RWTH AACHEN UNIVERSITY

E.ON Energy Research Center
ACS | Institute for Automation of Complex Power Systems

HiWi job position
(Studentische Hilfskraft)

Support to the "Modeling and Simulation of Complex Power System" course

Your profile:

We are looking for a student assistant to support the "Modeling and Simulation of Complex Power Systems" course with the following qualifications:

- RWTH student of Electrical Engineering (but students coming from other RWTH faculties are welcome to apply)
- Above-average academic performance
- Quick comprehension, self-reliable and structured way of working
- General knowledge of basic statistical concepts (e.g., variance, probability density function, regression)
- Programming knowledge (MatLab or Python) is desirable
- General knowledge of power flow study tools (e.g., MatPower, Pandapower) is a plus

Your tasks:

Refinement of some parts of the teaching material offer so far available for the "Modeling and Simulation of Complex Power Systems" course. In particular, potential tasks you might be asked to work on are (in order of priority):

- Support in the preparation of a ready-to-use didactic tutorial for running Sensitivity Analysis of a simple power system use case (e.g., small electrical grid with distributed generation and load, implementing a simple voltage control or state-estimation algorithm) by using state-of-the-art Global Sensitivity Analysis techniques (e.g., variance-based methods coupled with statistical Design of Experiments, [1]). The tutorial is expected to include also the creation of a simple Graphical User Interface for the students' interactivity and/or the usage of Jupiter Notebook interfaced with DPSim.
- Deepening of the "Simulation under uncertainty" topic: addition of further examples regarding Monte Carlo methods and intrusive / non-intrusive methods for solving Polynomial Chaos Expansions (PCE); elaboration of simple applications of PCE on analytical functions as well as on exemplary networks with parameters' uncertainty.

- Deepening of the “Numerical Integration methods” topic, by elaborating simple examples and applications (Euler Forward – Backward - Trapezoidal rule, Gaussian quadrature etc.)

Our offer:

The position is to be filled as soon as possible and is limited to 3 months, with possibility of extension up to 6 months based on the student assistant’s performance.
The regular weekly working time is 12 hours.

Notes:

The supervision will be done in English.

If you are interested in the advertised position, please send your application documents including motivation letter, CV and current grades.

References:

[1] Becker William and Saltelli Andrea (2015). Design for Sensitivity Analysis (available at: https://www.researchgate.net/publication/301647251_Design_for_Sensitivity_Analysis).

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