Alexander Loker

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Education

University of Waterloo **Expected April 2030**

Candidate for Bachelor of Applied Science in Mechatronics Engineering – 3.8 GPA

Experience

ElevaitLabs **December 2025 – Present**

Robotics Engineer

- Engineered a tri-omniwheel electromechanical system with a Raspberry Pi Pico, implementing PID controls and an auditory/visual tracking algorithm to enable 360° movement and autonomous human-following
- Designed the full mechanical system in SolidWorks from custom omniwheel rollers to an LCD-integrated head and bi-directional arms, iterating through simulation and 3D printing
- Collaborated with AI engineers at Elevait Labs to bridge software and hardware, meeting "visionary" requirements into physical design constraints across mechanical, electrical, and software
- Built a production-grade electrical system meeting rigorous reliability standards through soldering, pin-lock interference fits, and failure-based planning

Biomechatronics Exoskeleton Team **January 2026 – Present**

Electrical Team Member

- Designed electrical schematics from scratch such as an UVLO, LDO, and Buck Converter using LtSpice
- Transformed schematics into manufacturable PCB's using Altium, accounting for effective cost, compactness, and ease of integration throughout the exoskeleton

WAVE.AI **June 2021 – August 2024**

Video Editing Intern

- Edited, designed, and created graphics for advertisement material
- Received guidelines and raw videos and transformed them into advertisement-ready content using my own effects
- Assisted in editing and creative brainstorming of 5 advertisement campaigns

Projects

Autonomous Air Hockey Defense Machine **November 2025**

- Designed and assembled an automated robot capable of deflecting pucks back at the user with one distance sensor
- Constructed a single axis gantry system using grooved wheels, a belt, and a geared motor to allow for horizontal movement, alongside a linear actuator for deflection
- Developed code capable of predicting the exact final location, using C++ and a mechanical sensor block, achieving a 76% deflection rate of the puck
- Overcame speed issues by gearing down the gantry system, and overcame the VEX-IQ distance sensor inaccuracy by optimizing the placement relative to the gantry

Electrochemical Machining **April 2025**

- 3D Modeled and animated an Electrochemical Machine using Blender
- Recreated a picture-accurate model to allow for easier explanation during the presentation of my research
- Displayed workflow and progress through a video and time-lapse format using Premiere Pro
- Researched and presented an explanation of the uses, capabilities, and works of electrochemical machining

Extracurricular Activities

eSports semi-Professional **August 2020 – April 2025**

Open Division & MRCS

- Top ranked international player in two highly competitive eSports
- Team captain on teams that placed nationally in 4 tournaments and internationally in 1
- Lead strategization development, team meetings, and organization of scrimmages
- Coached players 1-on-1, lead to an average ranking point increase of 20% within a month

Skills

Technical Skills: SolidWorks, Altium, LTSpice, GD&T, AutoCAD, Excel, Premiere Pro, After Effects, Blender
Programming Languages: C++, Python, HTML, CSS
Machining: Lathe, Mill, Drill Press
Coursework: Algorithms & Data Structures, Materials Properties & Structures, Circuits