

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

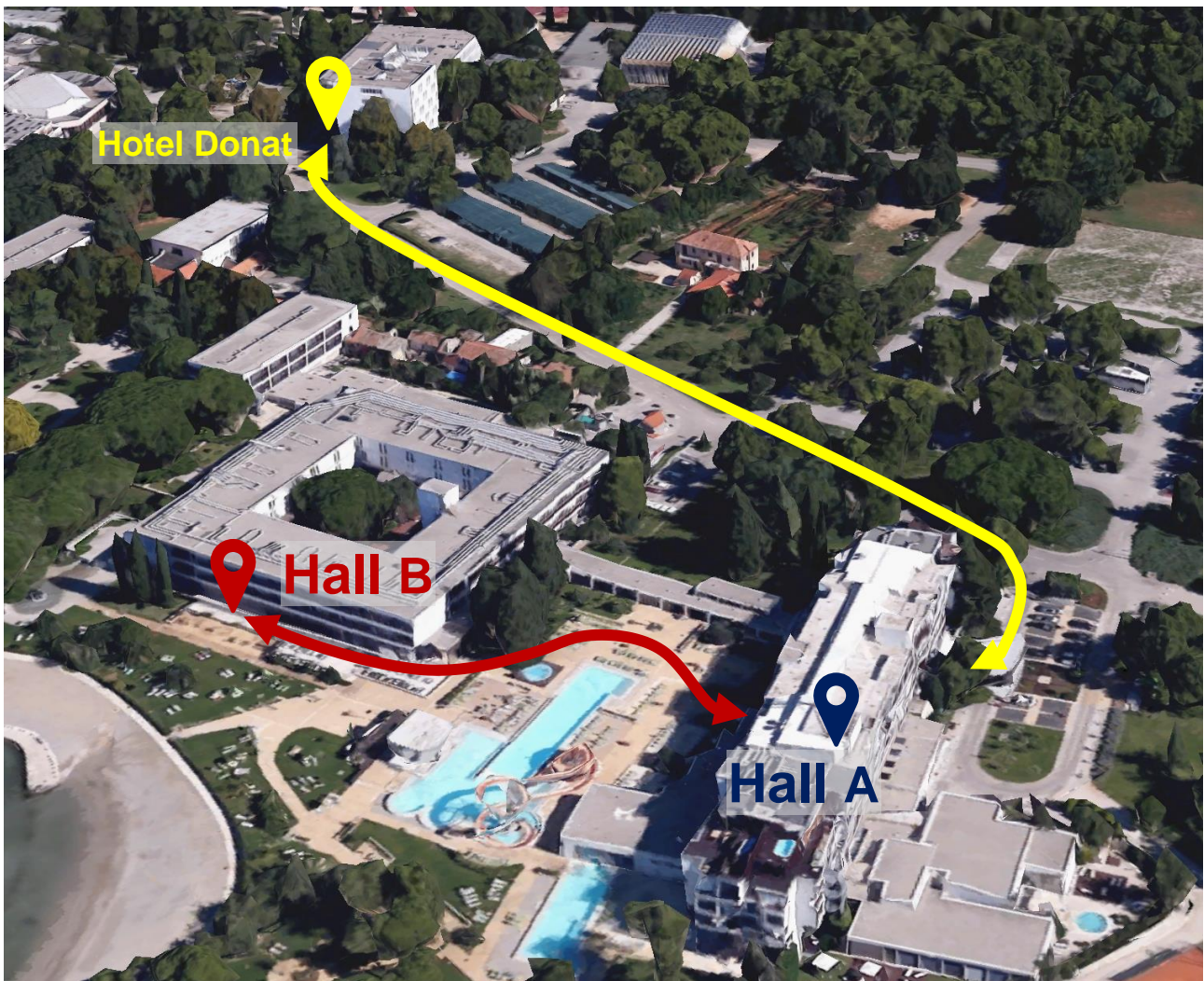
Address: Majstora Radovana 7, HR-23000 Zadar

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 language: Croatian/English

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: TBA

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: TBA

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: TBA

A Data-Based Cell Load Model for Efficient Network Simulation

Philip Schwarzingger, 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

Tuesday, 17 September 2024

HALL A

Tuesday, 17 September 2024

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

Session Chairs: TBA

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: TBA

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 Chairs: TBA

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 Chairs: TBA

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: TBA

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: TBA

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: TBA

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 Chairs: TBA

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: TBA

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: TBA

**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