Julian Chen

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Education

University of Waterloo — *September 2025 - Ongoing*
B.A.Sc in Mechatronics Engineering — Waterloo, ON, Canada

Skills

Software: Solidworks, Fusion 360, Ansys Mechanical, AutoCAD, Google Suite, Microsoft Office, Affinity Suite
Languages: C++, Java, VEXCode, English, Chinese, French
Certifications: WHMIS, Standard First Aid, CPR/AED C

Experiences

Mechanical Engineer | BDU Designer — *January 2026 - Ongoing*
Battery WorkForce Challenge

- Designed Battery Disconnect Unit using **SolidWorks**, following **Design For Manufacturing** principles
- Ran **Finite Element Analysis**, **Functional Failure Analysis**, busbar and bolt **torque and pressure tests**, **impact and drop simulations, and modal and vibration tests** using **Ansys**

Mechanical Engineer | Exteriors Team — *September 2025 - December 2025*
Midnight Sun Solar Car Team

- Modelled aerodynamic canopy, aerobody and fairings of a solar-powered electric car in **SolidWorks**, ensuring aerodynamic efficiency and manufacturability
- Practiced **surface modelling** on SolidWorks to develop aerobody geometries, enabling lightweight yet structurally sound designs
- Researched **materials, composites manufacturing and thermoforming** techniques to develop cost-effective designs for car durability

Mechanical Engineer, Machinist — *September 2022 - June 2025*
FIRST Robotics Competition Team 610

- **Designed, manufactured, and assembled 125lb robots** using **Fusion360**, contributing to 7 official design awards over 3 years and a World Championships division finalist placement (2023) out of 3141 teams worldwide
- **Collaborated with electrical and software teams** to **optimize robot layout, reduce wiring and programming complexity**, and **improve part accessibility** for faster repairs and maintenance during competition
- Programmed **3D printers**, **CNC router and CNC 3-axis mill**, and **operated precision machine tools** to create a PVC pipe manipulator with 4 motors and 2 sensors and a 14” foam ring shooter accurate from 11ft
- **Prototyped and tested** robot components to find flaws and improve designs
- Served as **one of four Pit Crew engineers** responsible for **diagnosing and repairing mechanical issues** during competition under strict time constraints to maximize robot functionality, efficiency and reliability

Projects

Robotic Arm, Colour sorter — *October 2025 - November 2025*
Mechanical Designer, Robotics Engineer

- Used **SolidWorks** to design a **3-axis robotic arm** from VEX and 3D printed components
- Used **C++** to integrate a distance sensor, colour sensor, and 4 motors to autonomously pick up and sort coloured blocks into their respective storage locations

Designed and built Arcade Game — *October 2023 - May 2024*
Product Designer

- Partnered with Sunny View Junior and Senior Public School to **develop mentally stimulating toys and games** for children with disabilities and limited physical and cognitive abilities
- **Designed arcade games** using **Unity and Fusion360**, integrating custom button and trackball controls based on **assistive design principles** to enable children of all abilities to enjoy arcade games and interact with game elements comfortably