe FaceMesh use in 3D model-based remote gaze tracking
10:00	Tomáš Martiník	Machine Learning-Driven Detection of Repetitive Manufacturing Processes Using Radar Sensor
10:15	Tomáš Frigyik	Automatic Landing of an Unmanned Aerial Vehicle Using Visual Markers
10:30	Jan Čtvrtníček, Jiří Janoušek	Metaheuristic Planner for a Swarm of UAVs
10:45	Josef Bartoněk, Jiří Janoušek	Vision-Based Autonomous UAV Tracking and Control
11:00	Clyde Mavhundu, Jiří Veverka	Design and Implementation of an Educational CubeSat Constellation



VYSOKÉ UČENÍ FAKULTA ELEKTROTECHNIKY
TECHNICKÉ A KOMUNIKAČNÍCH
V BRNĚ TECHNOLOGIÍ



STUDENT
EEICT

Category: D1 – Audio and Biomedical Signal Processing, Bioinformatics

Room: SD4.111 (UBMI)

Chairman:

Vice-chairman:

Secretary: Ing. Martin Králík (kralikmartin@vut.cz)

Committee members:

Time	Authors	Title
13:00	Simon Skvaril	Lumped Parameter Method for Prediction of Sound Absorption Coefficient of Loudspeaker Placed in Closed Enclosure.
13:15	Vojtěch Kovanda	Dequantized signal from two parallel quantized observations
13:30	Matej Liska	Sampling Configuration Analysis for the Design of Spherical Microphone Array
13:45	David Leitgeb	Multipurpose Digital Audio Effect: Combining Different Techniques Within a Single Device
14:00	Michal Švento	Audio Declipping with Unfolded Douglas-Rachford Algorithm
14:15	Jana Neuwirthová, Jana Indráková, Valentýna Provazník, Jana Schwarzerová	Comparing variant calling tools for genomic analysis of patients predisposed to Kidney Disease
14:30	Kristýna Heřmánková	Expression profiles of sRNA genes in <i>Caldimonas thermodepolymerans</i>
14:45	Richard Redina, Adrian Luca, Jakub Hejc, Marina Filipenska	Hausdorff Distance for P wave Alignment in ECG with Intracardiac Validation



VYSOKÉ UČENÍ FAKULTA ELEKTROTECHNIKY
TECHNICKÉ A KOMUNIKAČNÍCH
V BRNĚ TECHNOLOGIÍ



STUDENT
EEICT

Category: D2 – Communication and Information Systems, Network Security

Room: SC7.53 (UTKO)

Chairman:

Vice-chairman:

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

Committee members:

Time	Authors	Title
13:00	David Kohout, Tomas Lieskovan, Petr Mlynek	Smart Meter Emulator
13:15	Pavel Paluřík	Optimized 5G-IoT Probe: Hardware Innovations and Practical Deployment
13:30	Radim Dvořák, Pavel Paluřík	NB-IoT over NTN: Evaluating TBS and Elevation Angle Effects on Communication Reliability
13:45	Viet Anh Phan, Jan Jerabek, Roman Kümmel	ptnetinspector: A Practical IPv6 Scanner for Network Reconnaissance
14:00	Minh Tran, Petr Dzurenda	Implementation Aspects of Car-sharing Applications

Category: D3 – Microelectronics and Technology

Room: SA7.10 (UEEN)

Chairman:

Vice-chairman:

Secretary: Ing. Edita Hejátková (hejatka@vutbr.cz)

Committee members:

Time	Authors	Title
13:00	Jaromír Jarušek, Imrich Gablech	Optimized 3D Resin Printing for Microfluidic Chip Fabrication
13:15	Antonín Šimek, Tomáš Kazda, Charles Aram Hall, Ondřej Čech	Unraveling Sodium Storage Mechanisms in Carbon Anodes for Sodium-ion Batteries
13:30	Jiří Báňa, Tomáš Kazda	Trends And Challenges Of Hydrometallurgical Recycling Of Lithium-ion Batteries
13:45	David Trochta, Ondřej Klvač, Tomáš Kazda	Investigating Battery Degradation Mechanisms by In-Situ SEM Analysis and Related Techniques
14:00	Hana Hálová	Optimization of Spray Drying Synthesis of LiFePO ₄ : Effects of Calcination and Doping on Microstructure and Electrochemical Properties
14:15	Adam Dvorský	Early fire detector using GAS FET
14:30	Marek Sedlařík	Parametrization of equivalent circuit models for lithium-ion batteries using galvanostatic intermittent titration technique
14:45	Pavel Tomíček, Jaroslav Boušek	Effects of gate boosting on gate oxide reliability and lifetime estimation of commercially available MOSFETs



VYSOKÉ UČENÍ FAKULTA ELEKTROTECHNIKY
TECHNICKÉ A KOMUNIKAČNÍCH
V BRNĚ TECHNOLOGIÍ



STUDENT
EEICT

Category: D4 – Physical Sciences

Room: SC4.81 (UTEE)

Chairman:

Vice-chairman:

Secretary: doc. RNDr. Milada Bartlová, Ph.D. (bartlova@vut.cz)

Committee members:

