

## Program Summary

### Room 201 – Center for Mechatronics, Biomechanics, and Nanoengineering

September 20<sup>th</sup>, 2023 (Wednesday)

9:00	<b>OPENING</b> Chairman: Adam Dąbrowski
9:15-10:00	<b>TUTORIAL I:</b> <i>Lars Bramsløw - Real benefits in real life: developing and testing state-of-the-art relevant signal processing in hearing aids</i>
10:00-10:30	<b>Coffee Break</b>
10:30-11:45	<b>SESSION 1: Audio Processing</b> Chairman: Szymon Drgas
	Lukasz Smietanka, Tomasz Maka, Augmented Transformer for Speech Detection in Adverse Acoustical Conditions
	Marta Zielonka, Wiktor Krasieński, Jakub Nowak, Przemysław Rośleń, Jan Stopiński, Mateusz Żak, Franciszek Górski, Andrzej Czyżewski, A survey of automatic speech recognition deep models performance for Polish medical terms
	Jimmy Eadie, Automated Audio Time Alignment for Multi-Microphone Setups: An Open-Source Approach
	Marzena Mięsikowska, Analysis of Sound Levels and Speech Intelligibility in the Presence of X4 Unmanned Aerial Vehicle in External Environmental Conditions
	Filip Marciniak, Wojciech Marciniak, Tomasz Marciniak, Analysis of fast prototyping of microcontroller-based ML software for acoustic signal classification
11:45-12:00	<b>Coffee Break</b>
12:00-12:45	<b>TUTORIAL II:</b> <i>Giuseppe Tortora - AI and IoT for future generation of medical delivery with drones</i>
12:45-14:00	<b>SESSION 2: Biomedical Applications and Assistive Technologies</b> Chairman: Damian Cetnarowicz
	Ta Viet Tai, Ma Pham Nhut Tan, Duong Hoang Tien, Chu Thi Hong Ngoc, Nguyen Minh Tri, Nguyen Viet Ha, Tran Thi Thao Nguyen, Signal Quality Indices based on Skewness of Peak-Peak Interval for Wearable ECG Devices
	Kayode Inadagbo, Baran Arig, Nisanur Alici, Murat Isik, Exploiting FPGA Capabilities for Accelerated Biomedical Computing
	Resham Raj Shivwanshi, Neelamshobha Nirala, Implementation of an advanced lung nodule classification system using optimized ConvMixer and AdamW-based CNN architecture
	Tomasz Marciniak, Agnieszka Stankiewicz, Przemysław Zaradzki, Segmentation of Retina Vessels in 2D OCT-Reconstructed Fundus Images with 3D Unet
	Karolina Brończyk, Michał Adamski, Agata Dąbrowska, Adam Konieczka, Adam Dąbrowski, Two approaches (GC-ECD and electrochemical sensors signals processing) to the determination of carbonyl compounds as markers of air pollution
14:00-15:00	<b>Lunch</b>
15:00-15:45	<b>TUTORIAL III:</b> <i>Christos P. Antonopoulos - From embedded to AI-powered Cyberphysical systems and beyond</i>
15:45-17:00	<b>SESSION 3: AI applications in DSP</b> Chairman: Julian Balcerek
	Rafał Michał Burza, Application of Neural Networks for Validation of Data Integrity in Large Automotive Radar Datasets
	Muhammad Ahsan, Dariusz Bismor, Advanced Fault Diagnosis in Rotating Machines Using 2D Grayscale Images with Improved Deep Convolutional Neural Networks
	Dimitrios Gkountelos, Milad Kokhazadeh, Charalampos Bournas, Georgios Keramidas, Vasilios Kelefouras, Towards Highly Compressed CNN Models for Human Activity Recognition in Wearable Devices
	Aleksandra Świetlicka, Dagmara Haczyk, Marcel Haczyk, Graph Neural Networks for Natural Language Processing in Human-Robot Interaction
	Jakub Suder, Tomasz Marciniak, Fast Prototyping of In-Pavement Airport Navigation Lamp Prism Classification
18:00	<b>Welcome Party Banquet</b>

