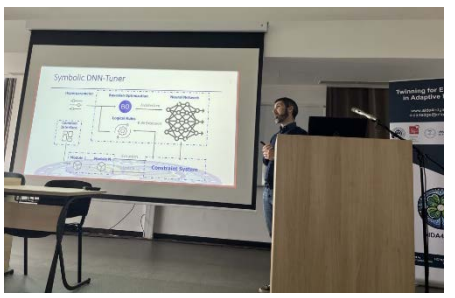
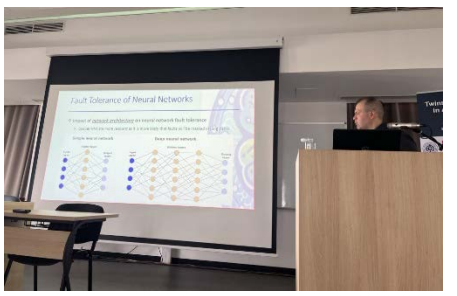
Newsletter of AIDA4Edge – Issue #2

The First AIDA4Edge Project Workshop
“The Edge AI Revolution: New Frontiers”, was held in a hybrid format

On April 15, 2025, the Faculty of Electronic Engineering, University of Niš, hosted the First AIDA4Edge Project Workshop, bringing together researchers and experts from across Europe to discuss cutting-edge developments in adaptive edge AI. Under the title “The Edge AI Revolution: New Frontiers”, the workshop featured a full-day program of presentations, discussions, and knowledge exchange.



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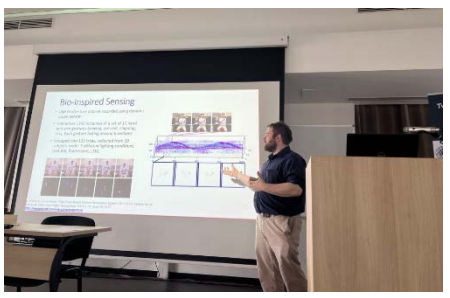
HORIZON-WIDERA-2023-ACCESS-02-01
Twinning for Excellence in Adaptive Edge AI – AIDA4Edge

The Edge AI Revolution: New Frontiers
AIDA4Edge Project Workshop

Date: Tuesday, April 15, 2025
Time: 09:00 – 15:15
Location: Faculty of Electronic Engineering, University of Niš, Aleksandra Medvedeva 4, Niš, Serbia



The workshop opened with a keynote by Prof. Jelena Nikolić, who presented the core objectives and anticipated impact of the AIDA4Edge project in her talk titled “*What Does the AIDA4Edge Project Bring Us*?” This was followed by a series of engaging talks covering diverse aspects of edge AI, including:.

- *Optimizing DNN for Edge Applications* – Prof. Riccardo Zese (University of Ferrara)
- *Enhancing Deep Learning Efficiency at the Edge through Runtime Adaptivity* – Prof. Davide Bertozzi (University of Manchester)
- *Neuromorphic Computing: Spiking Neural Networks for Event-based Edge Intelligence* – Dr. Edward Jones (University of Manchester)
- *Reliability of AI Hardware Accelerators* – Dr. Marko Anđelković (IHP, Germany)
- *Building the Future: Edge AI in Smart City Development* – Dr. Nikola Simić (University of Novi Sad)
- *Edge AI Approach from the Perspective of Compression* – Nikola Vučić and Sofija Perić (University of Niš)

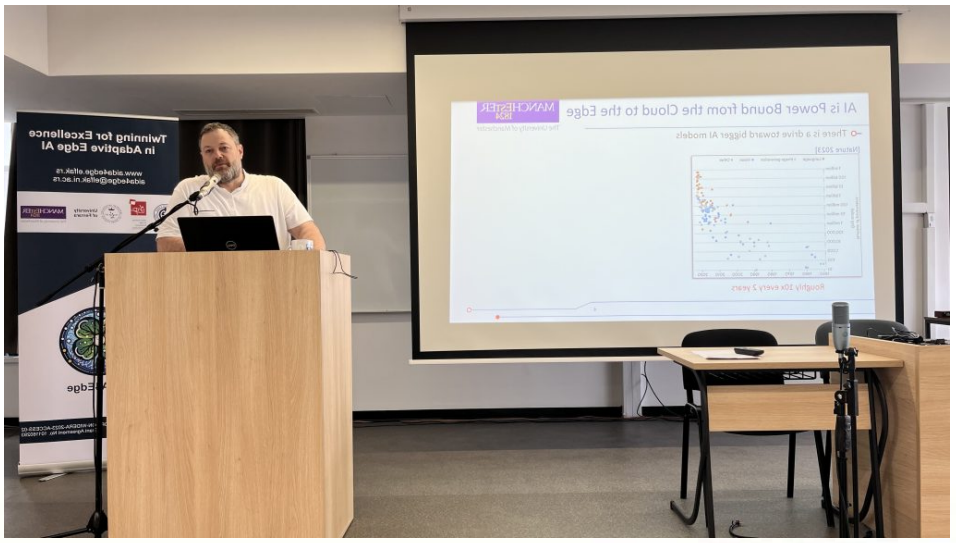
The First AIDA4Edge Project Workshop provided a platform for fruitful interdisciplinary discussions on how adaptive AI solutions can transform the future of edge computing, particularly in domains such as smart cities, reliable hardware, and energy-efficient architectures.

