

## Master Thesis/ Masterarbeit



### **Digital-twin-based driving environment modeling for the virtual test of automated driving systems**

The research focus of the Automated Driving Systems (ADS) test is gradually shifted from inefficient, expensive real road tests to efficient, economical scenario-based tests. One of the core challenges of scenario-based tests lies in how to reconstruct the real scenario in the simulator e.g., CarMaker. The target of this thesis is to develop a pipeline that is able to automatically model road networks and buildings of the test site based on the ground truth of the LiDAR perception system.

#### **Tasks:**

- Post-process LiDAR data to get ground truth using an available tool.
- Extract the geometry of road networks from the ground truth of LiDAR perception system.
- Programming a Python script to construct OpenDRIVE-based road networks using the extracted geometry.
- Modeling 3D buildings based on OpenStreetMap and LiDAR point cloud.
- Validate results in the simulator e.g., CarMaker.

#### **Requirements:**

- Basic knowledge of Python or MATLAB
- Self-motivated and highly reliable

**Duration:** 6 months  
**Begin:** As soon as possible

An expense allowance is offered for the completion of the master's thesis.

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