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Bachelorarbeit, Masterarbeit

Parameter Optimization of a Discrete Event System

Motivation

Automated vehicles are becoming increasingly important in road traffic. For reliable integration into existing traffic systems, it is crucial not only to model the individual behavior of individual vehicles, but also to understand their effects on the overall traffic flow. Discrete-event decision models, which are based on the occurrence of clearly defined events, offer a promising basis for controlling automated vehicles. However, due to the numerous parameters in the decision model, it is sometimes difficult to choose the parameters that are optimal and yet generally valid.
Automatic optimization according to specific optimization goals is therefore necessary in order to be able to optimize the complex and interwoven system in a targeted manner. The aim is therefore to first analyze the system effects of the individual discrete-event decision logics for the respective scenarios and then carry out a joint optimization of the model's parameters.

Task

The aim of this thesis is to investigate how a joint optimization of the numerous parameter values of the discrete-event decision model can be carried out. In particular, the focus is on the interaction between different parameters and their effect on the overall process.
The tasks include:
- Research into the optimization of discrete-event systems
- Analysis and evaluation of the existing discrete-event decision model
- Development of suitable optimization methods for the overall model
- Implementation of the optimization and execution of runs with different scenarios
- Evaluation of the results achieved
- Documentation and classification of the results

Prior knowledge

– Basic knowledge of signal processing and optimization
– Programming skills in Python
– Enjoyment of scientific work

Forschungsgebiet

– automated driving
– signal processing
– discrete event systems

Studiengang

[X] Elektro- und Informationstechnik
[X] Informatik

Ausrichtung

[X] Entwicklung
[X] Optimierung
[X] Implementierung
[ ] Recherche

Start

Ab sofort

Links

Forschungsprojekt
Mitarbeiter

Ansprechpartner

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