Supported by the European Union and UK Research and Innovation, this workshop represents a key milestone for the AIDA4Edge project in fostering collaboration and building excellence in edge AI technologies.

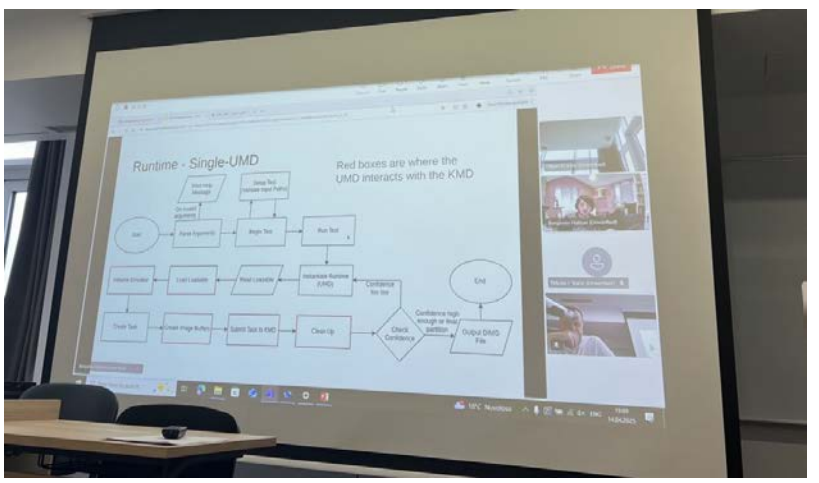
We thank all participants who joined us in person, as well as those who attended the workshop online, for their valuable contributions. We look forward to continuing this journey of innovation and exchange.

Prof. Davide Bertozzi Held Training on Dynamically - Reconfigurable Deep Learning Accelerators

On April 14, 2025, the Faculty of Electronic Engineering, University of Niš, had the pleasure of hosting Prof. Davide Bertozzi from the University of Manchester for a specialized training session focused on Dynamically-Reconfigurable Deep Learning Accelerators.



During this expert visit, Prof. Bertozzi shared valuable insights into the design and implementation of dynamic neural network models – models capable of adapting their structure or parameters in response to input during inference. The session also explored the hardware/software stack required to support such adaptive systems, with a particular emphasis on the open-source, industry-grade NVDLA architecture.



This event offered attendees a unique opportunity to deepen their understanding of advanced AI acceleration techniques and engage in discussion on the challenges and possibilities of deploying adaptive models in real-world scenarios.

We thank Prof. Bertozzi for his visit and inspiring contribution, and we look forward to further collaboration and knowledge exchange in the field of intelligent edge computing..

