

ELMAR-2024 PROGRAM OVERVIEW

Monday 16 September 2024	Tuesday 17 September 2024	Wednesday 18 September 2024
9:10 - 10:00 Registration	8:40 - 9:00, 10:30 - 11:00 Registration	8:40 - 9:00, 11:00 - 11:30 Registration
10:00 - 10:30 OPENING SESSION: Welcome Speeches	9:00 - 10:30 HALL A: Image and Video Processing 2 HALL B: Transport Systems	9:00 - 11:00 HALL A: Communication and Space Technologies HALL B: Autonomous Vehicles
10:30 - 11:00 Opening Cocktail	10:30 - 11:00 Coffee Break	11:00 - 11:30 Coffee Break
11:00 - 12:30 PLENARY SESSION: Keynote Talks	11:00 - 12:30 HALL A: Computer Vision 1 HALL B: Networks and Radars	11:30 - 13:00 HALL A: Automation and Robotics HALL B: Computer Vision 2
12:30 - 14:00 Lunch Break	12:30 - 13:30 Lunch Break	13:00 - 14:00 Lunch Break
14:00 - 16:00 HALL A: SPECIAL SESSION: 5G in Broadcasting HALL B: Image and Video Processing 1	13:45 - 19:30 EXCURSION Meeting point: Hotel Funimation, main entrance	14:00 - 15:30 HALL A: Automation and Robotics 2 HALL B: Image and Video Processing 3
16:00 - 16:30 Coffee Break		15:30 - 15:45 HALL A: CLOSING SESSION
16:30 - 18:30 HALL A: SPECIAL SESSION: Connected and Automated Mobility HALL B: Wireless Communications		
20:00 ELMAR-2024 SYMPOSIUM GALA DINNER		

ELMAR-2024 Venue

Hotel Falkensteiner Club Funimation Borik

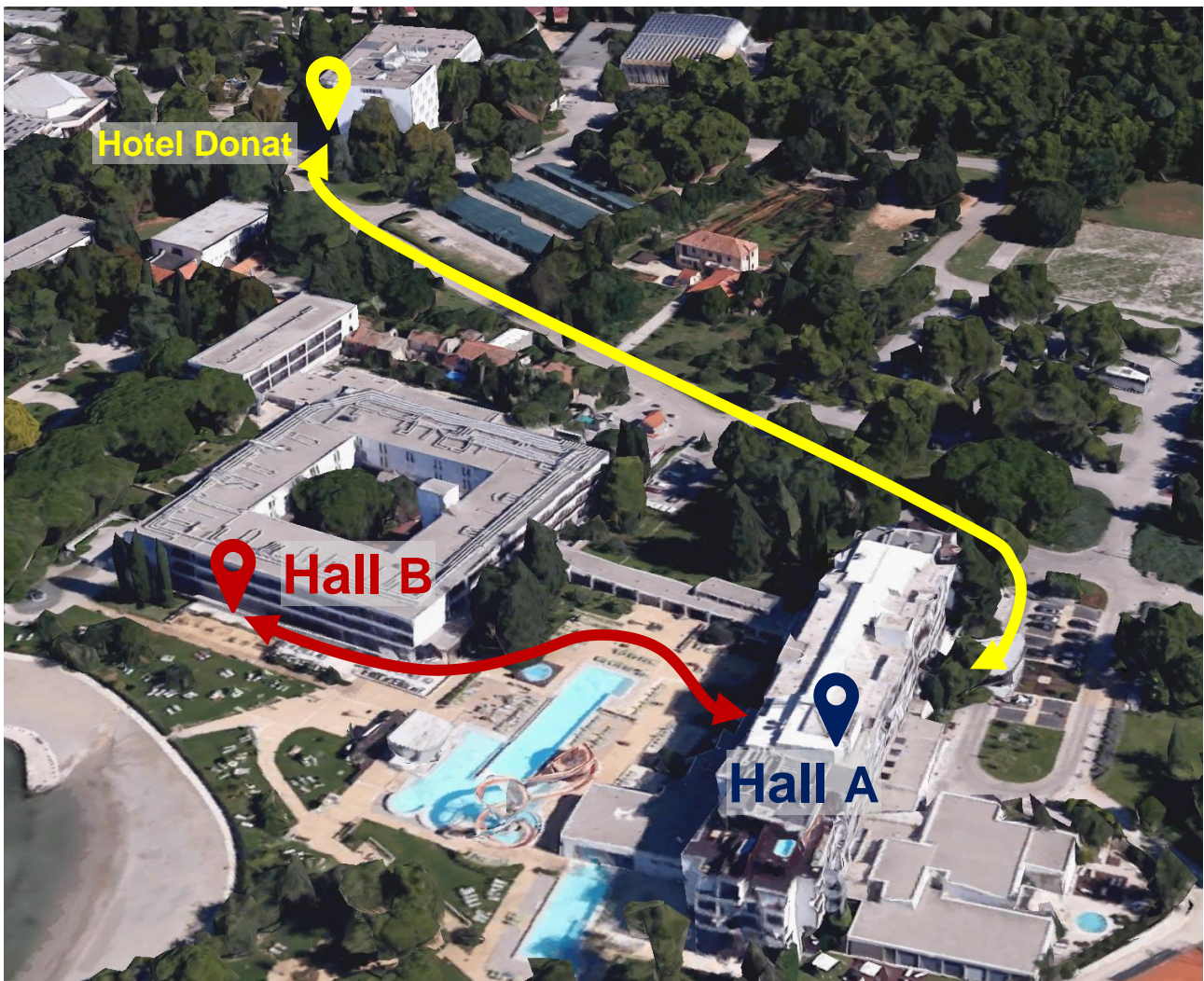
Address: Majstora Radovana 7, HR-23000 Zadar

