

Artificial Intelligence for Adaptive, Responsive, and Level-Compliant Interaction in the Vehicle of the Future (KARLI)

Cédric Houdard, Lea Hofmaier, Hamzeh Kraus, Melanie Zimmer, Victor Fäßler, Tobias Rößler

TWT GmbH Science & Innovation, 70565 Stuttgart, Germany

The KARLI project consortium investigates and develops monitoring systems for drivers and other occupants with new artificial intelligence approaches, based on high quality labeled data that is collected in real vehicles. The project's target applications are integrated in vehicles that enable various levels of automation and transitions of control. Level-compliant occupant behavior is assessed with AI algorithms and modulated with responsive and adaptive human machine interface (HMI) solutions. The project also targets the prediction and prevention of motion sickness to improve the user experience, enabling productivity and maintaining an adequate driver state. The user-centered approach is represented by defining five KARLI User Roles which specify the driving related behavior requirements for all levels of automation. The KARLI applications will be evaluated regarding user experience benefits and AI performance measures. The KARLI project is approaching two main challenges that are ambitious and have a high potential: First, raising and investigating the potential of AI for driver monitoring and driver-vehicle interaction, and second, accelerating the transfer from research to series production applications.

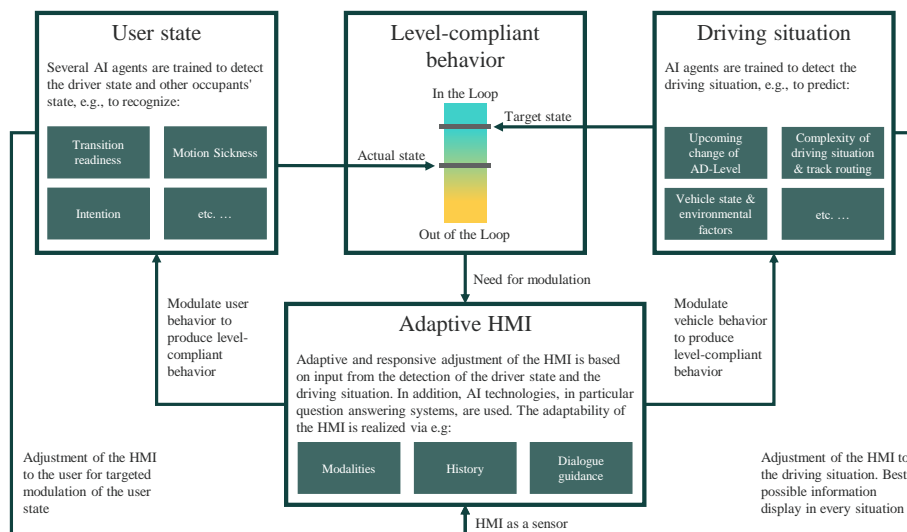


Figure 1: KARLI methodological approach.