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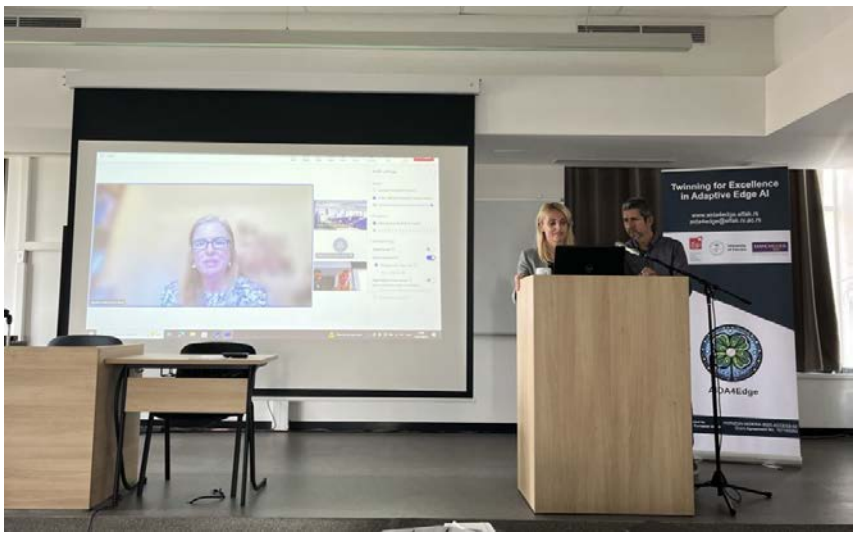
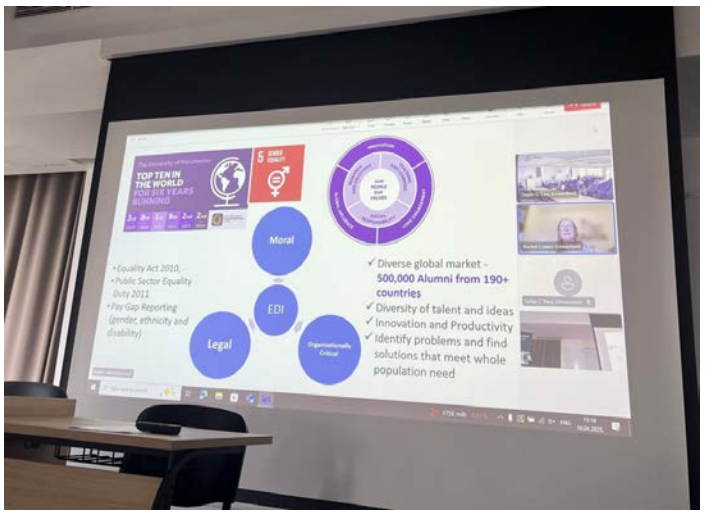
Prof. Rachel Cowen Delivered Online Lecture on Advancing Gender Equality in Academia

As part of the AIDA4Edge project activities, an online lecture was held on April 16, 2025, featuring Prof. Rachel Cowen from the University of Manchester. The session was dedicated to the topic of gender equality and inclusion in higher education, shedding light on the institutional approaches and cultural shifts necessary to create more equitable academic environments.

Prof. Cowen shared her extensive experience in leading equality initiatives and highlighted the role of the Athena Swan Charter in driving systemic change. Using the University of Manchester as a case study, she presented practical examples of how academic institutions can work towards inclusive excellence.

The lecture sparked a meaningful discussion among participants from the Faculty of Electronic Engineering, University of Niš, encouraging reflection on local practices and strategies for improvement.





This event marked the beginning of a series of collaborative knowledge exchanges between partner institutions, supported by the European Union and UK Research and Innovation under the AIDA4Edge initiative.

We express our sincere appreciation to Prof. Cowen for her inspiring talk and look forward to continuing the dialogue on equity and inclusion in research and education.

Networking with the RESIST Project

The first workshop of the project Cross-Layer Reliability Assessment of Electronic Systems – RESIST, funded by the German Research Foundation (DFG), was held at the Faculty of Electronic Engineering, University of Niš, from May 5 to 7, 2025.

https://mikro.elfak.ni.ac.rs/2025/04/08/first-resist-workshop/

The RESIST project aims to establish sustainable collaboration between the IHP – Leibniz Institute for High Performance Microelectronics (Frankfurt (Oder), Germany) and the Faculty of Electronic Engineering, University of Niš, in the field of cross-layer reliability assessment of electronic systems. The project is coordinated by Dr.-Ing. Marko Andjelković (IHP) and Prof. Danijel Danković (ELFAK).

Our project, AIDA4Edge, was pleased to support the workshop. We were honored to present our project ideas during the event through a presentation entitled *How Can We Bring Efficient and Reliable AI to Resource-Constrained Edge Platforms*?, delivered by Prof. Jelena Nikolić. It was also a great pleasure to meet and connect with colleagues from the IHP institute. This collaboration is highly valuable for our project, as reliability is a key aspect of Edge AI applications.

DFG Deutsche Forschungsgemeinschaft

The First RESIST Workshop received funding from the **Deutsche Forschungsgemeinschaft (DFG, German Research Foundation), project number: 551672220**.

The First RESIST Workshop is supported by:

IEEE

- IEEE Serbia and Montenegro Section
- IEEE Electron Devices/Solid State Chapter Society
- IEEE Student Branch Niš
- IEEE Women in Engineering Affinity Group

IEEE

AIDA4Edge Project

- Twinning for Excellence in Adaptive Edge AI (AIDA4Edge) project

AIDA4Edge

Face-to-Face with Our Stakeholder at the PEMS-ML Round Table

On May 6, members of the AIDA4Edge project team participated in the round table discussion Challenges and Opportunities in Modern Measurement Education, held at the University of Niš.

