







DAWSON HORVATH

 dawsonhorvath.com
 Vancouver, BC
 horvath.dawson@gmail.com
 1-250-306-0343
 /HorvathDawson
 /horvathdawson

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

SOFTWARE DEVELOPMENT

Python LabVIEW C++ Go
JavaScript MATLAB SQLite
Git Linux PyTorch OpenCV
Machine Learning
Computer Vision Data Analysis

HARDWARE & PROTOTYPING

Circuit Design Arduino
SolidWorks Onshape
Prototyping PCB Design
Sensor Integration
Embedded Systems

FABRICATION & HANDS-ON

Machining Soldering Welding
3D Printing Laser Cutting
Waterjet Cutting CNC Operation
Mechanical Assembly

DESIGN & MEDIA

Web Development HTML CSS
Photoshop LaTeX
UI/UX Design


CARRER SUMMARY

Innovative and adaptable Engineering Physicist with over three years of experience in robotics, mechatronics, and software engineering. Skilled in designing and building high-throughput automation systems, with expertise in real-time data acquisition, image processing, and instrument control. Proficient in Python, C++, LabVIEW, and Go, with a proven track record of delivering impactful solutions in robotics and automation. Experienced in developing scalable dashboards, advanced imaging systems, and control software, driving efficiency and enhancing data accuracy across multidisciplinary teams. A passionate problem-solver who thrives in dynamic environments, blending technical precision with creativity.

WORK EXPERIENCE







- **AbCellera Biologics Inc** Mechatronics Engineer
 May 2020 - Current
 - Built a real-time fleet management dashboard using Go, SQLite, HTML, CSS, and JavaScript to monitor robot metrics, environmental data, and experiment progress. Integrated a unified data schema and visualized recovered cell locations to improve cross-team collaboration.
 - Increased cell transportation speed 3x by transitioning liquid handling from open-loop to calibrated closed-loop control, leveraging vision-based measurements to ensure accuracy and maintain high cell viability.
 - Designed and implemented image processing pipelines with Python, C++, and LabVIEW, featuring meniscus detection in micro-capillaries, multi-exposure HDR, flat-field correction, and more, enhancing screening performance.
 - Engineered a custom schlieren imaging system using a lenticular lens array, inspired by "Hand-Held Schlieren Photography with Light Field Probes," to capture transparent media refractions with commodity hardware.
 - Delivered new single-cell recovery instrument control software in LabVIEW and Python, incorporating robot routines, state machine logic, operator UIs, and imaging pipelines. Completed the project three weeks ahead of a critical demo day.
 - Developed a monitoring tool to verify past recovery states, enable retries for failed recoveries, and reduce potential cell loss by up to 50%. Automated data consolidation into a single PDF report with machine learning summaries for troubleshooting and communication.
 - Manufactured PDMS microfluidic devices in a Class 1000 cleanroom, critical for high-throughput single-cell screening. Conducted photolithography, mold preparation, and device assembly to ensure precision and reliability in biological assays.
- **TRIUMF Particle Accelerator** SRF Development Intern
 January 2019 - May 2019
 - 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


- **Open Sim2Real Project** Open Source
 2022


Developed an open-source platform for Sim2Real research with a low-cost single-leg robot and simulation, supporting training in both real and simulated environments using the gym framework. I handled embedded systems, drivers, backend development, and integration with the gym framework. The project was a team effort with four people: two focused on RL research, and one worked on mechanical design, with me providing design review. This platform made Sim2Real research more accessible for transitioning from simulation to real-world applications.


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PROJECTS

- 1950 Austin A40 Restoration Personal
 2019 - Current

Overhauling the 1950 Austin A40 through welding, fabrication, and engine repairs to restore full functionality. The project involves mechanical, electrical, and bodywork expertise, replacing outdated parts with modern components such as suspension, braking systems, and electrical systems to enhance performance and safety while preserving the car's classic aesthetic.
- Simulated Gazebo Robot School
 2019

Simulated an autonomous robot in a Gazebo environment and implemented machine learning and computer vision techniques to control the robot and complete a set of tasks effectively.
- Robot Design Competition School
 2019

Collaborated with a small team to engineer a fully autonomous robot, focusing on mechanical and electrical design, and followed a rigorous review process emphasizing engineering communication and reliability.
- DIY Electric Skateboard Personal
 2017

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 to ensure extended reliability.