Connor Brackley

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Python developer | HFE specialist | MAsc Mechanical Engineering

Education

Concordia University — Sept 2020 — Present
Doctor of Philosophy, Building Engineering (Candidate) — *Montreal QC, Canada*

Thesis: Developing Novel Machine Learning Techniques for Fault Detection in Building Operations

My research explored the interactions between users and advanced building systems. I developed data visualizations, analytics platforms, and machine learning algorithms for managing energy in buildings. Supported by mixed-method approaches, my work integrates human-factors research strategies with the development of interactive UX tools to guide design improvements.

Carleton University — Sept 2018 — Aug 2020
Master of Applied Science, Mechanical Engineering — *Ottawa ON, Canada*

Thesis: Communicating HVAC Operation Through a Thermostat Interface: An In-Situ Implementation to Improve Perceived Control and Thermal Comfort in Offices

Available: repository.library.carleton.ca/concern/etds/6m311q22f

Highlighted Software Projects

PhD Projects

Schedule energy estimator for buildings

- This novel, web-based, interactive, data-driven tool estimates the energy usage of equipment schedules in buildings. Users can view their data, estimate savings using change point regression methods and predict the impact of operational changes.
- Backend/frontend Plotly Dash (Python), available: connbrack/Building-Schedule-Estimator

Development and instruction of a machine learning tutorial

- This Jupyter notebook was used for an interactive 2-hour tutorial I developed for Concodia's buildings team to teach the extensive functionality of the scikit-learn machine learning toolkit in Python.
- Developed in Python, available: connbrack/IBCL_sklearn_tutorial

Personal Projects

Flex App

- This web app searches for car-share cars within a radius and books them if found. This was achieved by reverse engineering the car-share's website backend to understand the required requests to search for cars and make bookings.
- Back end: Python's Flask, Front end: HTML, Available: connbrack/flex-app

TTSclip

- This Linux app grabs clipboard text and reads it using AWS Polly. It includes several quality-of-life options. This project includes a make file and install script for Debian-based systems.
- Develped in bash, packaged using apt, Available: connbrack/ttsclip

More projects can be viewed at connbrack.com/portfolio/

Relevant Experience

Research Assistant Sept 2018 — Present

Carleton / Concordia University (Masters / PhD) *Ottawa / Montreal Canada*

- Developed PhD project by establishing research gaps and defended knowledge base in front of a committee of my peers.
- Met monthly with industry partners to understand needs and deliver novel data analytic dashboards for energy management.
- Co-led working group through a 2-year project with a team of over 10 international researchers as part of an International Energy Agency EBC Annex.
- Participated in mentoring two undergrad students during summer projects, as well as incoming grad students.

Teaching Assistant Sept 2018 — Present

Carleton / Concordia University (Masters / PhD) *Ottawa / Montreal Canada*

- Developed content for and instructed weekly tutorials, encouraged collaborative work, and collaborated with fellow TAs to develop content.
- Prepared and ran weekly labs, marked and provided detailed feedback to students, and fielded course questions through email.

Engineering Co-op Fluids Support Systems May 2015 — Aug 2016

MDS Aero Corporation *Ottawa, Canada*

- Designed high-pressure oil and other fluid systems for gas turbine engine test cells, by coordinating designs with multidisciplinary project teams.

Highlighted Publications

Data-driven evaluations of building operational settings: Lessons learned from the development of a user-focused tool. *Brackley, C., Ouf, M. M., O'Brien, W. 2021. 12th eSim Building Simulation Conference*

- Published: publications.ibpsa.org/proceedings/esim/2022/papers/esim2022_240.pdf

The in-situ implementation of a feature-rich thermostat: A building engineering and human factors approach to improve perceived control in offices. *Brackley, C., O'Brien, W., Trudel, C. and Bursill, J., 2021. Building and Environment*

- Published: doi.org/10.1016/j.buildenv.2021.107884

A review of select human-building interfaces and their relationship to human behavior, energy use and occupant comfort. *Day, J., McIlvennie, C., Brackley C., and 17 others, 2020. Building and Environment*

- Published: https://doi.org/10.1016/j.buildenv.2020.106920

Full list of publications: Google scholar: Connor Brackley

Programming Skills

Python Flask, SQLAlchemy, Scikit-Learn, PyTorch, Numpy, Pandas, Matplotlib, Plotly, Dash, Anaconda

Web JavaScript, HTML, CSS, Nodejs, Svelte, Electron, Chart.js

Linux Package Management [Apt, Nix, Snap], Bash Scripts, Daily use

Other Git, Github, SQL, Latex, Vim