

Education

University of Oxford, PhD in Engineering Science 10/2020 - 3/2024

Thesis: Energy storage sizing, placement, and operation in hybrid renewable systems to minimize system cost.

University of Oxford, MSc in Energy Systems 10/2019 - 9/2020

Dissertation: Sizing lithium battery and solar photovoltaic to reduce the levelized cost of electricity in microgrids.

University of Toronto, BSc in Civil Engineering 9/2014 - 5/2019

Capstone Project: Design of a low-energy home with roof-top solar generation.

Experience

Teaching Assistant, University of Oxford 1/2021 - 3/2023

- Enhanced Oxford Masters students' knowledge on energy storage and renewable energy by teaching optimal storage sizing and placement, and storage design for solar and wind energy utilization.
- Assisted professors and guest speakers in both in-person and online lecture delivery. Provided guidance to student assignments. Managed the course webpage for course material distribution and lecture recording.

Research Assistant, University of Oxford 5 - 8/2022

- Optimized storage sizing and placement to maximize storage utilization when coupled with solar and wind generation, while accounting for storage efficiency, energy limits, power limits, and system losses.
- The novel optimization method operates without requiring storage costs, which stands in contrast to other methods, where errors in storage cost estimates can lead to inaccuracies in storage sizing and placement.

Energy Analyst, EcoSync 5 - 7/2021

- Created a real-time online tracking system for room-by-room monitoring of heating energy expenditure, carbon emissions, and heat loss by developing and implementing the physical models on servers using Node.js.

Energy Analyst, Energy Systems Catapult 2 - 3/2021

- Modelled electricity demand for the purpose of optimizing battery storage schedules to reduce peak demand, using machine learning techniques such as gradient boosting regression and recurrent neural networks.

Engineering and Project Management Assistant, TC Energy 5/2017 - 8/2018

- Streamlined engineering drawing process and improved drawing accuracy, saving 200 hours annually, by semi-automating the mapping of corrosion prevention devices according to placement designs using VBA.
- Enabled project managers to facilitate concurrent progression in constructions and permit applications across hundreds of sites, by creating an automated tracker that monitors permit status and construction schedules.
- Designed a unified search platform to efficiently manage the documentations for changes in project scope, schedule, and cost for corrosion prevention projects across Canada.

Skills

Software: Python, C, VBA, Microsoft Office.

Visualization: matplotlib, AutoCAD, SketchUp.

Renewables: Generation model, Capacity sizing.

Machine Learning: Tensorflow, RNN, Regression.

Optimization: Gurobi, Genetic algorithm, Particle swarm.

Storage: Capacity sizing, Site placement, Operation strategy.

Power System: Load flow analysis, Optimal power flow.