

SKILLSET

Software/Engineering

- **Optimization** · Pyomo, Cbc, GLPK
- **Python** · Pandas, NumPy, SciPy, Plotly/Dash, Kedro, SQLAlchemy
- Basic Java
- Basic Go
- MATLAB/Simulink and Optimization Toolbox
- Git
- Linux
- Docker
- Relational databases (PostgreSQL) and ORMs
- Grafana

Control Systems

- Modern optimal and digital control
- Modeling and simulation

Electrical Systems

- Power and signal electronics analysis
- Digital design
- Microcontrollers and single-board computers
- Real-time systems

WHAT I'M GREAT AT

- End-to-end problem solving, from conception to deployment
- Creating reusable, well-documented software
- Considering all aspects of a problem, from technical to green energy implications

EXPERIENCE

Optimization Engineer <i>BluWave~ai</i>	2024 – Present Ottawa, ON
<ul style="list-style-type: none">• Developed, deployed, and maintained an optimization service that performs city-wide demand response by controlling grid-scale batteries and hundreds of EVs, for an ongoing EV Everywhere program with Hydro Ottawa<ul style="list-style-type: none">• Created an algorithm that controls EVs' charging to consume power when the energy mix is sufficiently green• Developed and deployed an optimizer that sends timely and helpful charging site recommendations to Dubai Taxi EV drivers<ul style="list-style-type: none">• Created a real-time simulator of EV taxi fleet operations, showcased at COP28, which helped to progress the pilot project with Dubai Taxi to the next stage• Developed and deployed prototype optimizers of electric bus charging operations for multiple transit agencies in simulation<ul style="list-style-type: none">• Created optimization models for peak-shaving and energy cost minimization in a model predictive control scheme, used in a simulation study for Ontario's 11 Roxborough school bus depots• Developed software to smooth the power input to a solar-powered hydrogen generation and storage system, thereby extending its lifespan• Created a library used by multiple projects for testing smart grid control software in a variety of simulated environments.• Created, evaluated, and deployed an estimator of peak power consumption to improve the accuracy of a predictor pipeline for Mumbai's city load• Completed a 10-megawatt peak-shaving study for the city of St. John's• Co-inventor on three patent applications for BluWave's EV Fleet Orchestrator system• Co-inventor on a patent application for the real-time, data-driven minimization of cost and greenhouse gas emissions with EV charging stations	
Systems Engineering Co-op <i>Jastram Engineering</i>	Sep – Dec 2020 Vancouver, BC
<ul style="list-style-type: none">• For steering systems on naval frigates:<ul style="list-style-type: none">• Developed documentation for security, safety, risk management, and failure analysis• Verified conformance of electrical systems to NATO standardization agreement• Successfully performed vibration analysis for hydraulic power units in Python	

KEEGAN GREEN

MOTIVATED · ADAPTABLE · DEPENDABLE

EDUCATION

BASc Mechatronic Systems Engineering

Simon Fraser University

2016 – 2021

Vancouver, BC

- 3.67 CGPA; President's Honour Roll, three-time Dean's Honour Roll
- 4.33 GPA in statistics and engineering optimization courses

PROJECTS

Simulation of Mid-Air Refueling of a Hydrogen-Powered Airliner

July 2023 – Present

- Design and [feasibility study](#) determining how to refuel a sustainably-powered commercial airliner
- Developed a [3D computer simulation](#) of mid-air refueling by AT200 cargo UAVs
- Created a flight controller [UI mockup](#)

SignalPerfect Python library for signal resampling

July – Dec 2024

- Derived a special class of quadratic spline for resampling time series data
- Used a number of [linear algebra computing strategies](#) to reduce complexity from $O(n^3)$ to $O(n)$

Series About Energy, Renewables, and Climate Change

2022 – Present

- A series of web postings of interesting, significant, and actionable facts and pieces of information about energy, renewables, and fighting climate change

Cluedo Game Simulator and AI Assistant

Feb – Mar 2023

- Wrote software guaranteed to beat human players at Cluedo by solving the game as a Boolean satisfiability problem
- Made an interactive player dashboard to visualize artifacted game and simulation results

IoT Integration of a Hydroponic Farm

Sep 2022 – Jan 2023

- Created IoT dashboard and Python-based interface for remote monitoring and control
- Developed farm process model for minimizing consumption of energy and resources
- Completed first phase on-time to successfully control farm across Canada

Energy Yield Model of a Gas Turbine

Jan – Feb 2021

- Performed statistical analysis and trained machine learning models on sensor data
- Verified, visualized, and reported model performances

Model of Fuel Cell EV Air Supply System for Optimization

Mar – May 2020

- Identified potential for optimization among car manufacturers
- Defined empirical relationship between fuel cell membrane humidity and performance
- Numerically modeled turbo compressor to feed fuel cell oxygen

Optimization of a Telescopic Handler Mechanism

Mar – Apr 2020

- Applications in structural engineering and robotics
- Verified and visualized solution to 1000-variable optimization problem obtained using tuned gradient-based and genetic algorithms