Hall A – Left from the main entrance and the Reception desk

Hall B – In adjacent building, overlooking the beach

To reach the **Hall B** from the **Hall A** it is possible to walk through the connecting corridor between buildings or by following the **pathway drawn in red** through the pool area.

The pathway in yellow shows the easiest way to reach Halls A & B from the Hotel Donat.



Monday, 16 September 2024

9:10 - 10:00 **Registration**

HALL A

Monday, 16 September 2024

10:00 - 10:30 **OPENING SESSION: Welcome Speeches**

Session Chairs: Mislav Grgić, Mario Muštra

10:30 - 11:00 **OPENING COCKTAIL**

11:00 - 12:30 **PLENARY SESSION: Keynote Talks**

Session Chair: Mario Muštra

Brain Imaging in UK Biobank

Gwenaëlle Douaud; UNITED KINGDOM

Rigs to Reefs: Transforming Our Energy Past into an Eco-Friendly Future

Amber Sparks; USA

14:00 - 16:00 **SPECIAL SESSION: 5G in Broadcasting (5G u radiodifuziji),
HAKOM & OIV**

Session Chairs: Ana Katalinić Mucalo, Tigran Vržina

Welcome speeches

5G Broadcast for Public Service Media,

Dr. Roland Beutler, Südwestrundfunk (SWR)

5G Broadcast – Current Developments and Achievements,

Markus Mangi & Michael Weber, ORS

Maximizing the Potential of Sub-700 MHz Spectrum in Slovenia until WRC-31,

M.Sc.EE Janja Varšek, AKOS

Broadcasting using 5G and network slicing,

Hrvoje Hadžić, Ericsson Nikola Tesla

**5G potential in broadcasting in Croatia from the perspective of the regulator and
network operator,**

Danijel Vidaković, HAKOM & Jasminka Cigrovski, OIV

16:00 - 16:30 **Coffee Break**

16:30 - 18:30

SPECIAL SESSION: Connected and Automated Mobility

Session Chairs: Marek Galinski, Mario Muštra

Evaluating a Siamese Network for Traffic Sign Recognition Using Synthetic Datasets

Filip Zatroch, Peter Lehoczky, Nina Masarykova, Rastislav Bencel; SLOVAKIA

Single-filter CNN for Vehicle Recognition

Nina Masarykova, Marek Galinski, Peter Truchly; SLOVAKIA

Towards the Trilateration of Non-Connectable Vehicles for Digital Twin: Estimating Distance between Vehicles Based on Camera-Lidar Data Fusion

Matej Janeba, Marek Galinski, Ivan Kotuliak, Marian Jarnik; SLOVAKIA

Enhancing Vulnerable Road Users' Safety Using Ultrasonic Sensor Device

Matej Pončák, Ivan Gajdoš, Rastislav Bencel, Pavel Čičák; SLOVAKIA

A Design Proposal for a Platooning Testing Platform Utilizing Remote Control Vehicles

