Driver Capability Monitoring in Highly Automated Driving: From State to Capability Monitoring

Abstract:
A collision probability estimator in the advent of an emergency Take Over Request (TOR) that considers the driver reaction time and the driver state is an essential tool for developing driver assistance systems for Highly Automated Driving (HAD). In this paper we present an architecture for capturing the driver state and behavior inside the vehicle. This system is then used to predict the collision probability in the situation where drivers resolve the TOR doing a keep lane maneuver (KLM) and brake to avoid the collision. Since this maneuver can be executed safely even under fast reactions, we use it as a reference to determine if it is safe for transferring the vehicle control to the driver.