Patrick MacKay

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PROFESSIONAL SUMMARY

Electrical Engineer with hands-on experience in automation, system design, and coding. Expertise in C++, Python, energy management systems, and software development. Proven ability to design scalable systems and automate complex processes. Seeking a remote engineering position to leverage my technical skills and contribute to innovative projects.

EDUCATION

- **Bachelor's degree in electrical engineering**
  Dalhousie University
- **DELF Niveau B**
  Bilingual certification for French

TECHNICAL SKILLS

- **Programming Languages:** Python, C, C++, MATLAB, VBA, HTML, CSS
- **Tools & Platforms:** Git, Visual Studio, Excel Macros, MATLAB Simulink, ROS
- **Specialized Knowledge:** Excel automation, mathematical modeling, and simulation

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RELEVANT EXPERIENCE

Engineer in Training | Halifax Regional Centre for Education
Sept – Dec 2022 (Co-op)

- Developed an **automated budgeting program** using **VBA** and **Excel Macros**, reducing manual workload by 30%.
- Designed **solar energy systems** using **MATLAB Simulink** for multiple educational facilities, optimizing configurations for energy efficiency.
- Produced comprehensive **energy reports**, helping schools progress toward net-zero energy consumption.

Engineer in Training | Michelin
Jan – May 2022 (Co-op)

- Created an **auto-stop safety system** for a robotic wind-up process using **C++** and **electrical circuit design**, improving compliance with safety standards.
- Analyzed **conveyor belt motor systems**, providing recommendations to standardize based on system specifications.

RELEVANT PROJECTS

CAN BUS

Dalhousie University, Senior Year Project (2023)

- Created a CAN System for Dalhousie's Formula E race car. This connected the accelerator, brakes, 'gear shift', dashboard, BMS, and acted as the 'brain' of the vehicle. This was done with Raspberry PIs, Arduinos (and Arduino code), Python, and C++.

Python Robot

Dalhousie University (2023)

- Used python to build a robot that received visual cues through a webcam and navigated a series of courses, using 'dead reckoning' and other course planning algorithms.

Mine Detection Robot

Dalhousie University (2022)

- Used C++, Python, ROS to program and deploy an autonomous robot that used LiDAR and sonar to navigate a real-world maze, locate motion-sensitive mines, and then disarmed them with a specific electromagnetic frequency, before removing and storing them in a dedicated zone, while avoiding moving obstacles.

Automated Budgeting Program

Halifax Regional Centre for Education (2022)

- Developed a program to automate budgeting for energy management contracts using **VBA** and advanced Excel features.
- Reduced manual workload by 30% and improved accuracy in financial tracking.

Solar Array Design

Halifax Regional Centre for Education (2022)

- Designed multiple solar energy systems using **MATLAB Simulink** and **CAD software**.
- Optimized system configurations to achieve energy efficiency goals for educational facilities.

Auto-Stop Safety System

Michelin (2022)

- Created an automated safety system for a robotic wind-up process, involving **C++ programming** and electrical circuit design.
- Enhanced safety and compliance with industry standards.

ADDITIONAL EXPERIENCE

Tree Planter, Brusher | Blue Collar Silviculture *May – October 2024 (Seasonal)*

- Best performing rookie with a personal best of 7,050 trees planted in one day on raw B.C. burn land.

Bartender, Server | Morris East *July 2023 – Jan 2024 (part time)*

Scaffolder | Sky Rise Construction *July – Nov 2023, Mar 2024 (Casual)*

Solar Installer | Boomerang Energy *May – August 2023*

General Labourer | Grafton Connor Group *Summer 2020, Summer 2021*

Elections Officer | Dalhousie Undergraduate Engineering Society *Jan – Apr 2021*

- Planned and executed info sessions, campaign meetings, and organized student body elections for the engineering society.

Groundskeeper, The Deanery Project *August 2021 – January 2022*

- Stayed on site for 2 weeks, working part-time and volunteering part-time. Assisted in building a sound studio, creating an art installation, working in permaculture gardens, clearing trails, and winterizing the facility.

EXTRACURRICULAR ACTIVITIES

I have been traveling the world since January, exploring diverse regions including Hawaii, Japan, Thailand, Sri Lanka, India, Turkey, Northern B.C., Vancouver Island, the west coast of the United States, and The Mexican Baja Peninsula. Recently, I completed a motorcycle journey from northern B.C. to the southernmost tip of the Baja peninsula. When I am stationary, I spend a lot of my time being active in assisting local populations experiencing homelessness, volunteering with shelters, building temporary housing, and advocacy.