Time	Authors	Title
13:00	Pavla Kočková	Towards Early Rail Crack Detection: Characterizing Stress Wave Behavior through Experimentation and FE Modeling
13:15	Richard Schubert	Detection of Heavy Metal Contamination by Vibrational Spectroscopy: A Combined Theoretical and Experimental Study
13:30	Denis Misiurev, Vladimír Holcman	Optimization of Fabrication Parameters for Atomic Force Microscopy Probes to Improve Image Resolution and Analysis
13:45	Tatiana Pisarenko	Nanostructured Polyvinylidene Fluoride Membranes Functionalized with Chromium-based Metal-Organic Frameworks for Selective Pollutant Adsorption
14:00	Kipkurui Ronoh, Dinara Sobola	Influence of ultrafast laser surface modification of the surface morphology, chemical composition and wettability of MONEL® alloy 400
14:15	Pavel Máca	Effect of fuel assembly rotation on optimization of fuel pins burnup

Category: D5 – Power Electronics, Electric Drives and Machines

Room: SA4.37 (UVEE)

Chairman:

Vice-chairman:

Secretary: Ing. Martin Hemzal (Martin.Hemzal@vut.cz)

Committee members:

Time	Authors	Title
13:00	Šimon Chmelař	Analysis of Retail Electricity Prices in the Czech Republic
13:15	Martin Světlík, Jan Bárta	How to Measure Induction Machines: A Practical Methodology
13:30	Martin Světlík, Jan Bárta	Design and Optimization Workflow for Industrial Induction Machines
13:45	Tomáš Pitner	Current balancing in parallel structures of high-current power inverters
14:00	Jakub Súkeník, Marek Toman	Computational Fluid Dynamics Thermal Modelling of Fan-Cooled Finned Heat-sink Considering Air Temperature Rise
14:15	Miroslav Mrajca, Petr Šilling	Advanced Transformer Design Optimization via Simulated Annealing
14:30	Miroslav Kozumplík	Rapid Prototyping Platform for the Control and Testing of Electric Drives
14:45	Matúš Kavec	Optimization of PMSM Control: Integrating Flux Weakening, and MTPA for Performance Enhancement



VYSOKÉ UČENÍ FAKULTA ELEKTROTECHNIKY
TECHNICKÉ A KOMUNIKAČNÍCH
V BRNĚ TECHNOLOGIÍ



STUDENT
EEICT

Category: D6 – Sensors and Measurement Systems

Room: SD3.102a (UAMT)

Chairman:

Vice-chairman:

Secretary: Ing. Karel Juřík (xjurik14@vut.cz)

Committee members:

Time	Authors	Title
13:00	Lukáš Zdražil, Marek Andrlé, Petr Špaček	Electrical Properties Measurement of SMD Electrodes for Surface Decontamination
13:15	Matěj Turinský	Photovoltaic power plant source measurement system for fault detection
13:30	Serge Ayme Kouakouo Nomvussi, Jan Mikulka	Image Reconstruction in Electrical Impedance Tomography through 1D-Convolutional Neural Network
13:45	Sabrina Boujenfa	Driver inattention state: an overview of distraction, drowsiness, visual perception and infrared imaging
14:00	Tadeáš Zbožínek, Michal Jelínek, Břetislav Mikel	Enhancing Signal Collection Efficiency in Liquid Scintillators via Optical Fibre End Treatments for Dosimetry Applications



VYSOKÉ UČENÍ FAKULTA ELEKTROTECHNIKY
TECHNICKÉ A KOMUNIKAČNÍCH
V BRNĚ TECHNOLOGIÍ



STUDENT
EEICT

Category: D7 – Systems Modeling, Control, Machine Vision, UAVs

Room: SD6.76 (UREL)

Chairman:

Vice-chairman:

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

Committee members:

Time	Authors	Title
13:00	Silvestr Vaculovič, Jakub Arm	Formal specification of control system design in industrial domain
13:15	Marie Hartmanová, Josef Diblík	General Solution of Linear Planar Weakly Delayed Discrete Systems with Multiple Delays and with a Singular Matrix of Non-delayed Terms
13:30	Stepan Jezek, Radim Burget	Speed Measurement from Traffic Camera Video Using Structure-from-Motion-Based Calibration
13:45	Jakub Čelko	Comparison of Direct and Indirect Identification of a Human Driver Model
14:00	Jan Klouda	UAV platform for special operation
14:15	Šimon Prokop	Review of Autonomous UAV Methods in GNSS-Challenging Environments



VYSOKÉ UČENÍ FAKULTA ELEKTROTECHNIKY
TECHNICKÉ A KOMUNIKAČNÍCH
V BRNĚ TECHNOLOGIÍ



STUDENT
EEICT

Category: SS – General Technical Focus

Room: Aula prof. Braunera

Chairman: prof. Ing. Jaroslav Koton, Ph.D.

Vice-chairman: doc. Ing. David Kubánek, Ph.D.

Secretary:

Committee members:

Time	Authors	Title
13:00	Matěj Mlynář	Multifunctional 3D printed UAV
13:15	Jan Buchta	Electroactivity of Polyvinylidene Fluoride Fibers Probed by SPM