(778) 237-5533
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Ottawa, Canada

KEEGAN GREEN

MOTIVATED · ADAPTABLE · DEPENDABLE

SKILLSET

Languages

- Python
- Go
- Typescript and basic React
- Basic Rust
- Basic Java

Technologies

- OpenAPI
- Relational databases (PostgreSQL) and ORMs
- Docker
- CI/CD
- Linux
- Git
- Grafana

Control Systems

- Optimization
- Modern optimal and digital control
- Modeling and simulation

WHERE I EXCEL

- Showing initiative in end-to-end problem solving, from conception to deployment
- Creating reusable, well-tested, and fast software
- Considering all aspects of a problem, from technical to green energy implications

EXPERIENCE

Optimization Engineer 2022 – Present
BluWave~ai Ottawa, Canada

- Created and maintained a scalable optimization service that aggregates grid-scale batteries and hundreds of EVs into a virtual power plant for load curtailment
  - Designed and implemented rulesets that collaborate with EV owners and local utilities to reduce strain on the electrical grid, as part of the company's flagship product
  - Incorporated an algorithm that pauses and resumes EV charging to consume power when the energy mix is green, subject to users' flexible schedules and desired battery levels
  - Integrated with APIs and data sources to aid automated decision-making, with graceful fallback strategies for API downtime or missing data
- Created a high-performance and flexible service for simulating electrical devices, user behaviors, and how they all interact in the grid and electricity market
  - By enabling controllable EVs and grid-scale batteries to be simulated on demand via API, developers and QA engineers are empowered to test asset control software in a sandbox and play out hypothetical scenarios, building confidence in the software's performance
- Collaboratively developed and deployed a cloud service that sends timely and helpful charging station recommendations to EV taxi drivers based on location and battery level
  - Helped progress the pilot project with the taxi company to the next stage by creating a real-time simulator of EV taxi fleet operations, showcased at COP28
- Developed and deployed prototype optimizers of electric bus charging operations for multiple transit agencies in simulation
  - Formulated optimization models for peak-shaving and energy cost minimization in a model predictive control scheme, used in a simulation study for many local school bus depots
- Developed and deployed software to optimally control a solar-powered hydrogen production and storage system, extending its component lifespan while generating electricity from green hydrogen at high-demand times
- Co-inventor on five patents, including for the real-time, data-driven minimization of cost and greenhouse gas emissions with EV charging stations

Systems Engineering Co-op Sep – Dec 2020
Jastram Engineering Vancouver, Canada

- For steering systems on naval frigates:
  - Developed documentation for security, safety, risk management, and failure analysis
  - Verified conformance of electrical systems to NATO standards
  - Successfully performed vibration analysis for hydraulic power units in Python

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EDUCATION

BASc Mechatronic Systems Engineering 2016 – 2021
Simon Fraser University Vancouver, Canada

- 3.67 CGPA; President's Honour Roll, three-time Dean's Honour Roll

PERSONAL PROJECTS

How Phasors Work October 2025 – Present

- A modern electrical engineering book teaching the mathematical models that govern the electrical grid

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

Author of Multiple Python Libraries 2024 – Present

- Applications span signal resampling, Pandas/dataclasses interoperability, and ease of writing explainable, traceable, and auditable Python programs

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 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 game and simulation results

IoT Integration of a Hydroponic Farm 2022 – 2023

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

Energy Yield Model of a Gas Turbine 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 2020

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