

LAIRD SCABAR

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Available for 4-8 month co-op starting May 2027

EDUCATION

University of British Columbia

BASc in Mechanical Engineering, Mechatronics

Vancouver, BC

Expected May 2029

- **Cumulative GPA:** 4.30/4.33
- **Relevant Coursework:** Solid Mechanics, Dynamics, Material Science

EXPERIENCE

VETS Group

Burnaby, BC

Mechanical Engineering Intern – Thermal/HVAC

May 2026 – Sept 2026

- Designed and modelled industrial duct systems across **3 major projects** in **Revit** to **SMACNA** and **ASHRAE** standards, releasing **80+** general arrangement and fabrication **drawing packages**.
- Designed custom sheet metal snow hoods, an intake plenum, a filter box, and 6+ transitions in SolidWorks for production.
- Repaired 10+ existing company **SolidWorks** fan models by restoring parametric control, making them reusable on later jobs.
- Designed three 15 ft, ~1.5-ton duct support towers with a structural engineer, detailing them in **Advance Steel** for fabrication.
- Automated spool, BOM, and sheet setup with **Dynamo** and a custom **Revit plugin** to re-gauge ducts, saving 10+ hours/project.

UBC Formula Electric

Vancouver, BC

Drivetrain Sub-team Member

Sept 2026 – Present

- Designing **mounting brackets, tabs, and a custom clamp** for a radiator core with no built-in mount points, plus a new **radiator-to-fan shroud**, to repack the cooling system around the car's new **aero floor**.
- Implementing the radiators as **porous zones** in the full-vehicle **STAR-CCM+** aero sims, deriving **porous resistance coefficients** to model cooling airflow through the cores.

SUBC – UBC's Submarine Design Team

Vancouver, BC

Drivetrain Sub-team Member

Sept 2025 – May 2026

- Designed and validated drivetrain and **2:1 straight-bevel gearbox** components in **SolidWorks** for a **1.8–2.1 kN** design load.
- Reduced side plate mass **37% (1.89 → 1.19 lb)** with **FEA-guided material removal** while maintaining required safety factors; prepared drawings for **CNC machining** and installed the part in the assembly.
- Converted a stock McMaster-Carr shaft collar into a 0.500 to 0.375 in step-down collar, eliminating pinion slippage.

PROJECTS

VR-Controlled 5-DOF Robotic Arm (Personal Project) | SolidWorks, 3D Printing, ESP32

August 2026

- Designed a **5-DOF arm** in **SolidWorks** with **mirrored servos** sharing torque and bearings keeping joint loads off the servos.
- Iterated **14 unique printed parts** over **3 rounds**, tuning print orientation, press fits, and tool access for hand-tool assembly.
- Traced erratic servo motion to supply **voltage sag** and fixed it by adding a **decoupling capacitor** on the power rail.
- Drove the arm live from a **VR headset** using a **WebXR inverse kinematics** solver at **50 Hz** and **C++ ESP32 firmware**.

Autonomous Robotic Claw (APSC 101) | C++, Arduino, SolidWorks

January 2026

- Led design and build of a **sheet metal claw** in **SolidWorks** that grasps objects detected by an **ultrasonic sensor**.
- Programmed an **Arduino** in **C++** with distance-based logic so the claw closes on objects for **autonomous pickup**.
- Fixed missed detections by tracing them to **echo loss** at the claw's angled approach and swapping the ultrasonic sensor.

Self-Balancing Robot (Personal Project) | C++, Arduino, Control Systems, SolidWorks

December 2025

- Built a two-wheel robot using **sensor fusion** on an **MPU-6050 IMU** to estimate tilt from gyro and accelerometer data.
- Implemented a **PID control** algorithm and tuned its gains to cut oscillation and hold stability when pushed or bumped.
- Built **closed-loop motor control** with an **L298N** driver and dual DC motors on a custom chassis to keep the robot upright.

SKILLS

- **Design & Analysis:** CAD (SolidWorks, CATIA, Revit, Advance Steel), FEA (SolidWorks), CFD (STAR-CCM+), DFM/DFA
- **Manufacturing & Prototyping:** 3D Printing (FDM), Waterjet, Stick Welding (SMAW), Soldering, Manual Mill, Lathe
- **Programming & Data Analysis:** MATLAB, C, C++, Python, ESP32, Arduino
- **Certifications:** SolidWorks CSWP (100% on all segments)
- **Additional Experience:** Film & Television Actor (2015 – 2025), on-camera and voiceover work for Netflix, Disney, CBC, Pfizer