The event was organized within the Erasmus+ project PEMS-ML (Personalized Education in Measurement Science and Technology Empowered by Machine Learning), coordinated by the “Ss. Cyril and Methodius” University in Skopje, Faculty of Electrical Engineering and Information Technologies, in cooperation with Politecnico di Milano (Polimi) and the Faculty of Electronic Engineering, University of Niš (FEEUNI).

The round table focused on modern approaches to education, particularly the integration of artificial intelligence into both teaching methodologies and course content. Participants also presented their institutions’ research capacities, aiming to strengthen partnerships and encourage future collaboration.

For the AIDA4Edge team, it was particularly valuable to meet Prof. Živko Kokolanski from the “Ss. Cyril and Methodius” University in Skopje, Faculty of Electrical Engineering and Information Technologies, one of our stakeholders, and discuss potential avenues for cooperation. In addition to engaging with colleagues from “Ss. Cyril and Methodius” University, we had the opportunity to connect with representatives from Politecnico di Milano and learn more about academic and research activities at this renowned institution.

The round table was hosted by Prof. Milan Dinčić, Erasmus+ coordinator at University of Niš and a core team member of the AIDA4Edge project. The event also featured active participation from several members of the AIDA4Edge team, who joined as panelists, including Dr. Marko Anđelković and Dr. Fabian Vargas – our esteemed partners from IHP – Leibniz Institute for High Performance Microelectronics, Frankfurt (Oder), Germany – alongside Prof. Jelena Lukić, Prof. Dejan Ćirić, Assistant Prof. Miloš Marjanović, Early-Stage Researcher Sofija Perić, and Assistant Sandra Veljković from FEEUNI.

We believe that the networking and connections established during this event will significantly support knowledge exchange, inspire new perspectives, and lead to fruitful future collaborations.

PhD Student Sofija Perić Presented Research at ICEST 2025 Conference in Ohrid

We are pleased to announce that PhD student Sofija Perić from the Faculty of Electronic Engineering, University of Niš, presented research at the 60th International Scientific Conference on Information, Communication and Energy Systems and Technologies (ICEST 2025), held in Ohrid, North Macedonia, from June 26 to 28, 2025.

The presented paper, entitled "*SQNR Approximation Analysis of the FP24 Format of Laplacian Source in a Wide Variance Range*", was developed as part of a joint collaboration between the University of Niš and the IHP – Leibniz Institute for High Performance Microelectronics, under the AIDA4Edge research project.

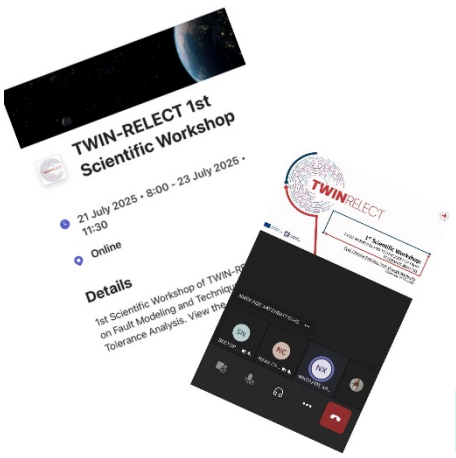
This research contributes to the field of quantization and reduced-precision data representation, with a focus on improving computational efficiency in edge AI applications.

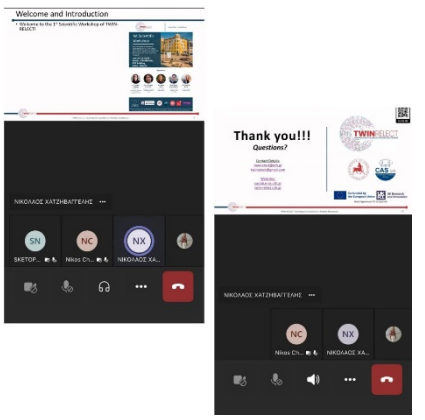
During the conference, Sofija had the opportunity to connect with fellow researchers working in the areas of signal processing and artificial intelligence, exchanging knowledge and ideas for future collaboration.

