Jessica Zhang

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Education

University of Toronto — Toronto, ON
Bachelor of Applied Science in Engineering Science — *Sep. 2023 – Apr 2027*

Experience

CREATE Facilitator | *Arduino, Python* — May 2025 – Aug 2025
UofT Engineering Outreach Office — *Toronto, ON*

- Developed and instructed a biomedical engineering curriculum for 24 high school students (grade 9-10) each week across 4 sessions, combining foundational concepts in engineering and physiology with hands-on applications.
- Instructed lessons on Arduino coding and circuitry, **resulting in students successfully engineering** and building a functional prosthetic limb powered by flex sensors and servo motors, by the end of the program.
- Created instructional worksheets in **Arduino and Python** for biological sensors (ECG, EMG, and PPG), giving students hands-on experience studying cardiac and muscle activity, and applying them to an interactive muscle-controlled gaming project.

Software Developer | *Python, Java* — July 2023 – Aug 2023
RBC — *Toronto, ON*

- Developed an account storage database in Java with Java AWT interface, **improving efficiency** in organizing and retrieving large volumes of client account information.
- Programmed a Python API to fully automate the addition of new accounts and deletion of select accounts (based on age and activity), streamlining database management and replacing a time-consuming manual process.
- Integrated the application with RBC's internal systems and Salesforce interface, ensuring a streamlined transition into existing workflows and **driving adoption** across the organization.

Leadership

LabPath Research Hackathon participant | *Fusion 360, Arduino* — July 2025
University of Toronto Mississauga (UTM) — *Mississauga, ON*

- Co-authored a **scientific research paper** exploring the relationship between diabetes and clinical depression in the context of endocrinology, using AI models to analyze links between blood sugar and mood.
- Designed a proposed insulin delivery system in **Fusion 360**, based on engineering constraints and medical requirements to optimize usability.
- Developed a functional insulin pen prototype using Arduino circuitry, programming sensors to detect the opening and closing of the cap, and implementing logic to record event time and duration to track frequency of administration.

Praxis Engineering Design Team | *OnShape* — Jan 2024 – April 2024
University Design Team — *Toronto, ON*

- Selected as a shortlisted candidate for the Ian and Shirley Rowe Innovation and Global Impact Award, highlighting innovation and global engagement.
- Collaborated on a team of 5 to design an improved worm composting system for Allen Gardens, a local botanical conservatory.
- Created CAD models of a proposed worm composting network in OnShape, presenting designs at a showcase to contest judges and stakeholders within the Allen Gardens community.

Projects

Godot 2D Game | *GDScript, Godot node system* — Jan 2025

- Designed and developed a 2D radiation-themed video game, including animations and physics; applied matrices and linear algebra to implement shaders.
- Game available on itch.io: https://jess-to-impress.itch.io/

Technical Skills

Languages: Java, Python, C, HTML/CSS, System Verilog, MATLAB, Assembly (RISC-V)
Frameworks and Tools: OOP, Git, Data Structures, Complexity Analysis, FPGA, Fusion360, OnShape
Developer Tools: Arduino IDE, VS Code, Pycharm, Quartus Prime