

34th international conference

RADIOELEKTRONIKA²⁰²⁴

April 17-18, 2024, Žilina, SLOVAKIA



CONFERENCE PROGRAM

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SHORT PROGRAM

Wednesday April 17, 2024

08.00 – 09.00 Registration¹

09.00 – 09.15 Opening Ceremony (R.Hudec, P.Špánik)¹

09.15 - 09.45

Invited Lecture¹

Erich Leitgeb
TU Graz, Austria

Optical Wireless Technologies as Upgrade and Extension to Traditional RF for Communications and Sensing

09.45 - 10.15

Invited Lecture¹

Dejan Vukobratovic
University of Novi Sad, Republic of Serbia

AI/ML Integration in 5G and Beyond

10.15 – 10.45 Sponsors Session (ASBIS, Rohde & Schwarz, PROFiber)¹

10.45 – 11.15 Coffee Break & Expo¹

11.15 – 12.15 Oral Session 1 - see detailed program¹

12.15 – 13.15 Lunch¹

13.15 – 14.45 Oral Session 2 - see detailed program¹

14.45 – 15.00 Coffee Break¹

15.00 – 16.15 Oral Session 3 - see detailed program¹

16.30 – 17.00 Poster Section 1 - see detailed program¹

18.00 Gala Dinner – Welcome party

¹Place: Scientific Council of University of Zilina, Nová Menza, Vysokoškolákov 26, Žilina

Thursday April 18, 2024

08.00 – 09.00 Registration¹

09.00 – 09.30 Invited Lecture¹
Ivan Glesk
University of Žilina, Slovakia
Impact of transformative innovations on the society and new research opportunities

09.30 – 10.00 Sponsors Session (TR instruments, VISSIM, SOS electronic, TESTE)¹

10.00 – 10.30 Coffee Break & Expo¹

10.30 – 12.00 Oral Session 4 - see detailed program¹

12.00 – 13.00 Lunch¹

13.00 – 14.30 Oral Session 5 - see detailed program¹

14.30 – 15.00 Poster Section 2 - see detailed program¹

15.00 – 15.15 Closing Ceremony & BPA¹

¹Place: Scientific Council of University of Zilina, Nová Menza, Vysokoškolákov 26, Žilina

WEDNESDAY, APRIL 17, 2024

Oral Session 1

11.15 – 12.15 (CEST)

chairman: **Peter Brída**

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| 0027 | M. A. ALI, R. MARSALEK
Dynamic People Counting from Delay-Doppler Images in Challenging Scenarios: Enhancing Model Performance |
| 0031 | J. SVATOŇ, J. SÝKORA, F. VEJRAŽKA, K. ULOVEC, D. SKOPEC, J. SPÁČIL, J. ROHÁČ, J. ŠKALOUD, M. TOMIS
Indoor-Positioning in DVB-T/T2 Single-Frequency Networks Using Inverse Passive Radar Approach |
| 0037 | J. KRŠKA, V. NAVRÁTIL
Improving UWB Positioning Accuracy by Fusion With Pedestrian Dead-Reckoning |
| 0045 | J. MACHAJ, P. BRIDA, B. ADAMEC
Effect of Wi-Fi Access Points Spoofing on Fingerprinting Localization |

Oral Session 2

13.15 – 14.45 (CEST)

chairman: **Matúš Pleva**

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| 0008 | M. SPIŠIAK, M. JAKUBEC, R. JARINA, P. KASÁK
Efficient Low-Complexity Speaker Identification based on a SpeakerGAN Approach |
| 0028 | S. SUCHALOVA, R. HUDEC, S. MATUSKA
Effects of Brain Signal Preprocessing on Visual Object Stimulation |
| 0036 | R. MUNIRATHINAM, S. VITEK
Sound Source Localization and Classification for Emergency Vehicle Siren Detection Using Resource Constrained Systems |
| 0046 | S. ONDÁŠ, J. STAŠ, R. ŠEVC
Speech recognition as a supportive tool in the speech therapy game |
| 0050 | M. KOCTÚROVÁ, Z. SOKOLOVÁ, J. JUHÁR
Comparative Study of EEG-based Speech Detection with Novel Feature Set |
| 0055 | M. HARAHUS, Z. SOKOLOVÁ, M. PLEVA, J. JUHÁR, D. HLÁDEK, J. STAŠ, M. KOCTÚROVÁ
Evaluation of Datasets Focused on Grammatical Error Correction Using the T5 Model in Slovak |

■ Oral Session 3

15.00 – 16.15 (CEST)

chairman: Milan Dado

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| 0004 | A. HILT
Feasibility of D-band Fixed Radio Links for 5G and Beyond Access Networks |
| 0009 | T. ĎAPTÍK, M. HRAŠKA, J. PAPÁN, M. JANOVEC
Comparison Of Basic SDN Controllers |
| 0022 | O. KRYVOSHEI, P. KAMENCAY, A. STECH
Server Implementation Design for Adaptive 3D Video Streaming |
| 0029 | S. MATUSKA, R. HUDEC, S. SUCHALOVA
Proof of Concept of Self-hosted IoT solution |
| 0033 | N. KURKINA, J. PAPAJ
C-MANET with enhancement of routing techniques using KNN and fitness function |
| 0054 | D. MASLAR, M. SOKOL, P. GALAJDA, P. JURIK
Robust Low-Power Sensor Network Based on the BLE protocol for IoT applications |

