

Fawaz Katranji

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Summary of Qualifications

- Mechanical engineering student and **sole hardware engineer** at a medical device startup, **rehired after co-op**; took a device from CAD to working prototype across **3 generations and 30+ iterations**.
- **CAD & Design:** SOLIDWORKS (3+ years), Onshape (1+ year), AutoCAD, Fusion 360, GD&T and engineering drawings, tolerance analysis, mechanism design, DFM, test fixture design.
- **Analysis & Software:** SOLIDWORKS Simulation (FEA), MATLAB (1+ year), Python (2+ years), C/C++, Git.
- **Fabrication:** 3D printing (2+ years, 100+ parts), CNC milling, soldering, mechanical assembly, rapid prototyping, oscilloscope/multimeter debugging.

Education

University of Waterloo — Mechanical Engineering

Awards: *Sir Isaac Newton Physics Contest (2024): Ranked 66th in Canada, 109th worldwide* *GPA: 3.3 / 4.0*

Experience

Hardware & Embedded Engineer — NewGen Health

May 2026–Present

- **Rehired as a part-time Hardware & Embedded Engineer** after completing a 4-month co-op term (May–Aug 2026), continuing as the company's **sole hardware engineer** reporting directly to the founder.
- Led the mechanical design of a **19-part** second-generation medical diagnostic prototype in SOLIDWORKS, including the enclosure, internal architecture, sensor mounts, battery holder, and structural components.
- Drove the product through **3 prototype generations and 30+ design iterations**, shortening the device by **15–20 mm** while improving manufacturability and ease of assembly.
- Fabricated device parts using **3D printing and CNC milling**, assembled builds through soldering and mechanical rework, and developed waterproof sealing concepts comparing threaded-cap and O-ring designs.
- Authored **10+** engineering documents covering testing procedures, assembly instructions, tolerance recommendations, engineering observations, and future design considerations.

Structures Member — WAT Arrow

Mar 2026–Present

- Designed **5+ new structural components from scratch**, including propulsion mounts, structural clamps, and landing gear assemblies, taking each from concept to production-ready **SOLIDWORKS CAD**.
- Performed weight estimation and engineering trade-off analysis to minimize aircraft mass while meeting stiffness, strength, and manufacturability requirements.
- Collaborate within a **20+ member** multidisciplinary team to integrate structures with propulsion, avionics, and other aircraft subsystems through iterative design reviews.

Technical Team Member — Waterloo Rocketry

Feb 2026–Present

- Designed a ground-based test chamber built to contain separation pressure loads, allowing staged airframe separation to be validated safely before flight testing.
- Engineered mechanical retention and release concepts, evaluating structural loading and tolerance stack-up while coordinating with recovery, avionics, and structures sub-teams.

Projects

Two-Stage 3D-Printed Planetary Gearbox

Nov 2025–Jan 2026

- Designed a compact **two-stage 16:1 planetary gearbox** comprising **15+ custom components**, optimizing gear geometry, packaging, and torque transmission for additive manufacturing.
- Performed **FEA in SOLIDWORKS Simulation** to refine gear and carrier geometry, improving load distribution and reducing deformation under peak torque.
- Fabricated components through **iterative 3D printing** and validated performance through assembly testing, achieving **~0.6° backlash**.

CNC Plotting Machine

Jan 2024–Jun 2024

- Designed and assembled a complete **2-axis CNC plotting system**, integrating custom mechanical structures, motion electronics, and Arduino-based control into a fully functional electromechanical platform.

Robotic Arm

Apr 2023–Jun 2023

- Designed and fabricated a **4-DOF robotic manipulator**, optimizing link geometry and joint placement to maximize reachable workspace while maintaining structural rigidity.