Technische Universität Braunschweig

Institut für Nachrichtentechnik

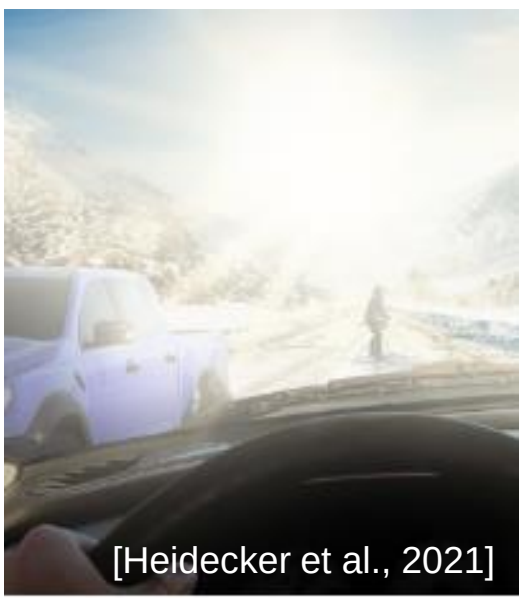
Deep Learning for Corner Case Detection in Automated Driving

Bachelor / Master Thesis

Design for a bachelor thesis. Master thesis can be customized.

Automated Driving **Deep Learning** **Camera Data** **Sematic Segmentation**

The challenging task in the development of automated driving is not driving on a straight road during day time with no other traffic participants around, but navigating in scenarios that for example can be crowded, hard to overlook, and with other traffic participants that do not stick to the general traffic rules. Such unexpected, potentially dangerous situations are called corner cases. In this thesis, you will work with deep learning tools for the detection of corner cases on camera data from automated driving.


[Heidecker et al., 2021]


[Chan et al., 2021]


[Koopman, 2018]

What is the thesis about?

- Detection of corner cases based on semantic segmentation
- Use discrepancy between a small, low-performing network and a large, high-performing network

Your skills

- Very good programming skills, ideally Python
- First knowledge in the field of Machine Learning is desirable
- **Very enthusiastic about the research fields** of machine learning, computer vision or automated driving
- Read and understand scientific texts in English
- Motivation for the topic and an independent structured way of working

Our offer to you

- Insights into our current research and practical experience in machine learning
- A **personal, careful and intensive supervision** (at least one meeting per week)
- Invitations to the final presentations of other students to get an insight into the different research topics of the department
- A workspace at our institute and the possibility to get in contact with other students. This way small problems can be solved quickly
- Insights into a current research project of the working group.
- Access to our own GPU cluster
- We aim to publish the results of this thesis at a peer-reviewed conference

CONTACT ME

How to get in touch?

Just send me an e-mail (breitenstein@ifn.ing.tu-bs.de, info via QR code) with your field of study, your grades, and why you are interested in this topic. ☺