Deep Learning World Models with Latent States for Autonomous Driving

Bachelor / Master Thesis

The Topic

• You will perform state-of-the-art research on current world models with latent state representations
• Based on the CARLA simulation engine, you will train a world model that included a reconstruction error based on a 3D voxel representation of the world
• You will evaluate its performance based on available sensor data from camera and lidar. Reconstruction and prediction errors will be your metrics of choice
• You will create appealing image and video visualizations

Your Skills

• You study Computer Science or a related course of study
• You are deeply interested in topics such as Autonomous Driving, Robotics, Deep Learning or Computer Vision
• You are able to read and write scientific texts in English
• You are fluid in Python, first experiences with PyTorch
• You show an above-average degree of initiative and commitment as well as a thorough way of working

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, bi-weekly student group meetings, monthly 1:1 strategy meetings
• Collaboration with other students to get tips, learn together, and fix issues quickly
• High-quality theses will be published on KITopen, with the code on GitHub
• We aim to publish this work in an IEEE paper with shared first authorship

Application

• Start: Immediately
• Shoot me an e-mail at daniel.bogdoll@kit.edu with your CV, grades, and a few sentences why you are interested. No cover letter necessary 😊