Topic and Goal of the Thesis

Vehicles are driving increasingly automated. But how can we prove that these vehicles are safe? This is a central question in research on safeguarding automated vehicles. A promising approach is scenario-based testing. Particularly exciting are edge cases that challenge the system but are realistic. However, such edge cases can hardly be found in data.

In this thesis, a method for the synthetic generation of such edge cases on the basis of real data shall be developed. The goal is to determine the general boundary of real-world scenarios based on real data. Rule-based approaches as well as machine learning approaches can be considered.

Working Points

• Literature research on the topics of scenario generation and parameter extrapolation
• Development of a methodology to generate realistic Edge-Cases for dynamic road users
• Implementation of the method
• Validation of the methodology based on real intersection data

Requirements

• Good English or German language skills
• Reliability, commitment and enjoyment of working independently as well as methodically
• Basic knowledge in data science
• Experience with python