

# Simulation Environment for Autonomous Driving Functions

## Bachelor / Master Thesis

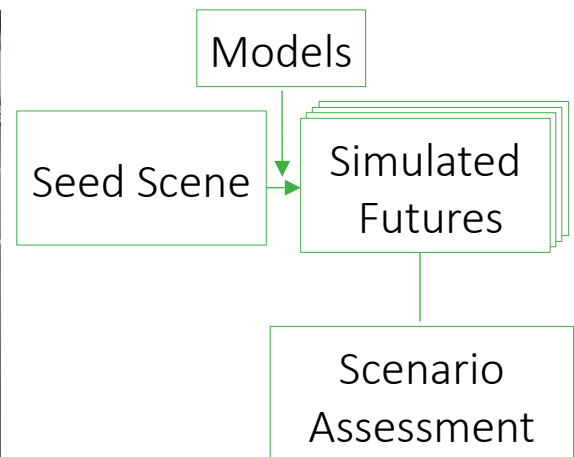
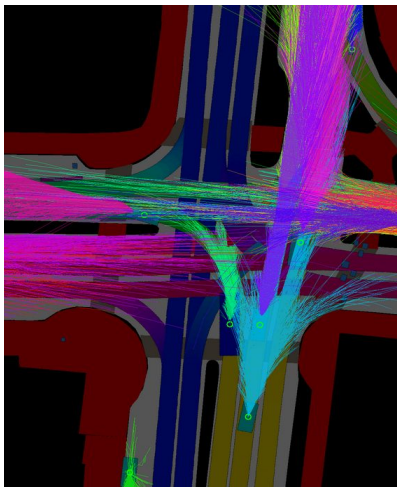
Autonomous Driving

Simulation

Data Analysis

Prediction

One of the major problems why we hardly ever see autonomous driving vehicles on the road in Germany is that it is not feasible to secure the systems in the conventional way. Therefore, simulation-based approaches should facilitate the homologation step in the future and enable highly automated vehicles on German roads.



### The Topic

- You will perform state-of-the-art research on current simulations for verification and validation of autonomous driving
- Based on the CARLA simulation engine, you create a framework to simulate multiple scenarios (futures) based on a seed scene
- You create simulation models which are compared with each other (e.g., Machine Learning Models, Physical Models, ...)
- You will analyze the results and access the results based on state-of-the-art metrics or self-designed ones.

### Your Skills

- You study Computer Science or a related course of study
- You are deeply interested in topics such as Autonomous Driving or Simulation
- You can read and write scientific texts in English
- You are fluid in Python (PyTorch or any ML framework is a plus)
- You show an above-average degree of motivation for working and solving through challenging problems.

### What We and I Offer

- You get exciting insights into our research and gain valuable practical experience
- We use the latest hardware and software. Together with us you work in first-class laboratories (on-site or remotely)
- Regular and extensive support: Weekly 1:1 meetings
- Collaboration with other students to get tips, learn together, and fix issues quickly
- We aim to **publish this work in an IEEE paper** with shared first authorship

### Application

- Start: Immediately
- Send me an e-mail at [maximilian.zipfl@kit.edu](mailto:maximilian.zipfl@kit.edu) / [zipfl@fzi.de](mailto:zipfl@fzi.de) with your CV, grades, and a few sentences why you are interested. **No cover letter necessary**