



IWSSIP 2023 Technical Session Program

27 - 29 June 2023, Ohrid, North Macedonia

* Each paper will have 15 min for presentation followed by 3 min for discussion.

Tuesday 27. June 2023

10:15 - 11:45	Image Processing 1 Chairs: André Araújo and Zoran Ivanovski
	<ul style="list-style-type: none">● Real-time vehicle detection based on wavelet decomposition and CNN Monika Todevska, Aleksandra Zlatkova, Zoran Ivanovski and Dimitar Tashkovski● A Feature-based Approach for the Recognition of Image Quality Degradation in Automotive Applications Florian Bauer● A technique to jointly estimate depth and depth uncertainty for unmanned aerial vehicles Michaël Fonder and Marc Van Droogenbroeck● Vision of the Seas: Open Visual Perception Framework for Autonomous Sailing Vessels André Araújo, Ganadev Chandrasekharan, Esteban Clua, Phillipe Preux, Eduardo Vasconcellos and Luiz Gonçalves● Occlusion-Aware Pedestrian Detection and Tracking Simão Correia, Diogo Mendes, Pedro Jorge, Tomás Brandão, Patrícia Arriaga and Luís Nunes

12:00 - 13:30	Image Processing 2 Chairs: Bartłomiej Pogodzinski and Tomislav Kartalov
	<ul style="list-style-type: none">● RGB-Guided Resolution Enhancement of IR Images Marcel Trammer, Nils Genser and Jürgen Seiler● Transformer-based spectro-temporal fusion for Sentinel-2 super-resolution Bartłomiej Pogodzinski, Tomasz Tarasiewicz and Michal Kawulok● Improving Ear Recognition with Super-resolution Luka Markičević, Peter Peer and Žiga Emeršič● Capturing and Processing Sign Animations to a Portuguese Sign Language 3D Avatar Duarte Dias, Bruno Ribeiro, Pedro Faria and Luis Romero

12:00 - 13:30	Miscellaneous (online , password: iwssip) Chairs: Maryna Popova and Tomislav Shuminoski
<ul style="list-style-type: none"> ● The concept of text processing in an ontological approach to spatio-temporal social network analysis Maryna Popova, Eduard Siemens and Kirill Karpov ● Indoor 3D Visible Light Positioning Analysis with Channel Estimation Errors Dimitrios Bozanis, Nikos Evgenidis, Vasilis Papanikolaou, Pavlos Bouzinis, Sotiris Tegos, Alexis Dowhuszko, Panagiotis Diamantoulakis and George Karagiannidis ● Identification During Verification Of Diplomas In The Blockchain System Avni Rustemi, Vladimir Atanasovski and Aleksandar Risteski 	

14:30 - 16:00	Multimedia Chairs: Gergely Dobreff and Tomislav Kartalov
<ul style="list-style-type: none"> ● Predicting QoE for Delay-critical services in Mobile Networks: A video conferencing case study Gergely Dobreff, Mark Szalay, Marton Molnar, László Varga, Bence Ladóczki, Attila Bader and Alija Pašić ● Piracy detection in online soccer streaming with video content inspection: an application to the Portuguese market Diogo Pontes, Claudino Costa, Ricardo Gomes Faria, Pedro Fidalgo and José Henrique Brito ● Cloud-based big data analysis for OTT video services Zhaneta Trencheva, Pero Latkoski, Marko Porjazoski and Borislav Popovski ● Next Generation Video Compression Standards – Performance Overview Dean Petreski and Tomislav Kartalov ● An Augmented Reality Application with EasyAR for Spatial Mapping in Museums Hugo Pereira, Luís Romero and Pedro Miguel Faria 	

14:30 - 16:00	Machine Learning 1 (online , password: iwssip) Chairs: André Cordeiro and Tomislav Shuminoski
<ul style="list-style-type: none"> ● Date Fruit classification using a wide range of classifiers André Cordeiro, Edson Oliveira Jr and Yandre Costa ● Automatic quantitative and morphometric analysis of muscle fibers Sérgio Silva Jr., Eduardo Santos, Mateus Carvalho, Franklin Flores, Fernanda Almeida, Cecília Costa and Yandre Costa ● Acoustic Scene Classification by Linear Projections for Dimensionality Reduction Marcos Vinícius Golom, Juliano Henrique Foleis, Yandre Costa, Rogério Aparecido Gonçalves and Diego Bertolini ● Integrating Multiple Public Datasets for Human Activity Recognition using Machine Learning Vinicius Fukace, Yandre Costa and Igor Natal ● Quantitative Assessment of Telangiectasia Whitening: A Standardized Image Analysis Approach for Evaluating Treatment Efficacy Marcelo Zanoni, Lucas Teixeira, Elvio Garcia and Yandre Costa 	

