

# DAN MCCABE

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## EDUCATION

### **M.S. (2021) & Ph.D. (2024), Civil Engineering**

*University of Washington, Seattle, WA*

- NSF Graduate Research Fellow
- 2020 C2SMART Center Student of the Year

### **B.S. (2017), Engineering**

*Harvey Mudd College, Claremont, CA*

- Graduated with distinction
- Dean's List, all semesters

## SKILLS

**Operations Research:** Optimization models (linear, nonlinear, integer, stochastic) and algorithms; commercial and open-source solvers and software (Gurobi, CPLEX, Pyomo); simulation

**Data Science:** Data processing and visualization; inferential data analysis; machine learning

**Software Development:** Python with extensive use of common libraries (e.g., NumPy, Pandas); R; SQL; git and GitHub; web apps; agile development

## EXPERIENCE

### **Research Assistant (2019-2024) | University of Washington | Seattle, WA**

- Developed optimization model for locating battery-electric bus (BEB) charging stations based on standardized GTFS data, balancing charging needs with capital costs.
- Developed optimization model and custom algorithms to schedule daily recharging of BEBs.
- Built data-driven discrete event simulation platform in Python to evaluate performance of the two above models under diverse real-world conditions.
- Built public app (<https://bit.ly/zebra-app>) to aid transit agencies with electrification planning.

### **Research Associate (2017-2019) | Pacific Northwest National Laboratory | Seattle, WA**

- Implemented and solved nonlinear optimization model for airport security resource allocation using Python.
- Implemented “virtual battery” model of residential building demand response for GridPIQ (<https://gridpiq.pnnl.gov>), a web app for evaluating power systems projects.
- Led conversion of GridPIQ backend from MATLAB to Python and served as scrum master, managing tasks and goals for agile development sprints.

## ADDITIONAL PROJECTS

- Wrote Python software based on Vehicle Routing Problem to automatically design routes for bicyclists distributing groceries from food banks, in partnership with Cascade Bicycle Club. Featured in UW CEE magazine at <https://bit.ly/prp-article>.
- Calculated shortest route to ride all 32 mountain bike trails on Tiger Mountain, WA using a Python implementation of the Windy Rural Postman Problem. Gathered OpenStreetMap data using *osmnx* package; solved with open-source CBC solver and heuristic method.