

Yvonne Zhang

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Education

Johns Hopkins University

Master of Science in Engineering in Robotics

Baltimore, MD

June 2027

Relevant Coursework: 530.691 Haptic Interface Design, 601.655 Computer-Integrated Surgery 1

University of Toronto

Bachelor's of Applied Science in Mechanical Engineering & PEY Co-op

Toronto, Canada

June 2025

Minors: Robotics & Mechatronics and Engineering Business

Relevant Coursework: Robotics, Mechatronics Principles, and Applied Computational Fluid Dynamics

Project Experience

Johns Hopkins University

Haptics Interface Design Project

Maryland, MD

August 2025 – Present

- Developing a tactile display device that converts visual art into interactive textured surfaces for visually impaired people, using CAD-driven design, 3D printing, and silicone molding to prototype pin-array mechanisms.
- Integrating embedded electronics and micro-controller control, leveraging Arduino-based systems to drive pin-arrays and enable real-time, bidirectional haptic interaction.

ETH Zurich - pd|z Product Development Group Zurich

Undergraduate Student Researcher

Zurich, Switzerland

June 2024 – September 2024

- Designed and 3D-printed a SolidWorks end-effector mount to integrate dual Intel RealSense cameras on a Franka Emika Panda arm, enabling real-time computer vision and depth perception for hand interaction tracking.
- Developed ROS2 code for advanced image processing, including depth extraction and gesture recognition, using MediaPipe and keypoint classifier training data.
- Authored a comprehensive research paper serving as foundational work, establishing clear and formalized instructions that supported the successful progression of three ongoing thesis projects in the PDZ lab.

University of Toronto

Autonomous Rover Design Project

Toronto, Canada

September 2024 – December 2024

- Designed an autonomous rover using Arduino IDE and Python, combining Bluetooth-controlled motors, ultrasonic sensing, and servo actuation to achieve adaptive reorientation, maze navigation, and object detection.
- Generated Python-based logic for maze navigation, supported by simulations for validation and optimization, achieving full task completion in 5 minutes.
- Constructed a power distribution network that features buck converters that provide stable voltages (8V / 5V) designed to meet the varying demands of motors and onboard electronics during continuous operation cycles.

Magna Internation & University of Toronto

Window Cable Tensioner Redesign Project

Toronto, Canada

September 2024 – December 2024

- Redesigned the cable tensioner for frameless car doors under Magna directors' mentorship, reducing component complexity and lowering manufacturing cost.
- Developed and iterated four SolidWorks CAD models, refining geometry to improve manufacturability while preserving original purely mechanical interactions of components.
- Conducted FEA analysis to evaluate critical stress, fatigue, and wear, guiding material selection and enhancing performance for plastic extrusion components.

University of Toronto Formula Racing (UTFR)

Aerodynamics & Mechanical Designer

Toronto, Canada

September 2023 – June 2024

- Optimized front-to-rear downforce ratio through CFD analysis techniques in SolidWorks and STAR-CCM+, leading to improved handling stability and increased driver confidence at speeds exceeding 100 km/h.
- Executed Vacuum Infusion Process for carbon fiber fabrication of aerodynamics CAD models, ensuring optimal structural integrity for race car components under competitive performance conditions.

Technical Skills

Programming: Python, Arduino IDE, C, C++

Data Visualization: MATLAB, Excel, and Minitab

CAD/Design: SolidWorks, ANSYS Fluent & Mechanical, FIGMA