



MSc thesis: ML for Solving Energy Generation Planning and Scheduling Problems (f/m/d)

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Energy generation planning and scheduling tasks are routinely solved today for safe and efficient operation of the power grid. In the future, as the energy transition progresses, they will further increase in importance and difficulty, mainly because of three drivers: The number of generation units is significantly increasing, generation is becoming more volatile, and transmission and distribution grids are operated closer to their physical limits. Mathematically, generation scheduling problems are formulated as Mixed Integer Programs, including the relevant constraints on energy generation and consumption as well as its transportation. Since Mixed Integer Programs are hard (NP-hard) to solve, new approaches are necessary to cope with their increasing complexity and size.

Our flexible work practices help you optimize personal and business performance while creating an environment where all employees can develop their skills and grow.

Your responsibilities

This Master thesis project is going to explore new approaches for solving generation scheduling, based on the Python library ECOLÉ (<https://www.ecole.ai>) designed for integrating Machine Learning into discrete optimization. The project is part of a collaboration between ETH Zürich, the Canadian research institute IVADO, and Hitachi Energy. It will be hosted on the Hitachi Energy campus in Baden-Dättwil.

Your background

Currently setting up his/her M.Sc. thesis in computer science, electrical engineering, physics, mathematics, or a related field

Experience with Machine Learning and Python Preferably experience with state-of-the-art Deep Learning frameworks (e.g. PyTorch, PyTorch Geometric)

Preferably experience with Mixed Integer Programming

Passionate about algorithms
Strong drive to produce results on a challenging task
Proficiency in English
Team player with hands-on mentality

More about us

Hitachi Energy is a global technology leader that is advancing a sustainable energy future for all. We serve customers in the utility, industry and infrastructure sectors with innovative solutions and services across the value chain. Together with customers and partners, we pioneer technologies and enable the digital transformation required to accelerate the energy transition towards a carbon-neutral future. We are advancing the world's energy system to become more sustainable, flexible and secure whilst balancing social, environmental and economic value. Hitachi Energy has a proven track record and unparalleled installed base in more than 140 countries. Headquartered in Switzerland, we employ around 38,000 people in 90 countries and generate business volumes of approximately \$10 billion USD. www.hitachienergy.com

Interested in joining our team? If so, we look forward to receiving your full application (motivation letter, CV, references) only via our online careers tool.

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Talent Acquisition

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