Risk Assessment of Trajectories of an Autonomous Vehicle with Regard to Static Factors

Motivation

As part of the Roborace project, the Chair of Automotive Engineering is developing software for a vehicle that will take part in the first racing series for autonomous vehicles. As part of this project, a concept for the risk assessment of trajectories with regard to static factors will be developed and evaluated.

The development of autonomous vehicles has been an emerging field of research for several years. Well-known companies are already demonstrating with automated test vehicles how far the technology is already. However, a safety driver must continuously monitor all existing systems. In order to enable the step to an independent autonomous system, a safety concept for autonomous vehicles is being developed at the Chair of Automotive Engineering (FTM).

Task Description

The overall objective of this work is to secure the motion planning of an autonomous vehicle. The desired procedure is based on a supervisor who connects planned trajectories of the ego vehicle with the current environment and can infer from this the current safety level (e.g. collision, friction, ...). In this work, a new evaluation procedure is to be developed on the basis of existing approaches. Among other things, the suitability for use in a racing scenario is to be considered.

Prerequisites

- Structured and independent working method
- Programming experience in Python (or similar)
- Ideally first experiences in the field of autonomous driving / safeguarding

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