

# Detecting Localization Failure using Deep Learning Methods for Autonomous Driving



**Bachelor / Master Thesis** The scope of the thesis can be adapted individually.

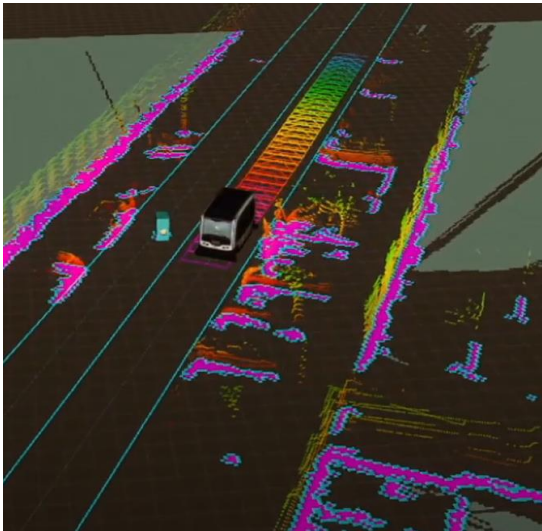
Autonomous Driving

Machine Learning

Deep Learning

Safety

Autonomous vehicles rely on robust perception and localization components. In case of a failure in the localization component, the vehicle might not be able to perform the desired behavior. This is a serious problem in autonomous driving, since components work with noisy data. Therefore, it is important to detect failures in these components and react accordingly.



## The Topic

- You will perform state-of-the-art research on failure detection methods for localization in autonomous driving
- Based on the results, you will evaluate the performance of different methods and propose improvements
- You will evaluate the performance of the prototype in simulation and on real-world data or directly on our shuttle busses

## Your Skills

- You study Computer Science or a related field
- You are interested in machine learning and deep learning, as well as autonomous driving
- You are not intimidated by scientific papers
- You have experience in Python, PyTorch and Linux
- You show an above-average level of initiative and responsibility

## What We Offer

- Exciting insights into our research and valuable practical experience
- Latest hardware and software for your work
- Regular support and feedback
- We plan on publishing these results in IEEE journals and with shared first-authorship

## How To Apply

- Start: Immediately
- Write me an email at [schotschneider@fzi.de](mailto:schotschneider@fzi.de) with your CV and a few sentences why you are interested and why you are a good fit
- After acceptance, we will set up a first meeting to discuss the details and to form the topic to your needs.