Jozef Juraško, Rastislav Bencel, Peter Trúchly, Michal Magula, Eduard Žňava, Norbert Vígh, Jakub Hrnčár, Tamara Janotková, Vanesa Milonová, Mátyás Neilinger; SLOVAKIA

Remote Virtual Laboratory for Simulation of VANET Networks

Peter Trúchly, Andrej Dubovský, Samuel Kačeriak, Ondrej Martinka, Vojtech Fudaly, Richard Andrášik, Roman Grom; SLOVAKIA

Steering angle prediction and algorithm performance testing in autonomous driving simulators

Borna Benja, David Mijić, Mario Vranješ, Ratko Grbić; CROATIA

20:00

ELMAR-2024 SYMPOSIUM GALA DINNER

Location: Hotel Funimation

14:00 - 16:00 **Image and Video Processing 1**

Session Chairs: Gregor Rozinaj, Jelena Božek

An Image Watermarking based on Rayleigh distribution detector

Djordje Stanković, Andjela Draganić, Cornel Ioana, Irena Orović; MONTENEGRO, FRANCE, PORTUGAL

Procedural Generation of Aneurysm Angiograms using 3D Mesh Reconstruction

Peter Sykora, Miroslav Benco, Roberta Hlavata, Jana Sturekova, Robert Hudec; SLOVAKIA

Enhancing Heart Rate Monitoring using Remote Photoplethysmography based on Neural Network

Jana Sturekova, Patrik Kamencay, Peter Sykora; SLOVAKIA

Comparative Analysis of Deep Learning and Traditional Approaches for 3D Reconstruction

Oleh Kryvoshei, Patrik Kamencay, Adam Stech, Roberta Hlavatá; SLOVAKIA

A New Deep-Learning Method for Classification Intracranial Aneurysm

Roberta Hlavatá, Peter Sykora, Patrik Kamencay, Martina Radilova, Robert Hudec, Piotr Pedowski; SLOVAKIA

Alignment of Objects in 3D Space using Radon Transform for Cargo-Mail Scanner

Martin Dobrovolný; CZECHIA

Creating a Metaverse-based Meeting Room with Live Avatar Control and Web Communication

Javlon Tursunov, Gregor Rozinaj, Ivan Minarik, Marek Vanco; SLOVAKIA

Segmentation of Lung Cancer in CT Images using Modified U-Net Architecture

David Ivušić, Ivana Žeger, Sonja Grgić; CROATIA

16:00 - 16:30 **Coffee Break**

16:30 - 18:30 **Wireless Communications**

Session Chairs: Dragana Krstić, Michal Ries

A Data-Based Cell Load Model for Efficient Network Simulation

Philip Schwarzinger, Agnes Fastenbauer, Lukas Eller, Philipp Svoboda, Markus Rupp;
AUSTRIA, JAPAN

Power Consumption Reduction by Switching Off Base Stations

Dominik Rössler, Agnes Fastenbauer, Philipp Svoboda, Markus Rupp; AUSTRIA, JAPAN

Design and Implementation of a Wireless Sensor Network based on the ESP32 for IoT Applications

Miroslav Sokol, Pavol Galajda, Patrik Jurik, Frederik Pribula, Zuzana Sokolová;
SLOVAKIA

Average Bit Error Probability Based on Moment Generating Function in the Beaulieu-Xie Fading Channel

Dragana Krstic, Suad Suljovic, Milan Jovic, Miodrag Brklje, Sinisa Minic; SERBIA

Critical Near-Field Impedance Matrices

Peter Krämer, Christian Schindelbauer; GERMANY

Designing and Realization of Switched Filterbank for Transmit Systems at UHF/VHF

Emre Erden, Mustafa Tekbaş, S. Doruk Yıldön, Serkan Topaloğlu; TURKEY

A High Selectivity Tunable Bandpass Filter for V/UHF

B. Zeynep Söder, Taner Demir; TURKEY

20:00 **ELMAR-2024 SYMPOSIUM GALA DINNER**
Location: Hotel Funimation

9:00 - 10:30 **Image and Video Processing 2**

Session Chairs: Sonja Grgić, Lidija Mandić

Towards Content-Optimized Selection of Video Spatiotemporal Resolution for HTTP Adaptive Video Streaming

