Master Thesis
Comparing Different Representations For Reinforcement Learning For Automated Vehicles

Reinforcement learning (RL) opens the possibility to learn optimal action strategies by interacting with the environment. A major influence on the success of an approach depends on how the state and actions are represented from which the RL agent learns its strategy. Choosing the optimal lane choice, acceleration and steering angle or other maneuver representations are common in the context of automated driving.

The goal of this work is to compare different representations for an RL agent to learn human-like driving strategies in the context of automated driving. Aspects of a well-chosen representation allow for efficient training (low number of interactions) and the possibility to transfer the learned strategy from simulation to a real experimental vehicle.

The proposed thesis consists of the following parts:
+ Literature research about reinforcement learning in the context of automated driving.
+ Compare different approaches to represent state and actions for a RL-Agent.
+ Implement a motion planner for automated driving using reinforcement learning.
+ Evaluate the implemented methods


I am happy to answer questions you might have. Feel free to ask for an appointment or directly ask at my office!