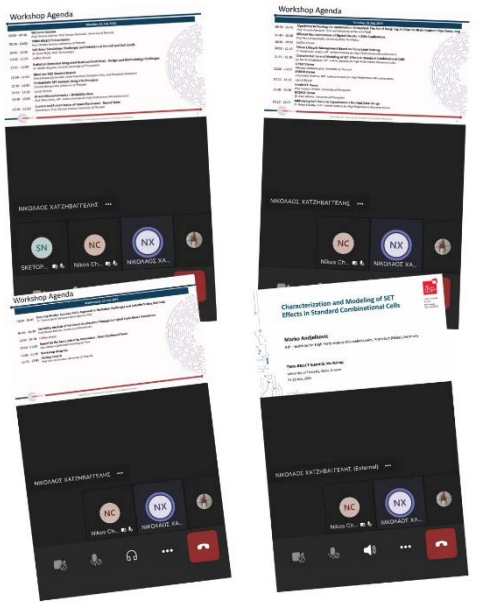
We congratulate her on this achievement and her continued dedication to scientific excellence.

Strengthening networking and collaboration between the AIDA4Edge and TWIN-RELECT project teams

The first scientific workshop of the TWIN-RELECT project was successfully held in Volos, Greece, bringing together researchers and experts for three days of engaging presentations, discussions, and networking. The AIDA4Edge team was honored to have the opportunity to follow this inspiring event. The workshop provided an excellent platform to strengthen networking and collaboration between the AIDA4Edge and TWIN-RELECT project teams. We look forward to continuing this building strong, lasting connections between our teams.







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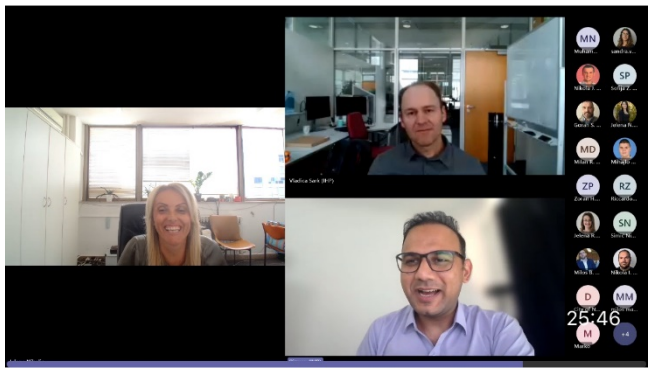
AIDA4Edge Project Webinar: Radar-based E...
29 Jul 2025 at 13:01

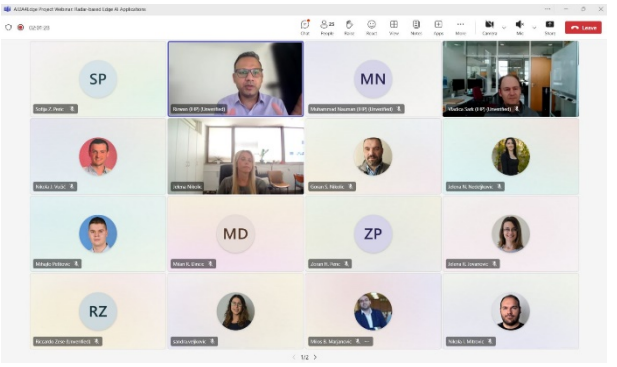
Part 2 of 2

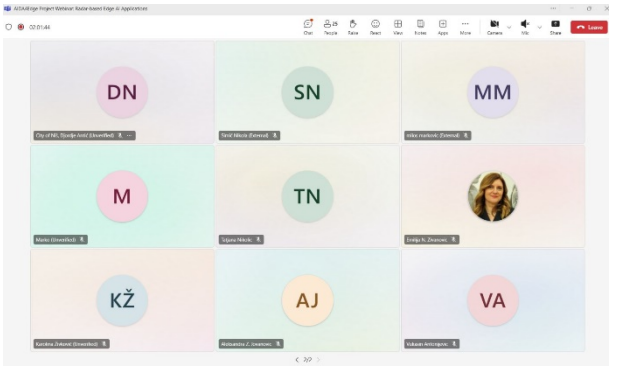


Radar, AI, and Edge Computing in Focus: Highlights from the AIDA4Edge Webinar

The webinar “Radar-based Edge AI Applications”, organized as part of the AIDA4Edge project, was successfully held on July 29, 2025. The online event brought together researchers and professionals engaged in advanced radar sensing, artificial intelligence, and edge computing technologies.

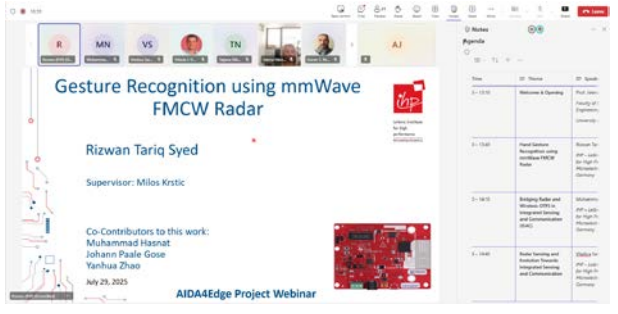
The webinar was opened by Prof. Jelena Nikolić, who welcomed participants and emphasized the importance of interdisciplinary collaboration in developing next-generation intelligent systems.

