

Interdisciplinary Project

Development and Application of a Method for Data-Mining in Autonomous Driving

Situation:

Fully automated driving functions allow people to be completely relieved of the driving task in specific scenarios. The required perception algorithms based on sensor data are already at a good level today. The great challenges are the scenery understanding and the prediction of the uncertain behavior of other traffic participants. These factors form the basis for decision-making, path and trajectory planning of the ego-vehicle. Comprehensive data sets are the essential resource for the application of data-based methods and for the efficient validation of developed algorithms in simultaneous environments.

Project:

In this project a method for systematic and efficient data-mining of real vehicle data for algorithms for motion prediction shall be developed. This method should be applied to and evaluated on an existing data set for autonomous commercial vehicle applications. The specific interfaces of the algorithms have to be considered and, if not available, necessary input variables should be generated from the pre-processed sensor data by means of suitable algorithms. The method should process data in a uniform format and should check for the plausibility of the detected objects.

The following work packages comprise the project:

- Literature review on the state of the art of data mining
- Investigation of methods for data preparation of public data sets for autonomous driving
- Development of a general method for data processing for the application to algorithms for motion prediction
- Application of the method to an existing data set
- Evaluation and documentation of the results

Lecture recommendation:

Artificial Intelligence in Automotive Technology (Module MW2378), online available

Prerequisites:

- Interest in Data-Mining
- Experience in Programming with Python
- Additional: Knowledge in Automotive Technology and Motion Planning

Contact:

Phillip Karle | karle@ftm.mw.tum.de | 089 289 15898
Lehrstuhl für Fahrzeugtechnik | Prof. Dr. Markus Lienkamp