

Master Thesis / Semester Thesis

Comprehensive Evaluation Approach for Selecting Optimal Driving Behaviors in Mixed Traffic for Autonomous Vehicles

The ongoing development of autonomous vehicles (AVs) requires their proper integration into traffic environments dominated by human drivers, resulting in so-called mixed traffic. To operate effectively, AVs must adopt “human-like” interactions with surrounding drivers for smoother, safer transitions. This study aims to present an evaluation framework to identify optimal driving behavior. It enables AVs to learn desirable behaviors and achieve more harmonious coexistence with human drivers on shared roads.

Tasks:

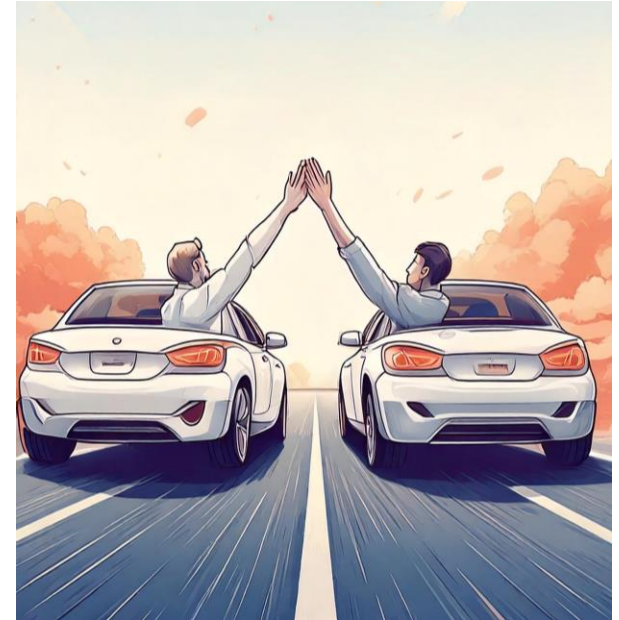
- Literature review: evaluation methods (GRA, FCE, TOPSIS...), driving behavior recognition and classification, interaction event detection
- Design algorithms to automatically detect and classify driver interaction events
- Develop a multi-dimensional evaluation framework assessing safety, efficiency, comfort, and adaptability in driver interactions
- Extraction and analysis of optimal driving trajectories

Requirements:

- Basic knowledge in the field of automated driving and algorithms
- Good programming experience (Python)
- High level of engagement
- Passion for challenges, problem-solving skills
- Scientific, structured, and intuitive working strategies

Begin of the thesis: Immediately

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