

Austin Li

📞 236.838.2903 | ✉ austincheungli@gmail.com | 🌐 austin-c-li | 🐙 austinnnli
🌐 Website: austinli.ca

PROJECTS

Field Oriented Control OneWheel

- Built a brushless PMSM motor with a custom distributed winding stator and 6 pole rotor to achieve a sinusoidal back-EMF profile
- Designed a high power electronic speed controller in **Altium** with capabilities for FOC and an on-board 6-axis IMU for lean-activated control
- Wrote **STM32 firmware** utilizing I2C and SPI protocols and ADC low-side current sensing for high-speed FOC algorithm

Autonomous Pool-Playing Robot

- Created a custom VEX robot with **C++** firmware to successfully detect a pool ball using a laser sensor and strike it into the pocket of a pool table
- Designed a compact extendable striking mechanism in **Solidworks** to consistently launch a ball in a straight path across a pool table

Cycloidal Gearbox Robotic Joint

- Designed a 1:14 cycloidal reducer for use in backdrivable joints on a robotic arm
- Validated prototypes with FDM printing and utilized brass bushings for reduced friction resulting in a final thickness of 22 mm

EXPERIENCE

Waterloo Rocketry

Oct 2025 - Present

Active Controls Canards R&D

Waterloo, ON

- Developed the teams first worm gear-driven canards prototype with magnetic encoders to fit a **57% smaller** footprint and allow for 3-axis control during flight
- Launched nominally with successful roll control to **63,000 ft** at Launch Canada 2026, setting a new **world record height** for amateur liquid-engine rockets

CiF Lab Solutions

May 2026 - Aug 2026

Automated Machine Specialist

Toronto, ON

- Led the production team of 4 to operate an automated color application assembly line comprised of 19 machine units; oversaw quality inspection on 500+ parts/day
- Operated a 3-axis CNC and adjusted G-code scripts for improved efficiency and accuracy

EDUCATION

University of Waterloo | 4.0 GPA

BASc Mechatronics Engineering

Waterloo, ON

- **Coursework:** Data Structures, Algorithms, Mechanics of Deformable Solids, System Design, Electronics

SKILLS & INTERESTS

Design Tools : Solidworks, Fusion 360, Onshape, Altium, KiCad

Software : C++, Python, Java, Arduino, Simulink

Interests : F1, Pole vault, Golf