Generation of Critical Scenarios for Automated Vehicles

Background

For verifying that an automated vehicle is at least as safe as a human driver, one needs to drive more than 400 mio km. This is impossible to cope only by real world testing. Therefore, virtual testing is crucial when developing automated vehicles. Most interesting for those tests are critical scenarios. To automatically generate a large variety of scenarios which push the vehicle controller to its limits, new methods need to be developed.

Description

Previously an algorithm has been developed, that optimizes given traffic scenarios with respect to their criticality. This method already yields promising results for rather simple highway scenarios. Your task is to extend this method to more complex scenarios, like merging maneuvers or more complex lane layouts.

If you are interested in automated vehicles, optimization methods and motion planning, this thesis provides a great opportunity to work within an new research area. You will get familiar with criticality assessment of traffic situations and prediction of traffic participants.

In case you are interested, please get in contact and we will discuss the topic in more detail.

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