Methods for Improving the Accuracy of the Virtual Assessment of Autonomous Driving

Abstract:
Assessing the safety of an autonomous vehicle is an open problem within the research domain for autonomous vehicles. Next to real-world driving tests, simulation and re-processing of recordings play a crucial role in validating the correct and safe behavior. Current state-of-the-art methods for function reprocessing suffer from several sources of error and hence, might lead to incorrect results. In this work, an overview of the most recent reprocessing methods is given and their shortcomings are described. We suggest the derivation of explicit sensor models and the learning of behavior models for traffic objects. An overview of different levels of sensor and different kinds of agent models is given along with a discussion for the need for statistical and machine learning based models. Furthermore, a novel method, based on infrastructure sensors, to collect the data needed for the derivation of the models is presented.