



The Teaching and Research Area for Mechatronics in Mobile Propulsion is located between the domains of mechanical and electrical drive components as well as control algorithms. Under the guidance of Professor Jakob Andert, the institute researches innovative, environmentally friendly vehicle drives and particularly emphasizes electrification and simulation-based development methods.

The automotive sector is currently undergoing a major transformation that is in particular affecting the drive technology. Electrification is gaining enormous relevance as one of the key technologies to reduce or avoid emissions. Regardless of the specific technology, a steadily increasing complexity of both the hardware and the associated control algorithms is leading to the evolution of modern drives towards software-intensive, embedded mechatronic systems.

## Bachelor / Master Thesis

**Start: from now**

- ☒ Faculty 1 - Mathematics, Computer Science and Natural Sciences
- ☒ Faculty 4 - Mechanical Engineering
- ☒ Faculty 6 - Electrical Engineering and Information Technology

### Automated Machine Learning for Control Oriented Model Identification

Machine learning (ML) approaches have been successfully used for chaotic systems, which often pose challenges for control and modeling. Data pre- and postprocessing as well as training hyperparameter identification are iterative and time-consuming processes, where Automated ML (AutoML) is a great opportunity for acceleration and simplification.

Your tasks:

- Analysis of existing networks and training scripts
- Development of an AutoML algorithm for ML based model identification
- Literature research of the above-mentioned topics

Your competences:

- Knowledge in Python and/or MATLAB
- Knowledge in Machine Learning is beneficial.

Your benefits:

- Experience with cutting edge open source ML tools
- International, interdisciplinary research project
- Potential publication opportunities

