Jackie Le

Mechatronics Engineering

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Skills

- **Sensor Experience**
  - Vision, IMU, Encoders,
- **Programming Experience**
  - C, C++, Python, JavaScript, CSS, React.js
- **CAD Experience**
  - AutoCAD, SolidWorks, Inventor
- **Manufacturing**
  - 3D printer, Laser cutter, CNC Mill

Experience

Vex Robotics Competition – *Team Manager + Designer and Programmer*　　　　*Sept. 2017 - June 2021*
- Achieved **1st in World** for programming
- Programmed in **C++** an autonomous robot that used PID loops and encoders to track position with odometry
- Implemented a design process that focused on shop organization and team scheduling to increase build efficiency by **~175%**
- Fully designed multiple robots using **Inventor**, decreasing likelihood of build errors by **~50%**

The STEAM Project – *Project Development and Instructor*　　　　*Jan 2022 – Apr 2022*
- Optimized STEM kits to require less physical labor and materials, resulting in a overall decrease of **~12%** in manufacturing time.
- Developed a cube that balances itself using three reaction wheels to sell as a DIY product
- Integrated an **IMU** sensor and Encoders in an LQR loop to map and control the position of a cube using **C**

UW Aerial Robotics Group – *Mechanical Sub-team*　　　　*Sept 2021 – Present*
- Designed a lightweight, aerodynamic gimbal using **Solidworks** that houses a GoPro capable of capturing images for use in locating ground object
- Collaborated with others on GrabCAD to design a versatile grabber for a drone that can pick-up a variety of shapes and materials using elastic material

Engineering4Youth – *Club Founder*　　　　*Sept. 2018 – Present*
- Started a club that promotes Engineering to kids in neighboring Elementary schools
- Increased interest in high school engineering courses by **~18%** through interactive engineering challenges

Personal and Academic Projects

Stock Predictor – *Personal*　　　　*April. 2022 - Present*
- Programmed a bot that can predict stock changes with up to 82% accuracy using **Python**
- Utilized a Linear Regression **machine learning** algorithm to increase performance over time

4 Axis Robot Arm - *Personal*　　　　*May 2021 - August. 2021*
- Designed and fabricated a robotic arm using a **CNC laser cutter** and a **3D printer**
- Programmed the arm for remote control and autonomous movements with PID loops, using **C++**

Machine Card Gun - *Personal*　　　　*March 2021 - June 2021*
- Designed and **3D printed** a flywheel with **Inventor** that fired playing cards at ~140km/h
- Utilized a multi-servo out-take system to program multiple firing methods (rapid fire, single shot, etc)

Education

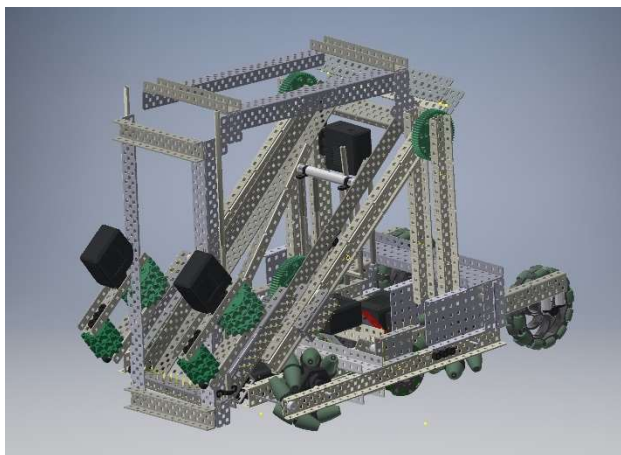**University of Waterloo**　　　　*Expected Graduation - June 2026*
Candidate for Bachelor's Degree of Applied Science, Mechatronics Engineering
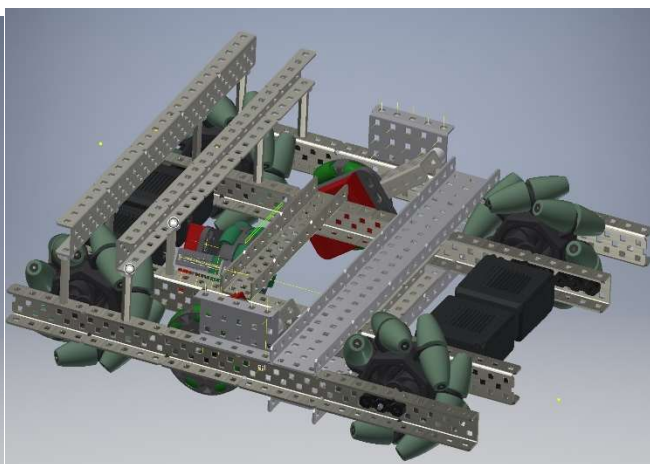
Enver Creek Secondary School　　　　*Graduated June 2021*
- Team captain of ultimate frisbee team for five years
- Student Council President
- 98.6% academic average
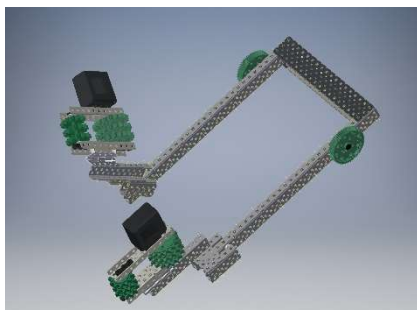
Vex Robotics Competition

Assembled Robot

Chassis

Storage Tray

Features

- Chassis with three encoder wheels that use suspension to always stay in contact with ground

- 55in tray that folds into 18in cube

- Intake system that folds to fit into 18in cube

- Flip out wheels that prevent the robot from tipping backwards

Intake system/arm