

Student Assistant Job (HiWi)

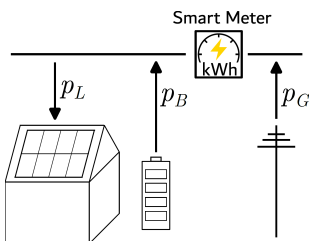
Coding Assistant for Battery Scheduling Simulations

The growing integration of distributed renewable energy sources introduces a variety of challenges to power systems worldwide. Battery storage systems play a key role in addressing these challenges. With the growing deployment of residential photovoltaics specifically, battery systems are increasingly being installed in private households to enhance self-consumption and minimize electricity costs. However, the specifics on how to operate the battery system in an optimal way are not always straightforward.

For this job offer, we want to investigate **single-family houses** featuring a **PV** (Photovoltaic) and a **battery system**. The main question revolves around how to charge/discharge the battery system to achieve specific goals (e.g., to minimize electricity bill, maximize grid-friendliness, ...). For that, we want to use Machine-Learning based forecasts to perform simulations of multiple real-world buildings and investigate different battery scheduling approaches. See [1] for our preliminary results, on which your work would be based on.

Your first tasks include:

- Familiarization with related works
- Rerun previous optimization processes for familiarization/comparison
- Run new simulations and perform evaluations
- Develop/Code new battery scheduling approaches
- Integrate your own ideas



Working conditions:

- Minimum of 43 hours per month
- Flexible working hours
- Fully remote possible

This sounds interesting? Then get in touch! We are happy to answer any questions you might have. Feel free to ask for an appointment, just write us a mail or give us a call.

References

[1] Averaging favors MPC: How typical evaluation setups overstate MPC performance for residential battery scheduling - <https://arxiv.org/abs/2510.25373>

Advisor:

Janik Pinter
Frederik Zahn

Programming language:

Python

Required skills:

- Basic Python programming skills necessary
- Basic knowledge about optimization is advantageous
- Basic knowledge about energy systems is advantageous
- Enrolled in computer science, mechanical/industrial/electrical engineering or something similar

Languages:

German or English

Starting date:

As soon as possible

For more information, please

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