Alexander Elliott

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TECHNOLOGIES SolidWorks, CATIA, Fusion 360, Onshape, Revit, AutoCAD, Arduino, Raspberry Pi, Docker, Soldering, 3D Printing, Mach 4, EtherCAT

LANGUAGES Java, Python (NumPy, Pandas, OpenCV, TensorFlow), C, C++, C#, MATLAB, SQL, JavaScript (React, Three.JS), HTML/CSS

University of British Columbia, Canada, *BASc Mechatronics (COOP)* SEP 2021 - MAY 2026

Cumulative GPA: 3.8, Dean's List: 4 Years
Relevant Coursework: Thermal & Fluid Dynamics, Circuits, Microcomputers, Algorithms

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RELEVANT EXPERIENCE

Magna International — *Mechatronics CO-OP (CAE Team)* JAN 2025 - AUGUST 2025

- Developed automation tools for pre- and post-processing of simulations (**FEA**, **MBD**, **Inertial Analysis**) using **TypeScript** and **Python** tech stacks, streamlining the workflow for the global CAE teams
- Architected and deployed "Inertia+", a tool that automated component **inertia** calculations and report generation, leading to upwards of **26%** time savings (**270**+ hours saved per quarter)
- Spearheaded the creation of "Collab Space," a web-based platform using **JavaScript** and **Python** to visualize **FEA** results, enabling real-time collaboration and faster design iteration

AME Group — *Mechanical CO-OP, QAQC CO-OP* SEPTEMBER 2023 - DECEMBER 2023, MAY 2024 - AUGUST 2024

- Designed 15+ HVAC, Hydronic, and Plumbing layouts and schematics for mixed residential spaces in the Vancouver area using **Revit** and AutoCAD
- Optimized AutoCAD schedule/schematic creation using **Python** and **Revit** plugins to reduce repetitive work by 50%
- Wrote C# Macros to automate **Revit** tasks such as creating detailed schematics from MEP systems, simplifying drafting tasks, and converting **AutoCAD** details
- Led many BIM improvement projects for teams across AME, such as **Revit** Schematics and **Revit** Details, to reduce the need for **AutoCAD**, allowing the user to work solely in **Revit**, saving dozens of hours on 5+ projects

UBC Uncrewed Aircraft Systems — *Mechanical Payload Team* SEPTEMBER 2022 - SEPTEMBER 2024

- Prototyped various payload drop systems, exploring technologies such as electromagnetic clutches and guided parachutes to control water bottle drops safely using **Onshape**
- Designed and manufactured a Carbon Fibre enclosure for our scale model taxi enclosure
- Achieved 2nd place in Phase 1 and 3rd place in Phase 2 of the 2024 AEAC competition

LRA3D — *Mechanical Designer / Fabricator Intern* MAY 2023 - AUGUST 2023

- Custom-designed prop/set installations for 3 clients using Rhino 7, including a 20' tall plywood guitar prop
- Scripted presets for **CNC** Routers and Hotwire machines using Mach 4 to increase machine efficiency by 20%
- Wired **CNC** Hotwire machine with **EtherCAT** technology to modernize production, reducing the CPU load by 30%

PROJECTS

UBC Formula Electric LapSim — *Mechanical Team* MAY 2024 - AUGUST 2024

- Engineered a lap time simulation tool in **MATLAB** using vehicle dynamics models to predict competition performance within **75%**
- Influenced key design decisions for the vehicle's powertrain and aerodynamics by providing data-driven estimates of how parameter changes would impact competition scores

RoboCan — *TOHacks CockRoachDB Award Winner* MAY 2022

- Built a mobile robotic trashcan to sort through reusable **NFC-tagged** cups
- Implemented **MySQL** database with **CockroachDB** to store user data and communicate between systems
- Wrote **Python** code to determine cup position and ID based on NFC sensors and I2C-controlled ultrasonic sensors

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Interests and Hobbies — Video Editing, Robotics, Guitar, Photography, Skiing, Biking, Geography, Space, Sneakers