interACT

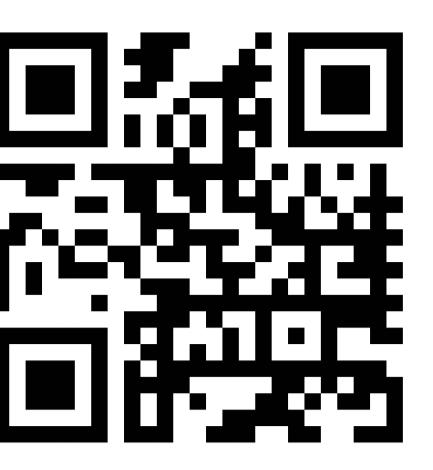**Designing cooperative interaction of automated vehicles with other road users in mixed traffic environments**

Project Coordinator

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interACT is a research project funded by the EU's Horizon 2020 programme. The aim of the project is to enable the safe and efficient communication and interaction between Automated Vehicles, other road users and on-board users.
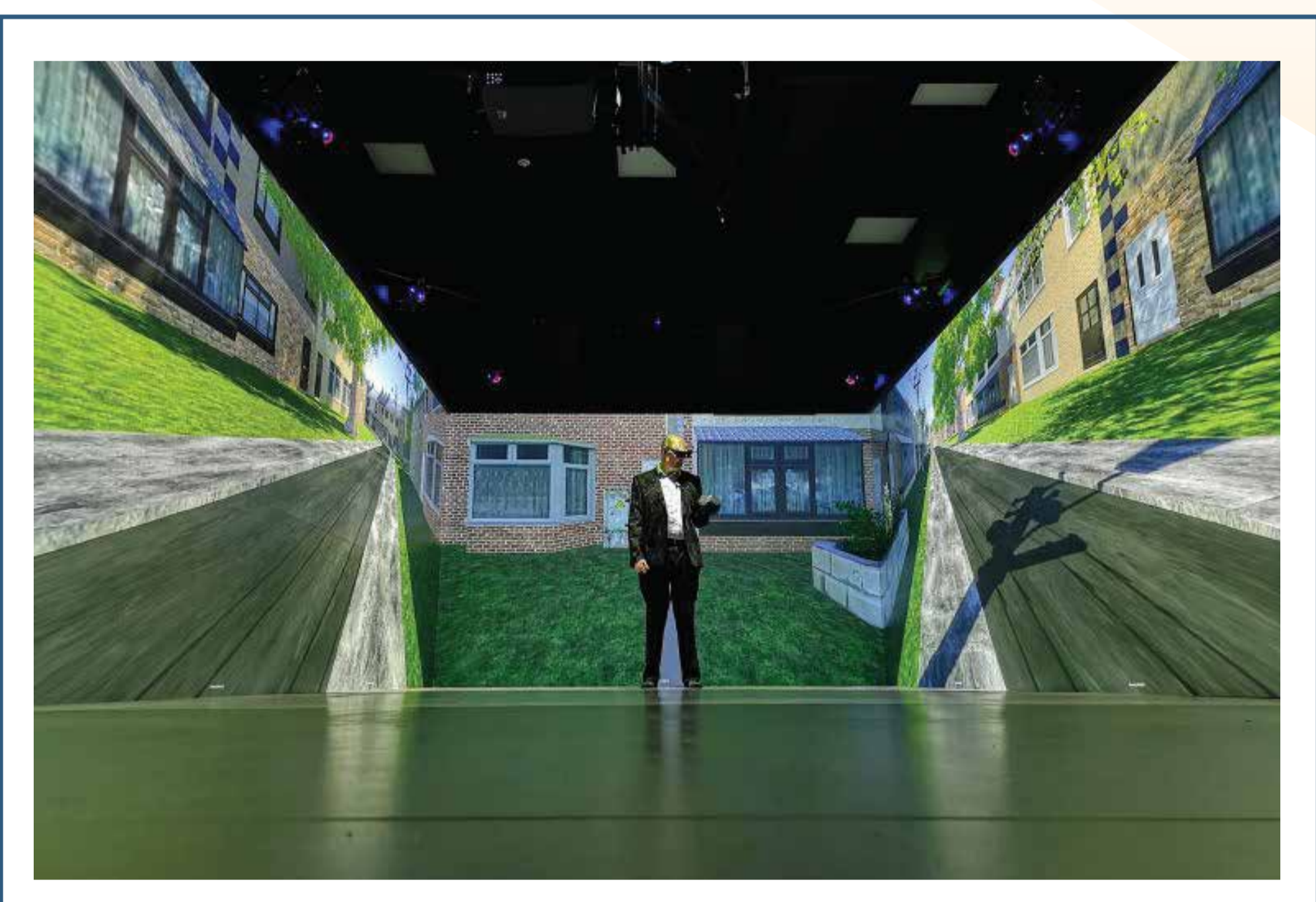
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interACT objective