Wednesday 28. June 2023

08:30 - 10:00	Natural Language Processing Chairs: Artur Janicki and Branislav Gerazov
<ul style="list-style-type: none"> ● A Translation System from European Portuguese to Portuguese Sign Language Bruno Ribeiro, Duarte Dias, Vasco Alves, Pedro Faria and Luís Romero ● Therapeutic Spoken Dialogue System in Clinical Settings: Initial Experiments Karolina Gabor-Siatkowska, Marcin Sowański, Mikołaj Pudo, Rafał Rzatkiewicz, Izabela Stefaniak, Marek Kozłowski and Artur Janicki ● A Gloss Based Translation From European Portuguese to Portuguese Sign Language Vasco Alves, Luis Romero, Pedro Faria, Jorge Ribeiro, Ângelo Costa and Vânia Ferreira ● Slot Lost in Translation? Not Anymore: A Machine Translation Model for Virtual Assistants with Type-Independent Slot Transfer Marcin Sowanski and Artur Janicki 	

08:30 - 10:00	Machine Learning 2 Chairs: João Paulo Papa and Matea Tashkovska
<ul style="list-style-type: none"> ● Opposition-Based Jellyfish Search for Feature Selection Douglas Rodrigues, Kelton Augusto Pontara da Costa, Danilo Sinkiti Gastaldello, André Nunes Souza and João Paulo Papa ● Prediction of Hospital Readmission using Federated Learning Borjan Sazdov, Matea Tashkovska, Stefan Krsteski, Borche Jovanovski, Stefan Kalabakov, Valentin Rakovic, Daniel Denkovski and Hristijan Gjoreski ● Temporal Dengue Outbreak Prediction from Climatic Variables using Finite Element Machines for Regression M. Lydia, Edwin Prem Kumar, Akash Ravichandran, Guilherme Brandão Martins, Leandro Aparecido Passos and João Paulo Papa ● OPFsemble: An Ensemble Pruning Approach via Optimum-Path Forest Danilo Samuel Jodas, Leandro Aparecido Passos, Douglas Rodrigues, Thiago José Lucas, Kelton Augusto Pontara da Costa and João Paulo Papa ● Fuzzy Logic based Algorithm for Electrical Load Management in Touring Buses Boris Butevski, Vesna Ojleska Latkoska and Dushko Stavrov 	

12:15 - 13:45	Wireless Communications 1 Chairs: Gordana Gardašević and Markus Rupp
<ul style="list-style-type: none"> ● Coverage and Throughput Trade-off in Relay Assisted V2I Communication in Microcellular Urban Networks Blanca Ramos Elbal and Markus Rupp ● An Approach to Link Quality Measurement in 6TiSCH Networks Danijel Ljepojević and Gordana Gardašević ● Channel-Aware Slotted ALOHA Networks Assisted by Intelligent Reflecting Surfaces Slavche Pejovski and Zoran Hadzi-Velkov ● Proportional Fairness in Wireless Powered Mobile Edge Computing Networks Marija Poposka, Zoran Hadzi-Velkov and Tomislav Shuminoski ● Impact of LoRaWAN Transceiver on End Device Battery Lifetime Simeon Trendov, Maksim Gering and Eduard Siemens 	

12:15 - 13:45	Audio, Speech and Music Chairs: Pascal Janetzky and Branislav Gerazov
<ul style="list-style-type: none"> ● Cross-lingual Text-to-Speech with Prosody Embedding Tijana Nosek, Siniša Suzić, Vlado Delić and Milan Sečujski ● Swarming Detection in Smart Beehives Using Auto Encoders for Audio Data Pascal Janetzky, Melanie Schaller, Anna Krause and Andreas Hotho ● Multimodal Music Mood Classification with Dynamic Classifier Selection João Gabriel Bracaioli, Alceu Britto Junior, Yandre Costa and Carlos N. Silla Jr. ● An Investigation of Different Positive and Negative Training Policies for the Task of Hierarchical Music Genre Classification Cinthya Oestreich Silva, Renato Suguivy and Carlos N. Silla Jr. ● Music Recommendation System for Shared Environments João Gabriel Bracaioli A Vitório and Carlos N. Silla Jr. 	

