Student for Software Development and Machine Learning for Scenario-based Testing in Autonomous Driving (AD)

Traffic scenarios and situations that are especially critical and/or occur only very rarely in the real world are of particular interest for the development and verification of autonomous vehicles. An essential part of my research is to extract such scenarios automatically from data sets as a first step and generate them synthetically as a next step, using ML methods. For the implementation of this, I am currently looking for a tech-savvy student (m/f/d) to support me (up to 40 hours / month).

Tasks

- Implementation of object detection methods on different AD datasets
- Implementation of conversion between object lists and a graphical scenario representation
- Implementation of algorithms to extract relevant scenarios from heterogeneous sensor data
- Integration of simulation environments (esp. CARLA) with our own AD stack and / or open-source stack like Auto-ware or openPilot
- Support in design and implementation of Graph Neural Network (GNN)-based methods for representation, clustering and generation of scenarios

What we expect:

- Very good knowledge and experience in Python
- Knowledge in the field of machine learning, especially Deep Learning
- Experience in the use of PyTorch and / or TensorFlow
- Basic Linux knowledge and experience
- Willingness and ability to acquire new technical knowledge and read scientific papers

Required documents:

- Cover letter (3-4 sentences)
- Brief CV (max. 2 pages)
- Excerpt of latest academic achievements

Please email applications to muetsch@kit.edu.

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