

Student Assistant

8-12 hours/week

Project Description: InnOpTEM

Transmission system planning faces uncertainties due to the rise in supply-dependent plants. Operators use time-phased processes and computer-aided optimization to ensure system security. Within this project, we integrate and optimize switching state changes and redispatch measures through mathematical optimization, heuristics, and artificial intelligence methods. The Chair of Operations Research focuses on developing mathematical solutions for topology optimization in a network operation optimization framework.

This is a joint project with Gurobi, Amprion, the IAEW at RWTH and the FGH, and funded by the Federal Ministry for Economic Affairs and Climate Action.

Job Description

Within this project, we currently have multiple tasks available:

- Generate new test instances based on few existing ones applying statistical measures, graph-based machine learning algorithms, etc.
- Extend our optimization-based big-M tightening and evaluate it empirically.
- Implement new and use already implemented heuristics for transmission line switching to evaluate the impact on optimality empirically.

We expect self-initiative to code, fix bugs and evaluate your implementation. If done well, each of the above could lead to a publication. As follow-up, a master thesis with us is a good opportunity to deepen your knowledge without the hassle of getting used to the code base.

Qualifications

- Currently enrolled as a master's student in Computer Science or a related field.
- Proficient in at least one programming language such as Julia, Python, or similar.
- Proficient with Git and basic shell knowledge.
- Preferred: OR2 or/and CGBP done, or enrolled.

How to apply

Interested students are encouraged to submit their transcript of records and a brief motivation explaining their interest in the position to Tim Donkiewicz and Oliver Gaul via hiwis-wanted@or.rwth-aachen.de. The deadline for applications is **15.04.2025**.