14:45 - 16:00	Wireless Communications 2 Chairs: Snježana Rimac-Drlje and Boštjan Batagelj
<ul style="list-style-type: none"> ● A Simple Infrared (IR) Optical Wireless Communication (OWC) Interface attached to a low-cost open-source measurement and control instrument – Red Pitaya Miha Gjura and Boštjan Batagelj ● Propagation of Radio Waves in Wine Cellars Snježana Rimac-Drlje, Slavko Rupčić, Tomislav Keser, Ivan Aleksi, Ivana Kovačević, Robert Miling and Vanja Mandrić ● Impact of Room Size on Machine Learning-based Material Prediction using Channel Impulse Response Teodora Kocavska, Tomaž Javornik, Aleš Švigelj, Ke Guan, Aleksandra Rashkovska and Andrej Hrovat ● Deep learning-based modulation identification for OFDM systems Geonho Song, Mingyu Jang and Dongweon Yoon 	

14:45 - 16:00	Biomedical Engineering 1 Chairs: Irena Galic and Alar Kuusik
<ul style="list-style-type: none"> ● Utilizing Infrared Thermography for Assessing Breast Cancer Treatment Progression Adriel Santos Araújo, Milena H. S. Issa, Angel Sanchez, Débora C. Muchaluat Saade and Aura Conci ● The future of wavelets in medical image processing Martina Petrovska, Aleksandra Zlatkova, Dimitar Taskovski and Zoran Ivanovski ● An Efficient Convolutional Neural Network for Arrhythmia Classification Marija Habijan, Irena Galić and Aleksandra Pizurica ● Matrix Profile based anomaly detection in streaming gait data for fall prevention Branislav Gerazov, Elena Hadzieva, Andrei Krivošei, Fiorella Ines Soto, Jakob Rostovski, Alar Kuusik and Mahtab Alam 	

16:30 - 18:00	Image Processing 3 Chairs: Gregor Rozinaj and Monika Kachurova
<ul style="list-style-type: none"> ● Comparative analysis of YOLOv7 models for use in perimeter protection of military areas Monika Kachurova, Marko Porjazoski, Pero Latkoski, Borislav Popovski and Goce Stevanoski ● A Combined Noisy Borehole Image Log Segmentation Method Letícia Bomfim, Helio Pedrini and Alexandre Vidal ● Comparing image processing techniques for bubble separation and counting in underwater leaks Rogerio Hart, Luiz Marcos Gonçalves, Aura Conci and Dunfrey Aragao ● Analyzing Classical and LDI Depth-Aware Image Stitching for Enhanced Virtual View Representation Jaroslav Venjarski, Simon Tibensky and Gregor Rozinaj ● Automatic Music Score Difficulty Classification Diogo Deconto, Erick Valenga and Carlos N. Silla Jr. ● Image Enhancement using Recursive Anisotropic and Stationary Wavelet Transform Ramez Mohamed Elmasry, Mohammed Abdel-Mgeed M. Salem, Omar M. Fahmy and Mohamed Abd El Ghany 	

16:30 - 18:00	Biomedical Engineering 2 Chairs: Žofia Rohutná and Daniela Janeva
<ul style="list-style-type: none"> ● An Approach to EEG based BCI for Motor Imagery using Explainable Transfer Learning Žofia Rohutná and Radoslav Vargic ● A System for Differentiation of Schizophrenia and Bipolar Disorder based on rsfMRI Daniela Janeva, Matea Taskovska, Stefan Krsteski, Tomislav Kartalov, Dimitar Taskovski, Zoran Ivanovski and Branislav Gerazov ● SCarrie: A Real-Time System for Sound Event Detection for Assisted Living Marko Chavdar, Tomislav Kartalov, Zoran Ivanovski, Dimitar Taskovski and Branislav Gerazov ● Automatic Classification of Infant's Cry Using Data Balancing and Hierarchical Classification Techniques Matheus Sudul, Rafael Aguiar, Yandre Costa, Sheryl Brahnham, Shannon McMurtrey, Loris Nanni and Carlos N. Silla Jr. 	

