Eric Wu

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Skills

Software: C++, Python, Github, Microsoft Office, Docker, Foxglove
Robotics & Controls: ROS 2, PID, Pure Pursuit, Odometry, Arduino, I^2C, LiDAR
CAD & Manufacturing: SolidWorks, Fusion 360, AutoCAD, Lathe, Mill, 3D Printing, GD&T

Experience

University of Waterloo Formula Electric Sept 2025 – Present
Suspension Manufacturer *Waterloo, ON*

- **Machined 20+ suspension components to a ±0.05mm tolerance** for the Formula SAE Car
- Designed **3D-printed** piston mounts in **SolidWorks** for the front damper system, reducing operational vibration
- Operated manual **mills and lathes** to machine aluminium and steel suspension components, including plates, L-brackets, spacers, rod plugs, and top hats, with precision drilling and countersinking for flush-mounted hardware

WATonomous Jan 2026 – Present
Robotics Engineer – Humanoid Division *Waterloo, ON*

- Deployed a **ROS 2 autonomous navigation system** combining LiDAR-based costmaps, obstacle inflation, and global planning; tested and debugged behavior in Foxglove, containerized in Docker
- Processed raw LiDAR scan data into a **2D occupancy grid**, applying distance-based obstacle inflation to keep planned paths collision-free
- Implemented and tuned an **A* global path planner** to produce reliable paths around static obstacles

Churchill Robotics Sept 2022 – May 2025
Mechanical Lead – VEX Robotics Team 3388C *Calgary, AB*

- **Top 20 national finish and top 2% overall among 20,000+ teams**, including 1st and 3rd place finishes at the 2024 and 2025 Alberta Provincial Championships
- Designed and prototyped fully defined **SolidWorks assemblies** for drivetrains, shooters, and climbing mechanisms
- Iterated over **12+** competition-ready robots, reducing weight and improving mechanical efficiency while maintaining reliable structural rigidity

Projects

Sensor-Based Arcade Machine Nov 2025
CAD & Electrical – 1st place at BoxBots Hackathon, Game Track *Waterloo, ON*

- Designed custom 3D-printed sensor and motor mounts in **SolidWorks**, integrating brushless DC motors to implement an **automated ball-return mechanism**
- Developed a centralized, multi-Arduino **leader–follower I^2C control structure** coordinating communication between distributed IR and ultrasonic sensors with real-time scoring displays
- **Improved scoring accuracy by 35%** through sensor calibration, debouncing, and timing-based filtering

X–Y Odometry and PID Controller Feb 2025
CAD & Software – Churchill Robotics *Calgary, AB*

- Designed space-efficient, **laser-cut** odometry pods in Fusion 360, **reducing robot width** by over 1.5 inches.
- Implemented a **Pure-Pursuit algorithm** and fine-tuned PID controllers, **increasing autonomous-routine success rates by ∼45%**
- Used odometry feedback to improve autonomous path efficiency and repeatability

Education

University of Waterloo Waterloo, ON
B.ASc in Mechatronics Engineering *Expected Graduation 2030*

- **Certifications:** Certified SolidWorks Associate (CSWA)