

Master's thesis: Data analysis and modelling of representative usage patterns for the design of vehicle components

Tasks:

Innovative methods of virtual load derivation are increasingly being used in the development of vehicle systems and components. This leads to realistic load requirements at an early stage of development and contributes to targeted and accelerated product development. One challenge in the simulation of vehicle loads is to determine realistic usage patterns and application scenarios for vehicles.

- The aim of the work is therefore to develop a comprehensive statistical framework for deriving and analysing characteristic and representative usage patterns of vehicles. The focus is on the development and application of methods from completeness analysis, representativeness heuristics and non-parametric statistics.
- You develop and test methods of completeness analysis, representativeness heuristics and non-parametric statistics to build models to derive characteristic usage patterns.
- Using defined validation metrics, you compare and evaluate your models and describe their impact on virtual load derivation.

Profile:

- **Education:** Master's degree in mathematics, computer science, physics, statistics, data science, econometrics or comparable
- **Experience and know-how:** advanced knowledge of data analytical methods (especially qualitative methods) and/or mathematical statistics, data mining; ideally experience with Python
- **Personality and working style:** you communicate openly and clearly, find solutions independently and plan tasks systematically, always taking responsibility for your results
- **Languages:** fluent in English (knowledge in German is a plus)

Information:

- **Start:** after consultation
- **Duration:** 6 months
- **Prerequisite:** enrolment at a university. Please enclose your CV, your current transcript of records, the examination regulations and, if applicable, a valid work and residence permit with your application.

Contact:

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- **Further Information:** [Link](#)