

Helen Huang

helengy.huang@mail.utoronto.ca | (416) 887-8627 | Toronto, ON

EDUCATION

University of Toronto | Bachelor of Applied Science (BASc) in Engineering Science Expected Jun 2029

- **GPA: 3.93/4.0** (Dean's Honour List for all terms)
- **Relevant Coursework:** Computer Programming (C/Python), Linear Algebra, Engineering Design (Praxis)
- Selected as 1 of 15 students nationally for **University of Waterloo Math & CS Scholarship (\$12,000)** for national mathematics competition performance.

SKILLS

- **Programming Languages:** Python, C, JavaScript, MATLAB, p5.js
- **Libraries & Tools:** OpenCV, MediaPipe, NumPy, OnShape, Fusion, SolidWorks
- **Certifications:** Google Data Analytics Professional Certificate (Coursera)

PROJECTS

Invisible Keyboard for Assistive Accessibility | Python, OpenCV, MediaPipe May 2026

- Engineered a **real-time computer vision pipeline** to translate mid-air hand gestures into keyboard inputs.
- Developed a **Machine Learning predictive text engine** using Hidden Markov Models and Viterbi algorithm, analyzing **100,000+ formal and informal text samples** to derive bigram frequencies for language modeling.
- Developed an optimization algorithm to generate an 8-group keyboard layout, **reducing bigram penalties by 42.3%** compared to the traditional Nokia T9 arrangement.

Automated Daycare Infrastructure Design | CAD prototyping, User-Centric Design Jan 2026 – Apr 2026

- Designed **multi-mode gate security system** for a local daycare to mitigate child escape and reduce staff workload.
- Conducted **human-factors research** and incorporated **stakeholder feedback** to **iteratively refine system** requirements, response times, and user experience throughout development.
- Developed multi-part **CAD prototypes** to validate and demonstrate structural components.
- Presented and defended design decisions to diverse stakeholders with rigorous, data-driven research.

Dynamic Structural Failure Simulation | MATLAB, Dynamic Load Modeling & Analysis Nov 2025

- Engineered a **MATLAB model to simulate** moving payload physics, mapping internal forces to predict and reinforce the structural buckling failure zones of the bridge.
- Iteratively optimized the structural geometry to reinforce high-stress zones and maximize load capacity.

Vending Machine Redesign | Mechanical Prototyping & Testing, Data Collection Sep 2025 – Dec 2025

- Redesigned an opening mechanism to maximize operational reliability and universal accessibility, documenting all design decisions and specifications in a **comprehensive final design report**.
- Conducted research on **codes and accessibility standards** to establish rigorous physical design constraints.
- Evaluated **50+ concepts** through iterative prototyping and testing, converging on a **fully-specified final design**.

TECHNICAL EXPERIENCE

University of Toronto Aerospace Team (UTAT) May 2026 – Present

Satellite Attitude Determination and Control System (ADCS) Member Toronto, ON

- **Developing Python simulation software** to validate satellite attitude determination and control systems prior launch.
- Independently **modelled IMU, sun sensor, and magnetometer behaviour** by extracting bias and noise parameters from datasheets to replicate real-world sensor outputs under space conditions.
- **Self-studied** orbital mechanics and advanced dynamics to support team simulation goals.

LEADERSHIP & VOLUNTEERING EXPERIENCES

Innovire (STEM Nonprofit) | Vice-President Nov 2022 – Jun 2025

- Directed a student executive team to design and deploy free educational STEM events for **300+ youth**.
- Managed end-to-end partner outreach, securement of corporate sponsorships, and venue logistics.

Safetynet Charities | Academic Tutor Sep 2022 – Jun 2025

- Dedicated **100+ hours** tutoring students with learning difficulties, researching **ADHD** to tailor teaching methods.
- Supported youth from **low-income backgrounds** to bridge educational gaps and expand academic opportunities.