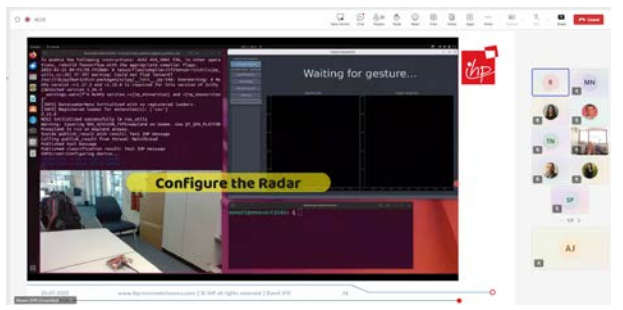


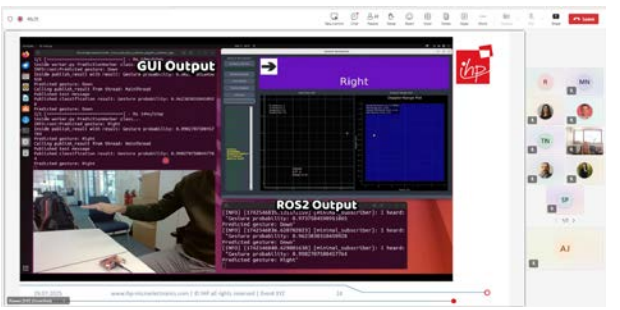


The program featured three technical talks from experts affiliated with IHP – Leibniz Institute for High Performance Microelectronics, each offering a unique perspective on the integration of radar and AI technologies:

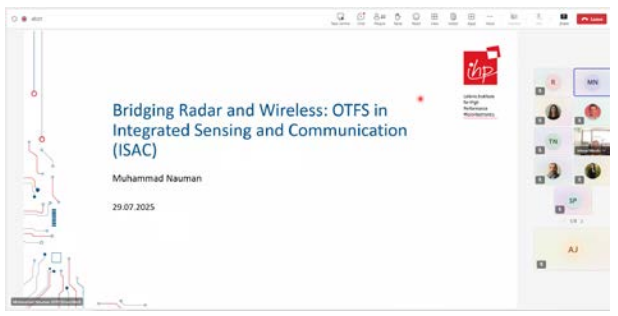
➢ Rizwan Tariq Syed – *Hand Gesture Recognition using mmWave FMCW Radar*
A deep dive into how high-frequency radar can be used for accurate and robust gesture recognition at the edge

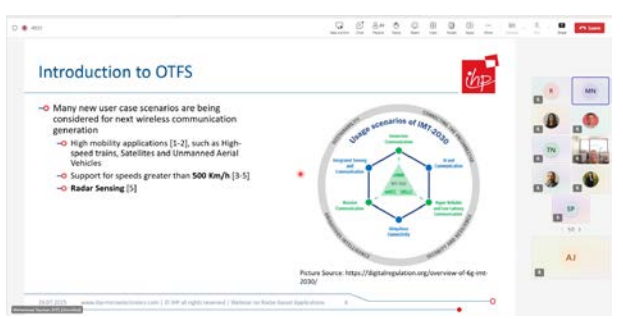


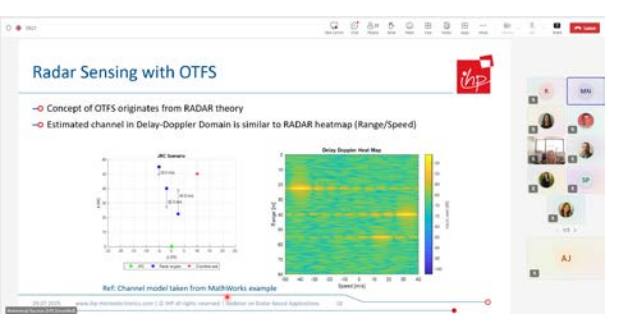




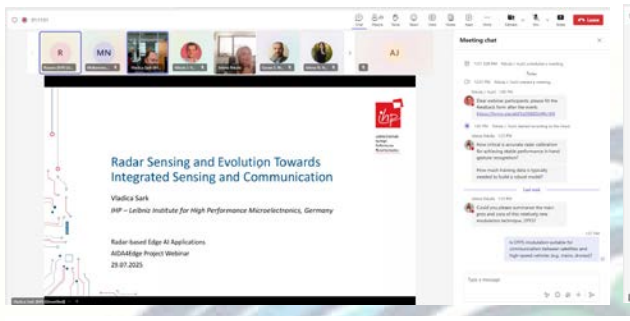
➢ Muhammad Nauman – *Bridging Radar and Wireless: OTFS in Integrated Sensing and Communication* (*ISAC*)
An exploration of Orthogonal Time Frequency Space (OTFS) modulation and its potential in unifying sensing and communication tasks

