Shuyang Zhou

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Technical Skills

Manufacturing: Lathe, Mill, CNC, Bandsaw, Drill Press, Belt Sander, Scroll Saw, 3D Printer (FDM & Resin)
Programming: C++, Python, MATLAB, C#, HTML, JavaScript/TypeScript, React (Web Development)
Certifications: CSWA, WHMIS 2015, DELF B2

Experience

Quality and Manufacturing Engineering Intern May 2026 – Aug. 2026
Extrudex Aluminum *Toronto, ON*

- Authored standardized work instructions and collaborated with IT to design automated data reporting pipelines.
- Conducted daily floor-based Layered Process Audits (LPA), QA validation, and dimension inspections using digital calipers to interpret strict engineering drawing tolerances.
- Analyzed daily production data in Microsoft Excel to identify high-scrap weights, root out recurring defects, and record Return Material Authorizations (RMAs).
- Generated Quality Alerts and internal notifications for on-hold items, researched historic die performance data, and systematically tracked Corrective Action Requests (CAR).
- Performed destructive and non-destructive mechanical evaluations, including bend tests and dogbone specimen tensile testing, to guarantee material conformance to strict manufacturing specifications.

Waterloo Aerial Robotics Group — Mechanical Subteam Feb. 2026 – Present
University of Waterloo *Waterloo, ON*

- Responsible for mechanical-electrical integration and aircraft wiring harness architecture for a modular fixed-wing VTOL platform with full electrical layout strategy.
- Designed and validated a 3D-printable ESC enclosure for a competition drone, featuring M3 grid-compliant mounting (30mm modular spacing). Ensured internal CAD standards and manufacturing aware tolerances.
- Developed a modular landing gear subassembly for the 2025 competition drone, integrating with existing airframe
- Engineered a controlled breakaway joint to protect the frame during crash scenarios, as well as evaluating material densities (carbon fiber, PETG blend, 6061-T6 aluminum) to meet a 500g constraint.
- Produced technical drawings using WARG's drafting template, applying ordinate dimensioning, proper hole callouts, GD&T principles, and millimeter-primary standards for machining parts.

Projects

AutoBowler | *VEX IQ (Embedded C++), Laser Cutting, Machining, 3D Printing, CAD*

- Designed and fabricated a 1.8m x 0.9m precision tabletop bowling platform, utilizing CAD modeling, laser cutting, manual machining, and custom 3D-printed structural components.
- Engineered an automatic pin-reset mechanism powered by a motorized 3D printed winch assembly and a custom distance sensor mount to automate score counting.
- Programmed full-cycle game state logic—including start sequences, round transitions and score display in Embedded C++ deployed on a VEX IQ micro-controller, achieving 95% accuracy during testing.

SpikeLift Arena | *Machining, CAD, 3D printing, Hydraulics*

- Built a mechanical toy arena featuring omnidirectional tilt and hydraulic spike ejection
- Prototyped mechanical linkages and syringe-based hydraulic systems to optimize player input
- Created various prototypes using SolidWorks, 3D printing and machining tools, including a custom made wooden frame and base, and custom printed PETG spike platform and spinning tops
- Authored a 20-page final design report detailing the design decisions and testing process, and presented the final product in a symposium

Education

University of Waterloo Waterloo, ON
Honours Bachelor of Applied Science, Mechanical Engineering *Sept. 2025 - May 2030*

- President's Scholarship of Distinction
- GPA: 3.9/4.0