Renato Kuna, Jelena Šuljug, Snježana Rimac-Drlje; CROATIA

Towards Using MultiModal LLMs as Graders in a GUI Design Course

Bruno Bušić, Hrvoje Leventić, Krešimir Romić, Marija Habijan; CROATIA

Enhanced Letter Recognition in Intracortical BCI via Optimized Feature Extraction and Classification

Žofia Rohutná, Radoslav Vargić; SLOVAKIA

Small Object Detection in Fundus Images

Tomáš Danko, Miloš Oravec, Veronika Kurilová, Jarmila Pavlovicova; SLOVAKIA

Harmful Brain Activity Classification using Ensemble Deep Learning

Marija Habijan, Robert Šojo, Ivana Hartmann Tolić, Irena Galić; CROATIA

Keypoint-Based Foreground-Background Image Segmentation

Jaroslav Venjarski, Ľuboš Likó, Šimon Tibenský, Marek Vančo, Gregor Rozinaj; SLOVAKIA

10:30 - 11:00 **Coffee Break**

11:00 - 12:30 **Computer Vision 1**

Session Chairs: Marija Habijan, Irena Galić

Impact of Skin Lesion Segmentation Labeling Errors on Convolutional Neural Networks

Robert Šojo, Marin Benčević, Marija Habijan, Irena Galić; CROATIA

Enhancing Generalization in Training Unbalanced OCT Datasets using Customized Ensemble Learning

Rama Hasan, Shadi Saleh, Holger Langner, Marc Ritter; GERMANY

Optimizing Monocular Depth Estimation for Real-Time Edge Computing Platforms

Shadi Saleh, Rama Hasan, Batbayar Battseren, Wolfram Hardt, Marc Ritter; GERMANY

Fed-SEMI: A Federated Machine Learning Framework for Nano-Scale Defect Classification and Detection in Semiconductor Manufacturing With Decentralized and Private Data

Bappaditya Dey, Jacob Deforce, Victor Blanco, Sandip Halder, Philippe Leray; BELGIUM

Addressing Class Imbalance and Data Limitations in Advanced Node Semiconductor Defect Inspection: A Generative Approach for SEM Images

Bappaditya Dey, Vic De Ridder, Victor Blanco, Sandip Halder, Bartel Van Waeyenberge; BELGIUM

Exploring 3D Gaussian Splatting: An Algorithmic Perspective

Martin Hornáček, Gregor Rozinaj; SLOVAKIA

12:30 - 13:30 **Lunch Break**

13:45 - 19:30 **EXCURSION**

Meeting Point: Hotel Funimation, main entrance

9:00 - 10:30

Transport systems**Session Chair: Marek Galinski, Mario Muštra****What About the Energy-Efficiency of Complementary Services making a Fuel Cell Electrical Vehicle more Trustworthy and AI-Powered?**

Alper Kanak, Serhat Ege İnanç, Sercan Tanrıseven, İbrahim Arif, Cengiz Bektaş, Oguzhan Herkiloğlu, Ali Serdar Atalay, Salih Ergün; TURKEY, ESTONIA, SWITZERLAND

An End-to-End Architecture for Smart Waste Management: Integrating Real-Time Data Processing, IoT, and Machine Learning

Nermin Goran, Sanid Muhić, Alen Begović; BOSNIA AND HERZEGOVINA

Reinforcement Learning-Based Traffic Signal Control Using Speed Transition Matrix for State Estimation

Željko Majstorović, Mladen Miletić, Edouard Ivanjko, Tonči Carić; CROATIA

Evaluation of Traffic Controller Performance via Systematic Exploration

Krešimir Kušić, Davide Calvaresi, Amy Liffey, Lora Fanda, Martin Gregurić, Edouard Ivanjko, René Schumann; CROATIA, SWITZERLAND

VR Applications in Maintenance of Certain Ship Systems

Renato Ivče, Astrid Zekić, Dario Ogrizović, Antonio Blažina; CROATIA

Determining Accuracy of Distance-Measurement using UWB Transceiver on Arduino ESP32

Luka Kramarić, Mario Muštra, Niko Jelušić; CROATIA

10:30 - 11:00

Coffee Break

11:00 - 12:30 **Networks and Radars**

Session Chair: **Marko Bosiljevac**

Application of Generative Adversarial Networks for GBSAR Data Synthesis

Grigor Škarić, Filip Turčinović, Marko Bosiljevac; CROATIA

Challenges in Using Doppler Radar for Non-contact Vital Sign Monitoring in Small Laboratory Animals

