HOCHSCHULE RUHR WEST
UNIVERSITY OF APPLIED SCIENCES

Exploratory Workshop on Intelligent Vehicles and Road Infrastructure

July 2-3, 2025

at Hochschule Ruhr West (Bottrop, Germany)

Scope:

Transportation is currently under rapid transformation with emerging technologies and systems. On the one hand, connected and automated vehicles (CAVs) have been developed, tested, and started to get ready for real-world deployment. On the other hand, roadway infrastructure (such as traffic lights and intersections) is increasingly installed with sensing and data collection systems (video cameras, Lidars, edge computing devices, etc.), enabling robust and fast data collection and sharing, and optimization of traffic flow. Naturally, infrastructure and CAVs should cooperate for better sensing, data collection, and joint traffic and vehicle optimization and control, which is essential to improve safety, mobility, and related performance goals in future urban areas.

Supported by the DFG program for the initiation of international collaborations, this 2-day exploratory workshop is centred around the main theme of cooperation of CAVs and roadway infrastructure, as well as related issues such as cybersecurity and AI applications. The workshop will feature podium presentations and panel discussions on recent achievements and current challenges related to the workshop theme. Academia and industry researchers from around the world will present state-of-the-art methods and emerging techniques. Workshop participants will also discuss and brainstorm with funding agencies on pressing issues related to the workshop theme, and how academia, industry, and agencies can work together to address these issues to help accelerate the development and deployment of CAVs in the real world.

Organizers:

- Prof. Dr. Anne Stockem Novo (Ruhr West University of Applied Sciences)
- Prof. Dr. Xuegang (Jeff) Ban (University of Washington)

Topics:

- Connected, automated vehicles (CAVs)
- Short-term CAV trajectory prediction
- Long-term traffic flow prediction
- AI for CAV and traffic safety, cybersecurity, and efficiency
- Simulator frameworks
- Real-world sensing and testing
- The industry and government perspectives

Format of the workshop:

The exploratory workshop brings together a selected group of experts from different countries with the aim of identifying open problems and relevant research questions. The workshop will be organized to allocate dedicated sessions for deep discussions.

Confirmed contributors from:

ZF Automotive Germany GmbH, Volkswagen, Schotte Automotive, INGgreen, University Duisburg-Essen, TU Dortmund, University of Washington, Ruhr West University of Applied Sciences

Anne Stockem Novo
Ruhr West University of Applied Sciences

Xuegang (Jeff) Ban
University of Washington

Preliminary program:

Time	July 2nd	Time	July 3rd
09:00	Sensing and Perception	09:00	Explainable AI and Testing
10:45	Traffic modelling	10:45	Working groups
12:15	Lunch break	12:15	Lunch break
13:15	CAV cybersecurity	13:15	Presentation of working group results
15:00	Panel discussion	14:45	Wrap-up day 2
16:00	Wrap-up day 1		

Participation:

For workshop participation, please contact Frauke Schreyer (Email: frauke.schreyer@hs-ruhrwest.de).

Funding acknowledgement:

This workshop is funded by the Deutsche Forschungsgemeinschaft (DFG, German Research Foundation) – 558307204.