



FACULTY MENTOR

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PROJECT TITLE

Learning to Run a Power Network in a Sustainable World

PROJECT DESCRIPTION

Reliable power supply plays a central economical and societal role in the society. Currently, the power grid is mainly run by human operators to balance the generation and demand at all times. However, with the increasing of renewable energy and its inherent intermittencies, the task of controlling the grid is becoming increasingly challenging. The recent development of artificial intelligence (AI) can be a game-changer towards operating complex power system in real-time. This project is inspired by the recent NeurIPS 2020 L2RPN Challenge: <https://l2rpn.chalearn.org/>, where reinforcement learning (RL) showed initial success in this task.

In this SRIP position, students will be engaged in 1) replicating the state-of-the-art reinforcement learning for power grid management papers (developing with Python and popular machine learning platforms such as Tensorflow/Pytorch) 2) identifying with PI opportunities to improve upon the RL algorithm robustness and adaptability with real-world power grid operating data and varying renewable generation profiles. Students will get hands-on experience with reinforcement learning and how to build actual projects using RL algorithms, that will make an impact for a sustainable future.

This project can accommodate both remote and in-person students

INTERNS NEEDED

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PREREQUISITES

1. Proficient with coding in Python
2. Courses in machine learning or reinforcement learning
3. (Optional but desirable) Know basics about power system operation