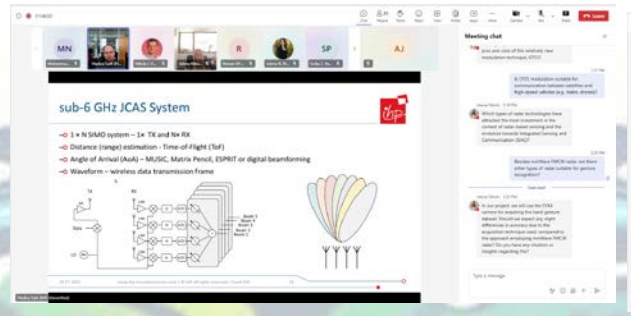






➢ Vladica Sark – *Radar Sensing and Evolution Towards Integrated Sensing and Communication*
A broader look at how radar technology is evolving toward fully integrated systems that combine environmental sensing and data communication





The presentations were insightful and engaging, offering valuable perspectives on the latest advancements. The follow-up discussions were inspiring, reinforcing the collaborative and innovative spirit at the core of the AIDA4Edge project.

We sincerely thank all speakers and participants for making this event a success.

New Highlights from AIDA4Edge Publications

Building on our initial contributions, the AIDA4Edge team has expanded its publication record. Take a look at our newest papers.

1. Marko Andjelkovic, Rizwan Tariq Syed, Alessandro Veronesi, Fabian Vargas, Markus Ulbricht, Leticia Bolzani Poehls, Milos Krstic, Davide Bertozzi, Edward G. Jones, Oliver Rhodes, Riccardo Zese, Michele Favalli, Alice Bizzarri, Evelina Lamma, Marco Gavanelli, Elena Bellodi, Zoran Peric, Jelena Nikolic, Milan Dincic, Aleksandra Jovanovic, Dejan Ciric, Nikola Vucic, Sofija Peric, Jelena Jovanovic, Milica Stojanovic, Tatjana Nikolic, Goran Nikolic, Jelena Nedeljkovic, Danijel Dankovic, Emilija Zivanovic, Milos Marjanovic, Sandra Veljkovic, Nikola Mitrovic, Bratislav Predic, Tamara Milovanovic, "AIDA4Edge: Twinning for Excellence in Adaptive Edge Artificial Intelligence", *28th Euromicro Conference Series on Digital System Design* (*DSD2025*), Salerno, Italy, September 10-12, 2025, accepted for publication

2. Bojan Denić, Zoran Perić, Milan Dinčić, Sofija Perić, Nikola Simić, Marko Anđelković, "Switched 32-Bit Fixed-Point Format for Laplacian-Distributed Data", *Information*, 16, 574, July 2025. https://doi.org/10.3390/info16070574

3. Sofija Z. Perić, Zoran H. Perić, Bojan D. Denić, Milan R. Dinčić, Aleksandra Ž. Jovanović, Marko S. Anđelković, "SQNR Approximation Analysis of the FP24 Format of Laplacian Source in a Wide Variance Range", *60th International Scientific Conference on Information, Communication and Energy Systems and Technologies* (*ICEST 2025*), Ohrid, North Macedonia, June 26–28, 2025.

4. Jelena Nedeljković, Goran Nikolić, Tatjana Nikolić, Marko Anđelković, Miloš Krstić, "Machine Learning-Based Error Detection and Function Approximation for Reliable Computing", *60th International Scientific Conference on Information, Communication and Energy Systems and Technologies* (*ICEST 2025*), Ohrid, North Macedonia, June 26–28, 2025.