**September 21<sup>st</sup>, 2023 (Thursday)**

<b>9:00-9:45</b>	<b>TUTORIAL IV: Miha Gjura - Red Pitaya: Empowering Signal Processing Education and Research Journey</b>
9:45-10:00	<b>Coffee Break</b>
<b>10:00-11:30</b>	<b>SESSION 4: Image Processing I</b> Chairman: Tomasz Marciniak
	Saleh Alshamrani, Haikel Alhichri, Yakoub Bazi, Naif Alajlan, Prototypical Networks for Remote Sensing Scene Classification - Episodic Versus Classical Training
	Krzysztof Blachut, Tomasz Kryjak, High-definition event frame generation using SoC FPGA devices
	Francisco Luquin Monroy, Rania Hussein, Contour Extraction of Surgical Stoma Surfaces Using 2.5D Images from Smartphone 3D Scanning
	Betül Sömek, Seniha Esen Yuksel, Plankton Classification with Deep Learning
	Omar Elnoamy, Mohamed Gabr, Youssef Korayem, Wassim Alexan, Minar El-Aasser, Enhancing Image Security Using Legacy-Based Encryption With Chaotic Tent Map and Memristor
	Mohannad Alkotb, Mohamed Gabr, Minar El-Aasser, Wassim Alexan, Secure Communications of Visual Data Over CF Relays
<b>11:30-12:00</b>	<b>Coffee Break</b>
<b>12:00-13:30</b>	<b>SESSION 5: Image Processing II</b> Chairman: Paweł Pawłowski
	Burak Akdemir, Eyüp Enes Aytaç, Erkani Mert Tosun, Seniha Esen Yuksel, Classification Of Solid Waste Using Computer Vision Techniques
	Faiza Mekhalifa, Fouad Yacef, Mahmoud Belhocine, Pre trained Deep Learning Models for UAV based Weed Recognition
	Maksims Ivanovs, Laura Leja, Kārlis Zviedris, Roberts Rimša, Karina Narbutė, Valerija Movcana, Feliks Rumnieks, Arnis Strods, Kevin Gillois, Gatis Mozolevskis, Arturs Abols, Roberts Kadiķis, Synthetic Image Generation With a Fine-Tuned Latent Diffusion Model for Organ on Chip Cell Image Classification
	Bouزيد Arezki, Fangchen Feng, Anissa Mokraoui, Convolutional Transformer-Based Image Compression
	Kamil Jeziorek, Andrea Pinna, Tomasz Kryjak, Memory-Efficient Graph Convolutional Networks for Object Classification and Detection with Event Cameras
	Nafaa Nacereddine, Aicha Baya Goumeidane, Software for an Automated Radiographic Testing in Weld Inspection (ARTWIS)
<b>13:45-15:00</b>	<b>Lunch</b>
<b>15:00-15:45</b>	<b>TUTORIAL V: Thomas M. Coughlin - Memories of The Future</b>
<b>15:45-17:15</b>	<b>SESSION 6: DSP Theory and Implementation</b> Chairman: Adam Dąbrowski
	Jan Monieta, Diagnostic development of damage of ship generator sets by means of electrical signals
	Nagasubhadra D. Uppalapati, Praveen B. Choppala, Lakshmi Krishnan, Sequential Monte Carlo with 3σ limits for Bayesian estimation of latent Markov processes
	Kacper Podbucki, Jakub Suder, Tomasz Marciniak, Adam Dąbrowski, Influence of power supply on airport navigation lamps photometric test accuracy
	Julian Balcerek, Paweł Pawłowski, How to combine issues related to autonomous vehicles - a proposal with a literature review
	Oleh Holovko, Adam Konieczka, Adam Dąbrowski, Modeling of passive cooling systems for building-applied photovoltaics panels (BAPV)
	Paweł Pawłowski, Rafał Długosz, Marek Radkowski, Mateusz Wątyły, Adam Dąbrowski, Analog, Programmable Switched Capacitor FIR Filters Based on Rotator Architecture Implemented in CMOS Technology
<b>17:30</b>	<b>Best Paper Award Ceremony</b>

**September 22<sup>nd</sup>, 2023 (Friday)**

<b>8:45-13:00</b>	<b>Social Event</b>
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