■ Poster section 1

16.30 – 17.00 (CEST)

chairman: Juraj Machaj

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| 0010 | B. BRTNÍK, D. MATOUŠEK
A Special Way of Solving the Field Emitted by the Hyguens Source |
| 0016 | J. STAŠ, D. HLÁDEK, A. KOPNICKÝ
Detecting Dementia from Transcribed Speech in Slovak using Pre-trained BERT Models |
| 0019 | R. HLAVATA, P. KAMENCAY, P. SYKORA, R. HUDEC, J. STUREKOVA
Recognition of Abnormal Behavior from a Thermal Camera using Deep Learning |
| 0032 | R. HALUŠKA, M. PLEVA, J. SEDLÁK, M. KOCTÚROVÁ, S. ANDREČÍK, L. OVSEŇÍK
Facial Liveness Detection for Biometric User Identification |
| 0040 | O. KOLAR, J. KRAL, M. NOVAK, A. POVALAC
Wireless Network Simulator for Advanced LoRa Applications |
| 0047 | M. KNYVA, D. GAILIUS, P. KUZAS, G. BALČIŪNAS, A. MEŠKUOTIENĖ, J. DOBILIENĖ
Automated Testing and Conformity Assessment for Smart Meters User Interface |
| 0051 | J. DUBOVAN, J. LITVIK, M. DADO, D. BENEDIKOVIC
Mitigation of Polarization Mode Dispersion Using In-Band System Reservation Model |

THURSDAY, APRIL 18, 2024

Oral Session 4

10.30 – 12.00 (CEST)

chairman: **Juraj Machaj**

0006	J. KRCHNÁK, M. DZURIŠ, R. HARTÁNSKÝ, A. KLIUCHKA, M. ŠTIBRANÝ Towards an Identification of Faulty Antenna in Large Antenna Systems using Vertical Flight Pattern Quadcopter Measurements
0011	E. KUPCOVÁ, P. ZELENÁK, M. PLEVA, M. DRUTAROVSKÝ Optimization of Ristretto255 Group Implementation for Cortex-M4 based Cryptographic Applications
0026	V. STOFANIK, P. KUBINEC, E. COCHEROVA, J. PUCIK Design of Mode-Separation Filters for Dual-Mode Oscillator with SC Quartz Resonator Operating at Elevated Temperatures
0057	O. FIŠER, K. POTUZNÍKOVÁ, L. REJFEK, C. POTUZNÍK, A. ZIKESOVÁ, M. M. KOVALCHUK Comparison of three generalised moment methods for raindrop size distribution modelling
0058	Z. M. AHMED, H. AL-AMAIH, Z. KOLLÁR Active Constellation Extension with Enlipping Technique for PAPR Reduction in FB-MC-OQAM Systems
0059	Z. KOLLÁR, M. ALRWASHDEH, L. LEITOLD Performance analysis of FBMC signals in the presence of DACs with limited range and resolution

Oral Session 5

13.00 – 14.30 (CEST)

chairman: **Miroslav Benčo**

0005	J. ORAVEC, L. OVSENÍK, S. ANDREJČÍK An Approach to Standardize Keys Used in Image Encryption Algorithms
0007	M. B. GIBRIL, R. AL-RUZOUQ, J. BOLCEK, A. SHANABLEH, R. JENA Building Extraction from Satellite Images Using Mask R-CNN and Swin Transformer
0013	A. ŠTECH, R. HUDEC, P. KAMENCAY, L. POLAK, A. DHAKA Comparative Analysis of 3D Object Scanning Devices for Scientific Applications
0018	R. HLAVATA, P. KAMENCAY, P. SYKORA, R. HUDEC, M. RADILOVA Recognition of Dangerous Objects using Deep Learning
0020	J. STUREKOVA, P. KAMENCAY, R. HLAVATA The Comparison of Neural Networks for Contactless BPM Estimation
0039	M. NOVOTNY, K. FLIEGEL, M. SIMKA, L. POLAK, J. KUFA Eye-Tracking Data Extension for Omnidirectional Image Quality Assessment Database (OMNIQAD)

 Poster section 2

14.30 – 15.00 (CEST)

chairman: Juraj Machaj	
0023	M. HUTAR, P. BRIDA, J. MACHAJ Performance of MLP NN Using CSI and Different Standard IEEE 802.11 with Variable Channel Width
0025	Y. SINGH, P. SWAMI, V. BHATIA, P. BRIDA Channel Estimation in 5G and Beyond Networks Using Deep Learning
0030	J. MACHAJ, P. BRIDA, B. ADAMEC Effect of Radio Map Interpolation on Performance of Rank-Based Fingerprinting Algorithm
0034	S. ANDREJČÍK, L. OVSENÍK, J. ORAVEC, R. HALUŠKA Resistance to attack on the covering medium using various steganographic techniques
0044	A. HILT, A. FARKASVÖLGYI, M. L. IVÁNYI Experimental Verification of Transmittance and Harmonics in External Optical Intensity Modulation
0048	B. ADAMEC, J. MACHAJ, P. BRIDA Advanced RF Module to Reduce Interference Between the Current DVB-T2 Broadcasting and 5G/LTE Networks
0053	M. SAKOVA, P. JURIK, P. GALAJDA, M. SOKOL Bee Hive Acoustic Monitoring and Processing Using Convolutional Neural Network and Machine Learning

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2024