Semester-/Master-Thesis

Neural Multi-View Video Compression for Autonomous Vehicles

The aim of this study is to improve upon the state of the art neural compression method by leveraging other more than a single camera to compress at the same time

Background

Autonomous vehicles generate huge amounts of sensor data, which is semantically processed by neural networks and classical algorithms to perform the dynamic driving task.

Video data is currently the largest chunk of data transmitted. Recently, neural data compression methods have emerged as a valid alternative to classical methods such as MPEG standards. We can go one step further and even leverage information from other cameras at the same time. Autonomous Vehicles typically have more than one camera with overlapping view points. Temporally these cameras also capture similar information at different points in time.

The neural compression approach thus can learn to compress the joint video stream better compared to single view setups.

Your Role

- Literature research about current neural data compression methods as well as their evaluation
- Literature research about semantically relevant perception models, multi-view integration.
- Extension of single view approaches to the multi view case
- Training and evaluation of the developed method

Depending on the type of thesis, this work can be split up in different topics

Was should you bring along?

- Strong interest & motivation for autonomous driving
- Initiative & independent way of working
- Foundational understanding of statsistics and machine learning
- Programming skills, e.g. Python

Language

English/German

If you are interested, please send me a grade sheet with your CV!

Niklas Krauss| ✉ niklas.krauss@tum.de | ✆ +49 172 1736882