

Master Thesis / Bachelor Thesis (2019)

Integrating Kinematics and Environment Context Into Deep Inverse Reinforcement Learning for Predicting Off-Road Vehicle Trajectories



There is a paper with the same title as this proposal written by Yanfu Zhang (Yamaha Motor Co. Ltd.), Wenshan Wang (Carnegie Mellon University), Rogerio Bonatti (Carnegie Mellon University), Daniel Maturana (Carnegie Mellon University) and Sebastian Scherer (Carnegie Mellon University).

The paper proposed a two-stage neural network architecture that considers motion and environment together to recover the reward function. The first-stage network learns feature representations of the environment using low-level LiDAR statistics and the second-stage network combines those learned features with kinematics data.

The software is available at <https://github.com/yfzhang/vehicle-motion-forecasting> and the thesis goal is to adapt the first-stage network to learn feature representation of the environment using multi-layer gridmaps and HD maps.

We are happy to answer questions regarding the topic, reference literature or alternative topics. In this case please contact the supervisor below for further information.

Requirements: Knowledge of Python or C++
Knowledge of Machine Learning methods
Independent, diligent and structured way of working

Keywords: Inverse reinforcement learning, deep learning

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