SA/MA/IDP

Online Detection of Challenging Scenarios for Autonomous Vehicles Using Artificial Intelligence

Situation:

The development of autonomous vehicles is progressing rapidly. However, they are still absent from public roads for a significant reason: the inability to ensure their safety, especially in rare and unforeseen scenarios, also known as corner cases, edge cases, or anomaly cases. To allow autonomous vehicles to be deployed on public roads at scale, they would need to be capable of autonomously recognizing such situations.

Project:

[Geißlinger23]
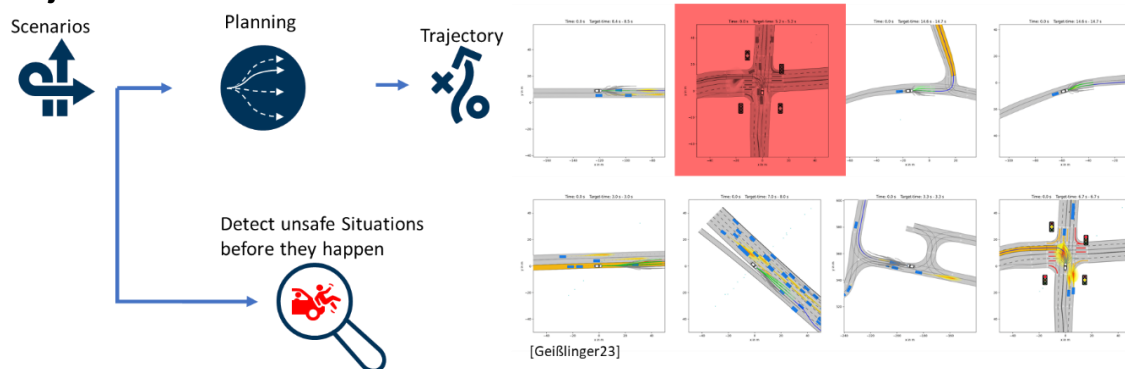
In this project, at least three common methods from the state of the art for detecting corner cases based on a planning module will be implemented. This will involve using both classical algorithms and machine learning algorithms. The methods will then be validated and compared using a comprehensive set of 2D scenarios provided with a planner.

The following steps are part of the research project:

- Literature review on online corner case detection.
- Familiarization with the used planner and CommonRoad scenarios.
- Capturing a suitable dataset by navigating through all scenarios.
- Implementation of three different approaches for corner case detection.
- Validation and comparison of the approaches.

Requirements:

- Advanced analytical, programming, and debugging skills.
- Proficiency in C/C++ or Python.
- Knowledge of machine learning.
- Ideally, experience with CommonRoad

Kontakt:

If you are interested in this project or any other project related to autonomous driving, please send your resume and transcript to:

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