Lehrstuhl für Fahrzeugtechnik
Fakultät für Maschinenwesen
Technische Universität München

Interdisciplinary Project

Data Engineering in Vehicle Testing

Situation:

In customer-oriented vehicle testing, engineers collect subjective feedback from drivers during or after a test drive using survey or mobile apps. Additionally, vehicles are equipped with different kinds of data loggers. A standardized and combined evaluation of driver feedback and measurement data is therefore not yet common standard. Within the research project Firefly, the Chair of Automotive Technology of the TUM develops a cloud-based software tool in cooperation with an industry partner. The tool analyzes vehicle test drives and optimizes the test procedure using machine learning methods.

Project:

As a data engineer, data is collected, processed and validated. This project addresses one of the main problems: the use of measurement data from a data logger in the vehicle. As a first step, an OBD-II logger is used to collect data. The chair already has experience and existing data from other projects. Based on this, OBD-II solutions will be implemented together with the project partner. In the next step, the data pool should be enriched and complemented. Finally, an existing prototype of an analysis framework, which uses machine learning methods, should be improved and extended.

The following work packages comprise the student research project:

- Familiarization and literature research on vehicle testing and data analysis
- Connection of data logger and database (in cooperation with developer), especially data preparation
- Enriching and complementing the data pool (e.g. by simple simulation)
- Testing and extending of existing analysis and optimization algorithms (based on methods of machine learning)
- Discussion of the results and presentation of possible extensions

Lecture:

Possible lectures accompanying the projects are: “Road Vehicles: Design and Simulation“ (in German), “Basics of Automotive Technology“ (in German) and “Artificial Intelligence in Automotive Technology“ (Notes in English, Lecture held in German): **All available online.**

Prerequisites:

- Interest in Data Engineering, data preparation and data analysis
- Optional: experience in simulation und Machine Learning

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