19:00 - 20:00	Satellite event: AIoD platform and AIDA presentation and networking Chairs: Ioannis Pitas and Branislav Gerazov
<ul style="list-style-type: none"> ● AI4Europe project, the AIoD platform, networking opportunities Zografia Sotireli, Ioannis Pitas ● International AI Doctoral Academy (AIDA) and membership/collaboration opportunities, Horizon Europe Opportunities Ioannis Pitas ● Interreg collaboration opportunities and discussion Vladimir Atanasovski 	

- **Digital Europe call: “Boosting Digital Skills of young pupils particularly girls”**
Branislav Gerazov
- **Self-presentation of AI, ML and related R&D Labs from SE Europe and cooperation proposals. Creation of an AI and IT cluster of SE Europe.**

Thursday 29. June 2023

08:30 - 10:00	Security Chairs: David Verde and Zivko Kokolanski
<ul style="list-style-type: none"> ● A Survey and Risk Assessment on Virtual and Augmented Reality Cyberattacks Tânia Silva, Sara Paiva, Pedro Pinto and António Pinto ● Assessing Cybersecurity Risks in BLE-based Asset Management Systems David Verde, Sara Paiva and Sérgio Lopes ● Digitalization in Power Energy Sector: Principles of Cybersecurity Valentina Timcenko, Slavica Bostjancic Rakas, Milenko Kabovic and Anka Kabovic ● Erecting pillars in a direction of a smart, innovative and energy efficient port Manjola Zeneli and Galia Marinova ● The UbiLAB Framework for Remote Laboratories Marija Kalendar, Zivko Kokolanski, Branislav Gerazov, Gorjan Nadzinski, Marija Poposka, Aleksandra Zlatkova, Filip Donchevski, Marija Markovska, Anastasiia Sapeha, Kirill Karpov, Danijela Efnusheva, Dusan Gleich, Andrej Sarjas, Blaz Pongrac and Eduard Siemens 	

10:15 - 12:00	Power Chairs: Valentina Timcenko and Marija Markovska
<ul style="list-style-type: none"> ● An Approach to NILM using image-based features and transfer learning Radoslav Vargic, Juraj Londak and Martin Medvecký ● Short-Term Electric Load Forecast Model Using the Combination of Ant Lion Optimization with Bi-LSTM Network Mansi Bhatnagar, Vivek Dwivedi and Gregor Rozinaj ● Electricity Theft Detection Based on Temporal Convolutional Network with Self-Attention Marija Markovska, Branislav Gerazov, Aleksandra Zlatkova and Dimitar Taskovski ● Multi-horizon energy consumption forecasting on daily basis Aleksandra Zlatkova, Bodan Velkoski, Zivko Kokolanski, Branislav Gerazov, Marija Markovska and Dimitar Taskovski ● A Historic-Best Particle Swarm Optimization Approach for Trust-based Routing in Smart Grid Networks Edwin Prem Kumar, A. Immanuel Selvakumar, M. Lydia, K. Baskaran, Danilo Jodas, Leandro Aparecido Passos and João Paulo Papa ● Advanced analytics at the edge Andrej Campa, Marko Hudomalj, Denis Sodin, Timotej Gale, Valentina Janev, Lazar Berbakov and Marko Batic 	

12:00 - 13:15

Special Session on Radars and Remote Sensing
Chairs: Dušan Gleich and Venceslav Kafedziski

- **The Influence of the Drone-Mounted Antenna Angular Position for Bistatic FL GPR Detection of Shallowly Buried Metallic Objects**
Aleksandar Atanaskovic, Nebojša Dončov and Nikola Bošković
- **Evaluation of Compact and Modular SFCW GPR Radars for Detecting Buried Objects**
Primož Smogavec, Blaž Pongrac and Dušan Gleich
- **Transmitter (Tx) and Receiver (Rx) Amplifier Chains in X- and Ku-bands of Radio Frequency (RF) Front-End for Frequency-Agile Microwave Photonic Radars**
Bostjan Batagelj and Luka Zmrzлак
- **UAV Based Microwave Tomography Imaging using Bistatic MIMO Ground Penetrating Radar**
Venceslav Kafedziski