

PRESS RELEASE



AI-SEE Project achieves groundbreaking advancements in all-weather automated driving

Berlin, 27.11.2024

In the fast-evolving landscape of automated driving systems (ADS), ensuring safe automated operation in all weather conditions has remained a significant challenge. Many current technologies depend on favourable weather for reliable functionality, limiting their capabilities and impacting customer confidence.

Over the past 3.5 years, the AI-SEE project, led by Mercedes-Benz AG has worked to address this challenge. The consortium, comprising leading OEMs, world-class suppliers, software specialists, research institutes, and engineering companies, has developed a groundbreaking, multi-layered perception system that combines advanced deep neural networks with innovative sensor technologies.

The project concluded with a final event on November 12th at RISE Proving Ground AstaZero in Sweden, where its achievements in automated driving were demonstrated.

To meet safety standards, ADS must, at a minimum, continuously assess weather and road conditions to determine when automated driving can safely operate. In cases where weather or visibility challenges become too severe, the system must promptly alert the driver to take control, ensuring safety while building trust in these advanced technologies. Recognizing the essential role of a safety-critical weather detection system, the AI-SEE project achieved progress in developing a robust multi-layered perception system. By integrating high-resolution sensors, adaptive AI algorithms, and comprehensive simulation and testing environments, the project partners developed solutions that enable vehicles to navigate adverse conditions with improved resilience.

Combining hardware and AI advancements, the project focused on the following five objectives:

- High resolution adaptive all-weather sensor suite with novel sensors.
- AI platform for predictive detection of prevailing environmental conditions including signal enhancement and sensor adaptation.
- Smart Fusion to create a 24/365 adaptive all-weather robust perception system.
- Novel simulation path which realistically simulates adverse weather near the sensor to adapt and test the system on both real and artificially generated road scenes.
- System validation plan and driving test campaigns.

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In particular, the driving testing campaigns in controlled environments and on public roads showcased the robustness of the AI-SEE all-weather multi-sensor perception system and its capability to operate in diverse lighting and weather conditions.

One of the key outcomes of the AI-SEE project is the novel sensing system's ability to detect and identify obstacles, including small hazards - up to 200 meters away, even in low visibility and adverse weather conditions. "This is a giant step towards SAE L3 market deployment, and enhances the safety of existing ADAS systems", says AI-SEE Coordinator Dr. Werner Ritter, Mercedes-Benz AG.

The project's key findings and results were showcased during the Final Event held at AstaZero, a project partner with the world's first full-scale independent test environment for future road safety. The event featured high-level presentations from AI-SEE partners, an exhibition, and two live demonstrations that highlighted the project's innovations.

The demonstrations in AstaZero's FlexZone focused on automated driving through a Fog Wall using AI-SEE sensing technologies, while the DryZone, the world's longest indoor track for testing active safety systems, hosted scenarios demonstrating Lost Cargo Detection under challenging visibility conditions and Repeatable Test Scenarios with water Spray.

While acknowledging the complexity of perfecting automated driving for all-weather scenarios, all partners and Event attendees highlighted the inspiring and essential progress of the project, paving the way for safe and reliable automated driving.

About AI-SEE

AI-SEE is a PENTA EURIPIDES² funded project. PENTA and EURIPIDES² are Eureka Network Clusters, operated by AENEAS promoting the generation of innovative, industry-driven, pre-competitive R&D projects in the area of Smart Electronic Systems.

Project duration: 43 months, 1st June 2021 – 31st December 2024

Total costs: €20 million

Funding from national public authorities (PENTA EURIPIDES²) label funding: €10 million

Coordinator: Mercedes-Benz AG

Partners:

OEMs: Mercedes-Benz AG, Patria Land Oy

System providers: Magna Sweden AB, Robert Bosch GmbH, Brightway Vision Ltd.

Technology providers: TORC Europe, TORC Canada, Meluta Oy, Unikie Oy, VTT Technical Research Centre of Finland Ltd

Development tools and simulation: ANSYS Germany GmbH, AVL List GmbH, University of Ulm - Institute of Applied Photonics and Optics, Fifty2 Technology GmbH, BASEMARK Oy

Modules and components: ams-OSRAM AG, OQmented GmbH, University of Stuttgart - Institute of Semiconductor Engineering

Inclement weather testing facilities: Technical University Ingolstadt - CARISSMA Institute of Automated Driving, AstaZero AB