

Title: Supporting Vehicle-Pedestrian Interactions

Format: Full day.

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Abstract

Current work in Autonomous Driving (AD) and Advanced Driver Assistance Systems (ADAS) takes the perspective of the ego vehicle when it comes to handling other traffic participants. They are incorporated into planning or warning systems as potential collision objects with the target to avoid interactions. However, in manual traffic there are many interactions between drivers and outside participants that also address other aspects such as mutual utility, comfort, social norms, friendliness and perceived safety, in particular for Vulnerable Road Users (VRUs) such as pedestrians. New technologies considering interactions with pedestrians and effects of ego behaviors on them have the potential to lead to smoother traffic and better mutual relations between pedestrians and motor vehicles.

List of topics

- Designing and validating novel HMI technologies aiming to improve road safety.
- Co-simulation of pedestrians, drivers, and cyclists in virtual road environments.
- Decision-making in HMI systems.
- Recognition of vehicle/pedestrian intention.
- Driver behavior prediction and driver type recognition.
- Recognition of social behaviors/communication.
- Trajectory/behavior planning for merging/crossing scenarios.
- Joint behavior planning.
- Multi-agent planning systems.
- Interactive behavior negotiation.
- External HMIs for explainability/predictability.
- Simulation of traffic interactions.
- User studies of systems with multiple human interaction partners.
- ADAS supporting drivers in interactive situations.
- Car2VRUs systems.
- Human factors aspects of HMI design for different users - drivers and VRUs in different states and conditions.
- Inclusion of ethical considerations, methodological innovations for testing and evaluation, and regulatory aspects of HMI systems.