Martina Kruljac, Marko Bosiljevac; CROATIA

On Selection of Access Network Technology by using Different Metrics in a Fixed Network: A Technology Investment and Cost Approach

Almir Bašić, Alen Begović, Nermin Goran; BOSNIA AND HERZEGOVINA

Classification of Network Traffic and Anomaly Detection Using Entropy in NetFlow Records

Igor Fosic, Drago Žagar; CROATIA

Scheduling Bag-of-Tasks with Selective Imprecise Computations in a Mist–Fog–Cloud Environment

Helen D. Karatza; GREECE

12:30 - 13:30 **Lunch Break**

13:45 - 19:30 **EXCURSION**

Meeting Point: Hotel Funimation, main entrance

9:00 - 11:00

Communication and Space Technologies

Session Chairs: Josip Vuković, Tomislav Kos

A two steps procedure to compensate for 3-D positioning errors in a non-redundant NF/FF transformation with helicoidal scan

Francesco D'Agostino, Flaminio Ferrara, Claudio Gennarelli, Rocco Guerriero, Massimo Migliozzi; ITALY

26 GHz Channel Measurements in an Office Environment

Philipp Reingruber, Richard Prüller, Markus Rupp; AUSTRIA

Link-Level Performance Comparison of Measurements and Indoor Channel Models at 26 GHz

Adam Blagojevic, Mariam Mussbah, Philipp Svoboda, Markus Rupp; AUSTRIA

Experimental Framework for Secure Post-Quantum TLS Client-Server Communication

Eva Kupcova, Jozef Simko, Matus Pleva, Milos Drutarovsky; SLOVAKIA

Assessment of Signal Losses in LEO Satellite-to-Ground Optical Communication Links

Mate Jagnjić, Josip Vuković, Dubravko Babić; CROATIA

The Threat of Counterfeit Electronics to the Development of CubeSats

Giovanna Mura; ITALY

Toward a Reusable and Cost-effective Ground Control Software for Cubesat Missions

Ibtissam Latachi, Mahmoud Erradi, Tajjeeddine Rachidi, Mohammed Karim; MOROCCO

11:00 - 11:30

Coffee Break

11:30 - 13:00

Automation and Robotics 1

Session Chairs: Jasmin Velagić

Development of Cascaded-Control System for Three-Phase Rectifier

Harun Špago, Adnan Osmanović, Jasmin Velagić; BOSNIA AND HERZEGOVINA

Evaluating BERT-Derived Models for Grammatical Error Detection Across Diverse Dataset Distributions

Maroš Harahus, Zuzana Sokolová, Matúš Pleva, Daniel Hládek; SLOVAKIA

**Measuring and Mitigating Stereotype Bias in Language Models:
An Overview of Debiasing Techniques**

Zuzana Sokolová, Maroš Harahus, Jan Staš, Eva Kupcová, Miroslav Sokol,
Marianna Koctúrová, Jozef Juhár; SLOVAKIA

**Sensing System for Technological Data Collection in Industrial
Internet of Things: Non-Cloud Based Solution**

Marek Neruda, Jan Hofman, Lukas Vojtech; CZECHIA

A Database of Slovak News Articles for Boilerplate Removal

Zuzana Rábeková, Vanesa Andicsová, Miloš Oravec, Jarmila Pavlovičová, Peter Hintoš;
SLOVAKIA

13:00 - 14:00 **Lunch Break**

14:00 - 15:30 **Automation and Robotics 2**

Session Chairs: Josip Vuković

Smart Household Speech Recognition based on locally-run Neural Network

Ivan Minárik, Matúš Vaňo, Matúš Prekopa, Javlon Tursunov; SLOVAKIA

Automatic Muscle Fatigue and Movement Recognition Based on sEMG Signals

Alexandru Guzu, Ana Neacsu, Nicolae Georgian; ROMANIA

**Towards an Open-Source Intrusion Detection System Integration
into Marine Vehicles**

Gabor Visky, Dariana Khisteva, Risto Vaarandi, Olaf Maennel; ESTONIA, AUSTRALIA

Incremental Scheduling using Genetic Algorithm

Omar Hekal, Daniel Onwuchekwa, Roman Obermaisser; GERMANY

**Symbolic Expression of Damping Factor and Damping Resistance
of Passive High-Pass LCL Filters**

Alexandru Gabriel Gheorghe, Mihai Eugen Marin, Cristina Gabriela Bortosu; ROMANIA

