

Alistair MacIver

alistairmaciver.com | armacive@uwaterloo.ca | linkedin.com/in/alistair-maciver

EDUCATION

University of Waterloo, BSc in Mechanical Engineering

Expected Apr 2028

Cumulative Average: 89% (3.82 GPA); 3x Term Dean's Honour List

SKILLS

Mechanical: CAD (SolidWorks, NX, Onshape), FEA (ANSYS Mechanical), DFMA (Injection Molding, Sheet Metal, CNC Machining, Casting, Composites), GD&T, Tolerance Stackup, Mechanism Design, Sealing & Enclosure Design, Materials Selection, Robotics, Thermal Simulation
Manufacturing & Prototyping: Lathe, Mill, 3D Printing (FDM, SLA, SLS), Waterjet & Laser Cutting, Composites Molding
Electrical & Software: PCB Design, Python, MATLAB, Arduino, C++, Control Systems, Sensor Integration, Data Acquisition and Analysis

EXPERIENCE

Mechanical Engineering Intern

Sep 2025 – Apr 2026

Neuralink

- Overhauled assistive robotic arm (ARA) electrical system by designing a power distribution PCB and compact waterproof machined enclosures, reducing overall system assembly time by over 60%
- Fully integrated microcomputer into ARA system through system architecture definition, electrical design, and steady-state thermal hand calcs, allowing low-latency contact detection to enable independent use
- Designed a PCBA assembly fixture with datum features and GD&T principles to maintain 0.1mm positional accuracy of panel-mount connectors, ensuring stress-free solder joints which eliminated fatigue failure risk in an overconstrained assembly
- Led mechanical aspects of FDA supplement including risk assessment, authoring V&V tests, executing and analyzing test results, to identify and mitigate ISO 13485 and IEC 60601-related risks, enabling independent use of ARA and ensuring product effectiveness
- Defined and developed contact detection recovery software feature with fault handling logic to safely restore operation after contact

Mechanical Engineering Intern

Jan 2025 – Apr 2025

Formlabs

- Optimized recoater linear motion mechanism through 7 mechanical iterations, investigating resonant frequencies, and profilometer measurements of benchmark prints, improving part quality by 60% and reducing average print time by 1.5 hours
- Owned the end-to-end design and integration of a Z-axis lifetime testing system for a next-gen SLS 3D printer, simulating representative thermal and powder ingress conditions for 24/7 lifetime cycling to identify three critical risks and propose corrective actions
- Designed a detachable hinge and damper mechanism by prototyping three concepts and performing UX trials to identify and quantify the optimal damping configuration
- Conducted 2D tolerance stack-up analysis on next-gen printer hinge to guarantee 0.5 mm alignment, thereby minimizing risk to print quality and increasing a critical product metric by 4.9%

Brakes Lead, Driveline Member

Sep 2023 – Aug 2025

University of Waterloo Formula Electric (FSAE)

- Reduced mass of Formula SAE brake rotors by 19.2% by redesigning part using SolidWorks and optimizing using ANSYS Mechanical with data-driven structural and thermal simulations
- Developed a rotor mounting solution using tolerance stackup analysis and addressing coefficient of thermal expansion material mismatch to ensure reliable mounting to 450°C, the peak measured temperature observed in the previous car
- Designed and manufactured a waterproof status indicator light enclosure, performing thermal simulations using ANSYS Mechanical and conducted tolerance stackup between gasket, acrylic cover and machined body to exceed IPX5 target
- Redesigned motor output shaft using DFM principles for CNC machining, conducting structural analysis with ANSYS Mechanical and fatigue analysis with hand calculations to reduce part weight by 43%

Undergraduate Research Assistant

Sep 2024 – Dec 2024

University of Waterloo Forming & Crash Lab

- Designed two versions of a high-velocity, low-energy impact testing system for EPS foam to test combined compressive-shear loading in bicycle helmets

Mechanical Design Engineering Co-op

May 2024 – Aug 2024

High Q Technologies

- Designed layouts of microwave and RF spectrometer components using standardized enclosures to reduce part count by 45%
- Drafted 75+ detail drawings, ensuring fitment of parts using GD&T callouts, following ASME Y14.5 standards

Research & Development Engineering Co-op

Sep 2023 – Dec 2023

Bend All Automotive

- Owned the development of in-house prototype hose forming for HVAC hoses used in 150k+ Stellantis EVs beginning in 2025
- Built modular aluminum extrusion fixtures to create and validate a hose overbend angle calculator to expedite fixture design
- Designed molds for repeatable hose forming using SolidWorks and SLA printing, tripling prototype production capacity