

ALEXANDER LOKER

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United States Permanent Resident

Education

University of Waterloo

Expected April 2030

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

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

Companion Robot (ONGOING)

January 2026 – Present

- Prototyping & assembling an autonomous robot with omnidirectional mobility by integrating a Raspberry Pi with encoded DC motors alongside printed omniwheel assemblies, enabling precise navigation and smooth movement
- Designing a near-zero volume mechanical system integrating a speaker, an LCD panel, a microphone array, and a camera to implement audio, personability, and detection software
- Developing C++ control software with encoded PID controls enabling autonomous navigation, person tracking, and gesture recognition features

Experience

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

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

Resource Area for Teaching

November 2023 – May 2024

Volunteer Worker

- Assisted over 8,000 educators/yr by helping bridge the education gap for students and communities by offering engaging and affordable STEAM resources for local teachers
- Facilitated the creation of and assembled parts of STEAM kits

Skills

Technical Skills: SolidWorks, GD&T, AutoCAD, Excel, Premiere Pro, After Effects, Blender

Programming Languages: C++

Machining: Lathe, Mill, Drill Press

Coursework: Algorithms & Data Structures, Materials Properties & Structures, Circuits