Bachelor or Master Thesis: Clustering of Traffic Scenarios

Description

Automated vehicles are tested in simulation with traffic scenarios of previously recorded data, e.g. [https://commonroad.in.tum.de/scenarios/](https://commonroad.in.tum.de/scenarios/). This demands a large number of scenarios with different situations. To automatically label and structure these scenarios, a clustering technique (similar to [1]) should be developed in this thesis. The goal is to classify arbitrary traffic scenarios with respect to features like relative positions or velocities of vehicles, lane-change behavior, criticality of the scenario, etc.

Your tasks include:

- getting familiar with clustering techniques and LTL logic and select an algorithm
- define features for labeling traffic scenarios
- program the clustering algorithm in Python
- apply algorithm to highway scenarios
- possibly extend method to intersections

You should have:

- good programming skills (preferably in Python or a similar language)
- first experience with motion planning, clustering, learning, or search algorithms
- motivation to work independently

If you are interested, contact me and we can discuss the topic in more detail.

Literatur