Developing and Testing a Vehicular AI Agent

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Motivation: Exploring Interactions

- **Develop** an AI agent that can interact and communicate with drivers in real-time
- **Test** AI Agent by creating realistic simulation environments using the CARLA Simulator to replicate real-world traffic scenarios
What is CARLA?

- An open-source platform for autonomous driving and research development that uses Python.

- Supports various sensors and enables interaction with the simulation programmatically.
Carla PazNet
Depth

Instance Segmentation

RGB

Semantic Segmentation

Sensor Data
Scenario Runner
Town 12

- Vast map that spans 10x10 km² (compared to the standard map which was 1.2 km²).
- Consists of various sections such as a downtown area, farmland, woods, city, suburbs, and highways.
- Great to run larger experiments.
- Obstacles:
  - FPS
  - Storage
Map, Route, and Voice Agent Demonstration
Data Collection

- Question: How do we decide what is a “good” run or not?

- Need to collect two types of data: Voice agent vs. no voice agent
Results

Without voice agent

With voice agent
Future Plans

- Loading the Town-12 and having more scenarios in it for large-scale testing with the help of better hardware support.

- Integrating the Carla PazNet model and training the model using the data collected from scenarios.
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