Implementation of Discrete FPGA-Based PID Controller

Nedim Osmic, Tarik Cohadzic, Almir Salihbegovic, Emir Sokic; BOSNIA AND
HERZEGOVINA

15:30 - 15:45 **CLOSING SESSION**

9:00 - 11:00 **Autonomous Vehicles**

Session Chair: Mario Vranješ

An Overview of Localization Accuracy for Cooperative, Connected and Automated Mobility

Marcel Simeonov, Patrik Kamencay, Milan Dado; SLOVAKIA

Hangar System for Unmanned Aerial Vehicle Autonomous Missions

Ariane Heller, Reda Harradi, Wolfram Hardt; GERMANY

Towards a Situationally Aware Cloud-Based Autonomous Driving System using Object Detection and Rule Based Techniques

Julkar Nine, Afzaal Shoukat, Wolfram Hardt; GERMANY

MAVLink UAV Hangar Communication Based on a Cloud Architecture

Reda Harradi, Ariane Heller, Jörn Roth, Wolfram Hardt; GERMANY

Twisting sliding mode Control of a nonlinear quadrotor UAV under perturbations and disturbances

Faik Tahirović, Almir Salihbegović, Emir Sokić, Nedim Osmić, Samim Konjicija; BOSNIA AND HERZEGOVINA

Autonomous Vehicle Control in CARLA Simulator Using Reinforcement Learning

Dorian Činčurak, Ratko Grbić, Mario Vranješ, Denis Vranješ; CROATIA

11:00 - 11:30 **Coffee Break**

11:30 - 13:00 **Computer Vision 2**

Session Chairs: Jelena Božek, Snježana Rimac-Drlje

A Complex Model of Human Recognition in Emergencies by a Multi-level Drone System

Mykyta S. Kozlov, Eugene V. Malakhov; UKRAINE

Efficient Neural Network Compression Process to Facilitate Hardware Implementation

Antoine Siebert, Guillaume Ferré, Bertrand Le Gal, Aurélien Fourny; FRANCE

Impact Analysis of Data Drift Towards the Development of Safety-Critical Automotive System

Md Shahi Amran Hossain, Abu Shad Ahammed, Divya Prakash Biswas, Roman Obermaisser; GERMANY

Comparison of Deep Learning Explainable Approaches for Medical Image Analysis

Andrej Pisarcik, Robert Hudec, Roberta Hlavatá, Patrik Kamencay; SLOVAKIA

Deep Learning Methods for Autism Spectrum Disorder Detection Using Functional MRI

Dominik Pavelić, Mislav Grgić, Jelena Božek; CROATIA

13:00 - 14:00 **Lunch Break**

14:00 - 15:30 **Image and Video Processing 3**

Session Chairs: Miloš Oravec, Jarmila Pavlovičová

ETFCam - a Multifunctional Didactic Model for Machine Vision and Automated Visual Inspection

Emir Sokic, Almir Salihbegovic, Nedim Osmic, Majda Curtic-Hodzic, Samim Konjicija; BOSNIA AND HERZEGOVINA

Automated Image Processing Approach for Solving Semi-apictorial 2D Puzzles

Emir Sokic, Isam Vrce, Armin Zunic, Nedim Osmic, Almir Salihbegovic; BOSNIA AND HERZEGOVINA

Optimization of 3D Model for Computer Games

Lidija Mandić, Jesenka Pibernik, Maja Strgar Kurečić, Ana Agić Cmrk; CROATIA

Author Identification Based on Convolutional Neural Network

Marian Sebena, Juraj Kacur, Matus Zlacky; SLOVAKIA

Evaluating Gaze Communication in a Human-Robot Memory Game Setting

Tin Mišić, Gabriela Vitez, Borna Paro, Ivan Marković; CROATIA

Image Processing on the Edge using an Entry-Level FPGA

Armin Zunic, Emir Sokic, Nedim Osmic, Isam Vrce, Almir Salihbegovic; BOSNIA AND HERZEGOVINA

15:30 - 15:45 **CLOSING SESSION**
In Hall A