Achieve a safe, highly accepted and efficient integration of Automated Vehicles into mixed traffic environment

The results

Results - Evaluation methodologies

1. Evaluation criteria and methodologies derived for Automated vehicles
2. interACT demonstrators evaluated in test-track studies, while eHMI/iHMI solutions were also evaluated using driving and pedestrian simulator
3. Impact assessment carried out to understand the effects of the interACT solutions on safety, traffic flow, criticality, comfort, and acceptance
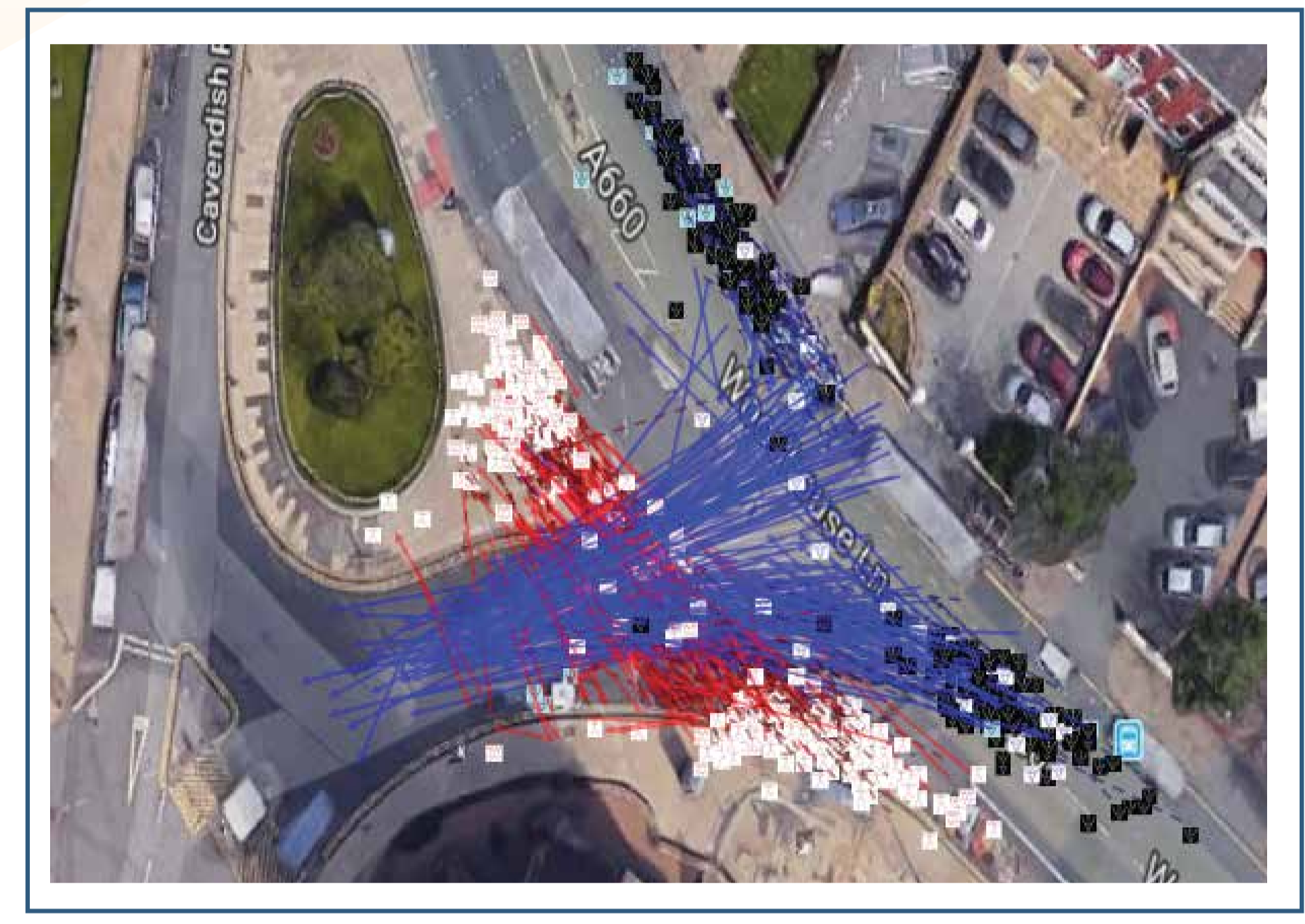
Results - Human interaction behaviour

