

Masterarbeit

Multi-objective Optimization of Mode Transition Process in HEV Based on Doe and Evolutionary Algorithm

Motivation: As shown in Fig. 1, in order to improve the efficiency and shorten the co-optimization time of multi-objective optimization of mode transition process in hybrid electric vehicle (HEV), an appropriate polynomial model should be developed to replace the co-simulation platform based on the design of experiment (Doe). Evolutionary algorithm will be implemented further to improve the riding comfort based on Doe during the mode transition process.

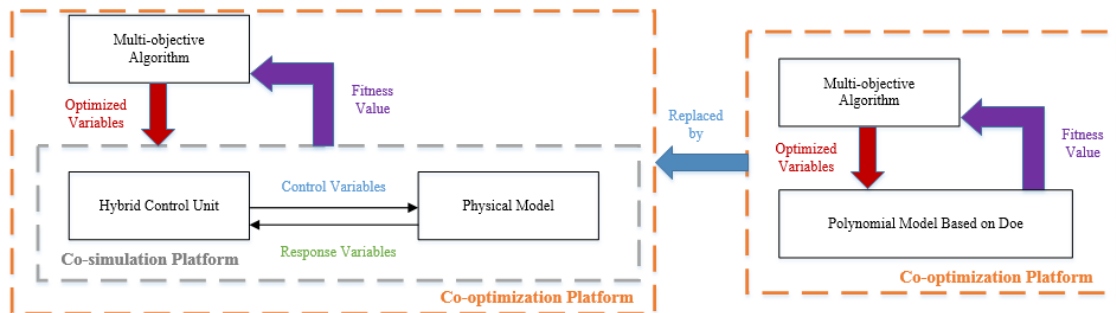


Abbildung 1: Idea of Multi-objective Optimization of Mode Transition Process in HEV Based on Doe and Evolutionary Algorithm

Aufgabe: After the literature review of mode transition process in HEV and Doe, the data used for building the polynomial model should be generated by selecting the appropriate test points based on Doe and the current co-simulation platform. Then the key parameters of the generated polynomial model should be studied by comparing the fitting performance. In the end the mode transition process should be optimized by evolutionary algorithm.

Zusammenfassung:

- mode transition process in HEV and evolutionary algorithm
- Master of knowledge of Doe
- Generation of the appropriate polynomial model instead of co-simulation platform
- Comparison the key parameters of polynomial model by comparing the fitting performance
- Multi-objective optimization of mode transition process in HEV based on evolutionary algorithm
- Documentation und presentation of work

Voraussetzungen: Software: MATLAB/Simulink, Doe

Knowledge: mode transition process in HEV, multi-objective optimization algorithm

Betreuer: M.sc. Dengfeng Shen
dengfeng.shen@tu-berlin.de