DAWSON HORVATH

WORK EXPERIENCE

AbCellera Biologics Inc — Mechatronics Engineer
May 2020 - Current

Developing robots to push the boundaries of high-throughput single-cell screening for antibody discovery.

TRIUMF Particle Accelerator — SRF Development Intern
September 2018 - Current

- Led the design and implementation of a UHV induction furnace, enabling doping of niobium superconductors with gas compounds and removal of hydrides. Achieved a 10x improvement in the SRF cavity quench limit.
- Developed an advanced magnetic field controller that integrates a 3-axis fluxgate magnetometer to dynamically adjust electromagnet currents, effectively neutralizing the Earth's ambient magnetic field.
- Contributed to the maintenance and reassembly of cryostats in ultra-clean environments (Class 1000, 100, and 10 cleanrooms), ensuring optimal performance for precision applications.

Streamline Transportation Technology — Fullstack Developer
April 2018 - September 2018

- Designed and implemented a full-stack web application using Node.js and AngularJS, automating previously manual workflows and significantly improving operational efficiency.
- Enhanced the QA automation framework by completing Protractor scripts and extending helper classes, leading to more robust and efficient automated testing processes.
- Collaborated closely with team members to identify and resolve technical challenges in the company's flagship product, ensuring smoother performance and higher reliability.

PROJECTS

1950 Austin A-40 Restoration — Personal
2019-Present

- Overhauling the vehicle with ongoing welding, fabrication, and engine repairs to restore full functionality.
- Utilizing mechanical, electrical, and bodywork expertise to ensure a successful restoration.
- Replacing outdated parts with modern components, including upgrades to suspension, braking systems, and electrical systems for enhanced performance and safety, while maintaining the car's classic aesthetic.

Open Sim2Real Project — Open Source
2022 - Details

- Developed an open-source platform for Sim2Real research featuring a low-cost single-leg physical robot and corresponding simulation.
- Enabled training in both real and simulated environments using the gym framework.
- Provided low-level drivers for the physical robot, gym-os2r simulation, and a real-time backend linking simulation and real components.
- Made Sim2Real research more accessible for research groups transitioning from simulation to real-world applications.

Robot Design Competition — School
2019 - Details

- Worked with a small team to engineer a fully autonomous robot.
- Implemented mechanical and electrical design to develop reliable instruments and robot kinematics.
- Followed a rigorous review process with extensive engineering communication expectations.

Simulated Gazebo Robot — School
2019 - Details

- Simulated an autonomous robot in a Gazebo environment.
- Controlled the robot using machine learning and computer vision techniques to complete a set of tasks.

DIY Electric Skateboard — Personal
2017 - Details

- Designed and prototyped an electric skateboard capable of commuting 20+ km daily at speeds exceeding 30 km/h.
- Engineered a robust powertrain system with optimized battery efficiency for extended reliability.

DIY 3D Printer — Personal
2017 - Details

- Designed and built a Prusa i3 3D printer clone from scratch, reducing production costs to under 300 CAD.
- Conducted extensive research on modern 3D printing technologies to optimize cost-efficiency and reliability.

EDUCATION

B.ASc., Engineering Physics
University of British Columbia
2018 — 2022
GPA: 3.7/4.0

Engineering Transfer Program
Thompson Rivers University
2017 — 2018
GPA: 4.0/4.0

SKILLS

Development
Python · JAVA · C++ · C · MATLAB · Arduino · JavaScript · pyTorch · Git · Gym Framework · openCV · Linux · SQLite

Hardware
Circuit design/prototyping · SolidWorks · Prototyping · Digital logic · Assembly · PID control

Hands-on
Machining · Soldering · Welding · Clean room experience · Hands on shop experience · Engine and small engine repair · 3D printing · Laser-cutting · Water Jet-cutting

Design
Web Design · PhotoShop · LaTeX · HTML · CSS

CONTACT ME

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