Aaron Lew

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Education

University of Waterloo | Mechanical Engineering 2025 - 2030

Technical Skills

CAD:	SolidWorks, Onshape, Fusion 360, AutoCAD, Siemens NX, KiCAD, EasyEDA
Design:	Mechanism design, Parametric modelling, Rapid prototyping, DFM, DFA, GD&T, Technical drawings
Fabrication:	FDM/SLA/SLS Additive manufacturing, CNC routing, Laser cutting, Mill, Lathe, MIG welding
Embedded:	Linux, CLI, Git, GitHub, Docker, Raspberry Pi, Arduino, STM32, ESP32, I2C, CAN
Electronics:	SMD PCB assembly, Reflow/Manual soldering, Hot-air rework, PCB prototyping, PCB bring-up

Experience

Surgical Robot Designer | Revolve Surgical - YC 2026 - 2026

- Designed an intuitive and ergonomic physical surgeon interface in Onshape to control 6+1 DOF wristed laparoscopic instruments
- Developed a novel pivoting mechanism in SolidWorks to reduce surgeon fatigue, iterating based on surgeon feedback
- Designed parts for CNC machining and used SLS and SLA printing technologies to iterate through prototypes and designs rapidly
- Programmed C++ firmware onto a CAN telemetry peripheral PCB and ensured full board functionality
- Collaborated with the UX lead to program distance sensing and haptic responses in C++ for a well-rounded surgeon experience
- Developed a modular heads-up display in TypeScript and Python using CAN telemetry to track and record surgeon movements

Junior STEM Instructor | Simon Fraser University - Science Alive School Year Camp 2024 - 2025

- Designed and delivered interactive engineering and science lesson plans to 30+ students through collaborative hands-on activities
- Inspired and motivated 10+ students to pursue engineering by providing mentorship and guidance for future project ideas and learning

Classroom Mentor | Gilmore Elementary School - Robotics and After-school Program 2022 - 2025

- Guided 150+ students through the design process, consisting of prototyping, construction, testing and programming of VEX IQ robots
- Inspired 10+ students to design creative robot innovations to complete advanced challenges, like stacking objects with improved claws

Projects

Autonomous Piano-Playing Robot | Lead Mechanical Engineer, Manufacturing, Data Analyst 2022 - 2025

- Engineered an 88-key autonomous, modular, piano-playing robot with human-like key actuations with Onshape, for setup on any piano
- Lowered production and development costs by 90% compared to commercial alternatives, enabling scalable and repeatable development
- Designed a lightweight, FDM-printed structural frame optimized for a high stiffness-to-weight ratio and modular assembly
- Used EasyEDA to design a custom I2C control PCB to actuate 88 solenoids, each with 255 power levels individually

Competitive Robotics | Team Captain, Lead Mechanical Engineer, Driver, Autonomous Programmer 2022 - 2025

- Designed and validated 10+ competitive robots in Onshape and SolidWorks, integrating structural and kinematic calculations
- Achieved 7th global ranking in TrueSkill out of 20,000+ teams worldwide, ranked 1st in BC and top 10 at 21+ VEX competitions
- Managed 70+ members and 12 teams, and optimized $15,000 budget via a custom inventory and resource management system
- Started a mentorship program, with 5 rookie teams winning first awards and qualifying for the provincial championships

Waterloo Combat Robotics | Lead Mechanical Engineer 2025 - 2026

- Used SolidWorks to design a manufacturable, robust 3lb combat robot made out of UHMW plastic, carbon fibre, and hardened steel
- Integrated structural and reinforcing with electrical components intelligently, ensuring maximum repairability and utility

Personal Engineering Infrastructure | Systems Designer 2024 - 2026

- Built and deployed a Linux-based home server using Docker to host cloud storage, cloud photos, and personal engineering projects
- Integrated a custom engineering portfolio website to showcase previous projects, technical drawings, and achievements

Achievements/Awards

Competitive Robotics:	World Championship Design Award, 4 BC Provincial Championship Awards, 32 Regional Championship Awards
Vancouver Regional Science Fair:	Senior Category Silver Medal, 3 times regional qualifier
UBC Physics Olympics:	Build Challenge Bronze Medal