1. Definition of interaction terminology
2. Several observation studies on human-human interaction in Greece, Germany and the UK
3. Traffic participants tend to avoid conflicts; Interactions are more likely to occur when the vehicle is driving slowly; Pedestrians mostly focus on implicit vehicle cues rather than explicit communication

Results - Intention recognition

1. Risk analysis framework for the prediction of traffic participants location
2. Pedestrian intention prediction using the semantic map and behaviour models of other traffic participants
3. Novel deep learning techniques, for classification of pedestrians' head orientation and hand waving gestures
4. Hidden Markov model for vehicle maneuvers recognition and generation of intention-aware trajectory.
5. Extended vehicle prediction trajectory via fusion of intention-based with typical motion-based

Results - HMI/eHMI

1. Two interaction strategies defined: intention-based & perception-based strategy for HMI/eHMI
2. Two eHMI technologies developed and implemented: 360° Light Band & Directed Signal Lamp
3. Two iHMI technologies: Light Band & Automation Display
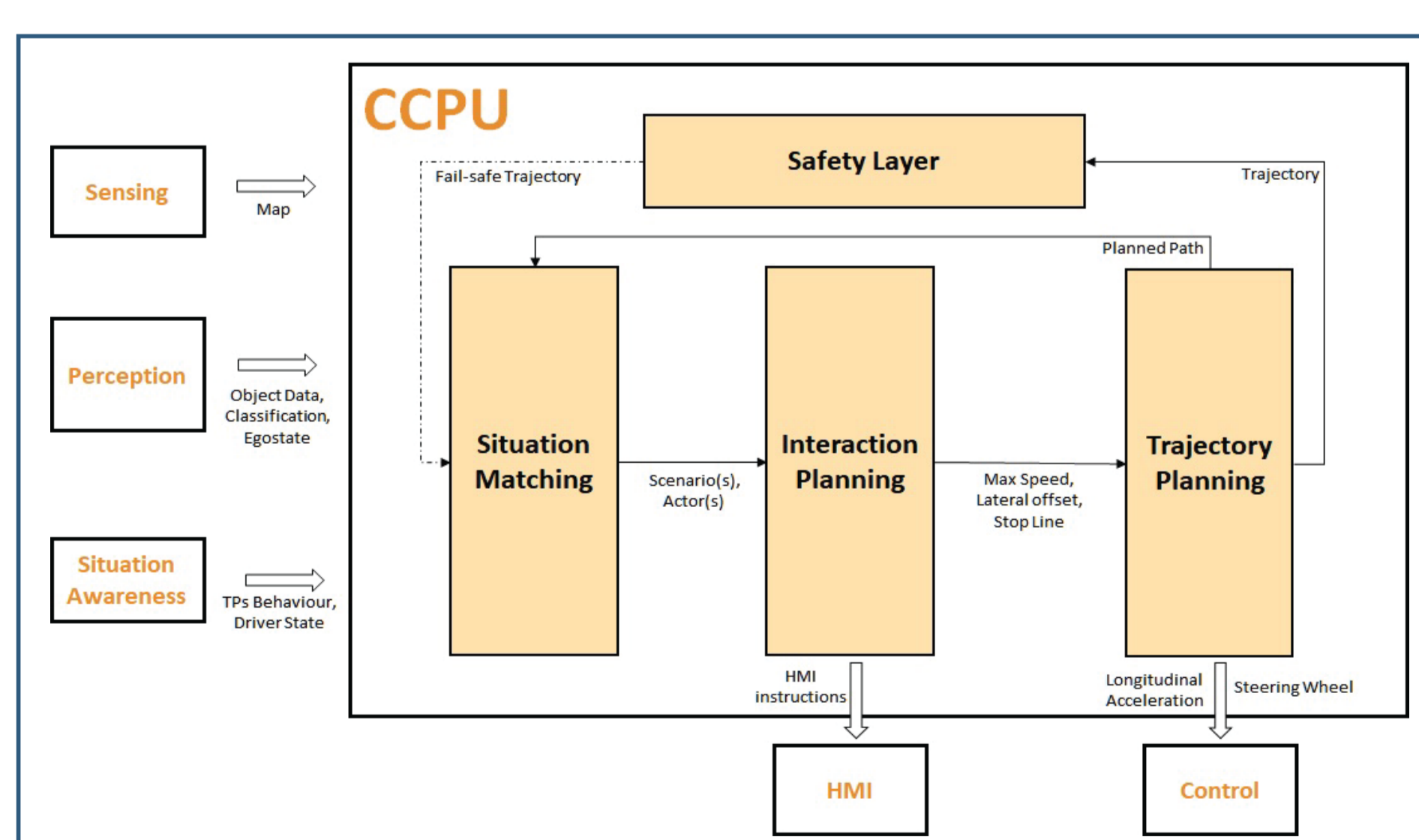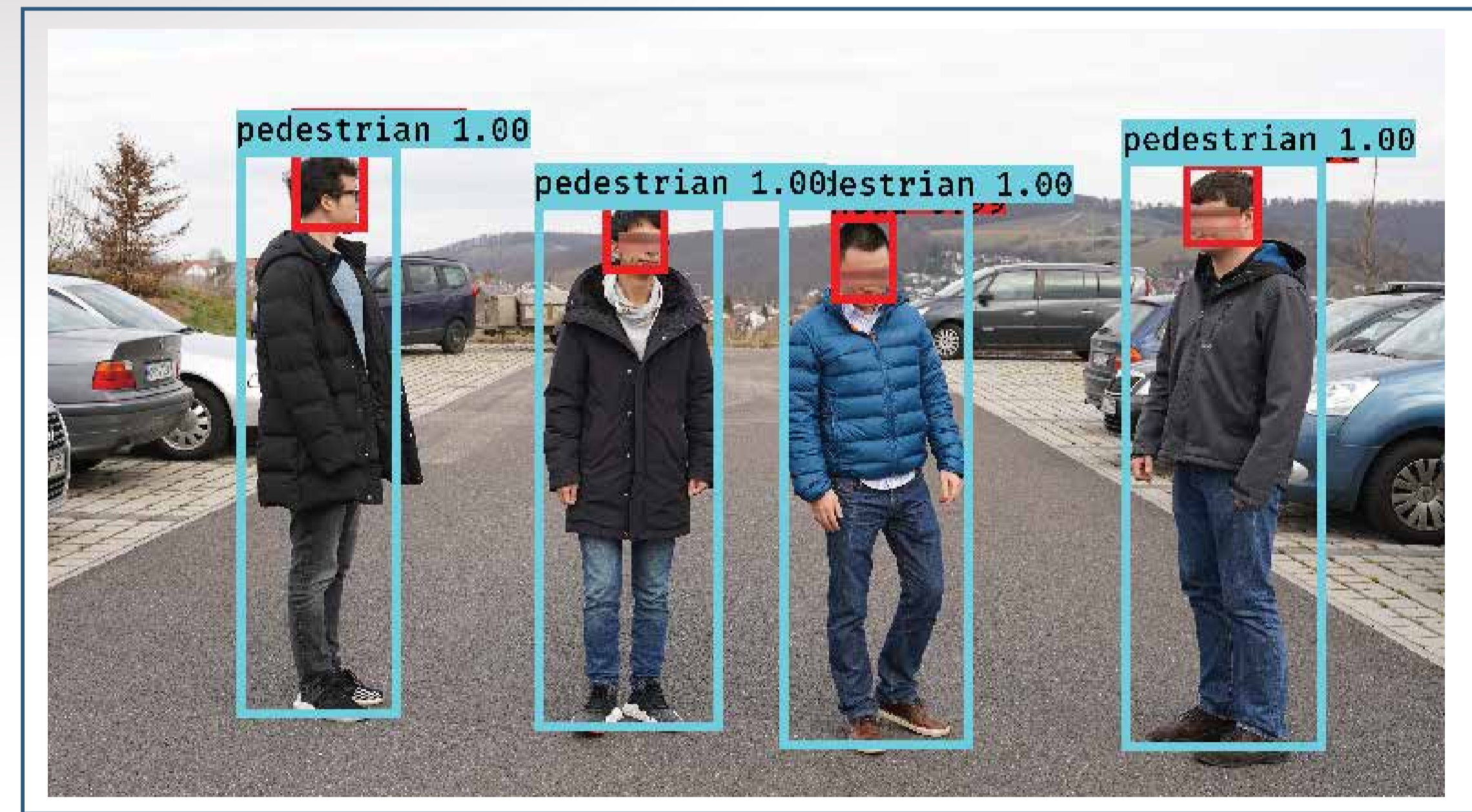
Results - Communication and Cooperation Planning Unit

1. Recognition of traffic conflicts between Automated Vehicles and other traffic participants
2. Implementation of reaction strategies according to the identified situation (future path constraints, candidate actors for HMI/eHMI interaction)
3. Integration of internal and external HMI to enable human-like interaction
4. Development of safety layer for emergency situations

Consortium

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