5. Jelena Nedeljković, Goran Nikolić, Tatjana Nikolić, Marko Anđelković, "Evaluation of Machine Learning Models for Enhancing System Reliability", *12th International Conference on Electrical, Electronics and Computer Engineering* (*IcETRAN 2025*), Čačak, Srbija, June 9–12, 2025, ELI1.1 (#2343)

6. Nikola Mitrović, Sandra Veljković, Vojkan Davidović, Srboljub Stanković, Snežana Djorić-Veljković, Emilija Živanović, Danijel Danković, "Equivalent electrical circuit modeling of the irradiation and NBTS induced threshold voltage shift in p-channel power VDMOSFETs", Book of Abstracts of *the 13th International Conference on Radiation, Natural Sciences, Medicine, Engineering, Technology and Ecology* (*RAD 2025 Conference*), Herceg Novi, Montenegro, 16-20 June, 2025. https://doi.org/10.21175/rad.abstr.book.2025.9.3

7. Danijel Danković, Nikola Mitrović, Sandra Veljković, Miloš Marjanović, Emilija Živanović, Vojkan Davidović, "Stress-induced degradation and lifetime estimation in commercial power VDMOS transistors", Book of Abstracts of *the 13th International Conference on Radiation, Natural Sciences, Medicine, Engineering, Technology and Ecology* (*RAD 2025 Conference*), Herceg Novi, Montenegro, 16-20 June, 2025. https://doi.org/10.21175/rad.abstr.book.2025.9.6

8. Jelena Nikolić, Stefan Tomić, Aleksandra Jovanović, Zoran Perić, Milan Dinčić, Edward Jones, Davide Bertozzi, Riccardo Zese, Marko Andjelković, "Statistical Analysis of Synaptic Weights in Spiking Neural Network Trained on the DVS128 Gesture Dataset", *34th IEEE International Conference on Microelectronics* (*MIEL2025*), Nis, Serbia, October 13-16, 2025, accepted for publication

9. Sofija Perić, Zoran Perić, Aleksandra Jovanović, Jelena Nikolić, Riccardo Zese, Oliver Rhodes, Alice Bizzarri, "SQNR Analysis of Power-of-Two Level Quantizer and Integer 3 Quantizer", *34th IEEE International Conference on Microelectronics* (*MIEL2025*), Nis, Serbia, October 13-16, 2025, accepted for publication

10. Nikola Vučić, Zoran Perić, Aleksandra Jovanović, Dejan Ćirić, Milan Dinčić, Nikola Simić, Riccardo Zese, Oliver Rhodes, Michele Favalli, "Golomb–Rice Coding for Efficient Compression of 8-bit Floating-Point Data", *34th IEEE International Conference on Microelectronics* (*MIEL2025*), Nis, Serbia, October 13-16, 2025, accepted for publication

11. Tamara Milovanović, Bratislav Predić, Davide Bertozzi, Zoran Perić, Sofija Perić, Jelena Nikolić, "Dynamic Neural Networks for Adaptive Edge AI: Techniques, Tools, and Development Directions", *34th IEEE International Conference on Microelectronics* (*MIEL2025*), Nis, Serbia, October 13-16, 2025, accepted for publication

12. Milos Marjanovic, Marko Andjelkovic, Danijel Dankovic, Jelena Nikolic, Fabian Vargas, "Performance Evaluation of Digital Multipliers for Application in Neural Network Accelerators", *34th IEEE International Conference on Microelectronics* (*MIEL2025*), Nis, Serbia, October 13-16, 2025, accepted for publication

13. Nikola Mitrović, Sandra Veljković, Emilija Živanović, Miloš Marjanović, Danijel Danković, "Machine Learning Based Compact Model for NBTS Induced Threshold Voltage Shift in P-Channel Power VDMOSFETs", *34th IEEE International Conference on Microelectronics* (*MIEL2025*), Nis, Serbia, October 13-16, 2025, accepted for publication

14. Marija Petrović, Nevena Veselinović, Lana Tasić, Dunja Djordjević, Nikola Mitrović, Miloš Marjanović, Emilija Živanović, Danijel Danković, "Investigation of NBTI and Relaxation Effects in p-Channel Power VDMOS Transistors", *34th IEEE International Conference on Microelectronics* (*MIEL2025*), Nis, Serbia, October 13-16, 2025, accepted for publication

15. Dunja Đorđević, Lana Tasić, Nevena Veselinović, Marija Petrović, Sandra Veljković, Nikola Mitrović, Miloš Marjanović, Emilija Živanović, Goran Ristić, Danijel Danković, "Investigation of the Self-Heating Effect in a P-Channel VDMOS Transistor after NBT Stress and Relaxation", *34th IEEE International Conference on Microelectronics* (*MIEL2025*), Nis, Serbia, October 13-16, 2025, accepted for publication

Thank you for your interest in the AIDA4Edge project. We look forward to sharing more updates with you in the future. Stay connected!
www.aida4edge.elfak.rs

Leibniz Institute for High Performance Microelectronics

University of Ferrara

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