

# Allan Zhou

437-223-1682 | [allan.zhou@mail.utoronto.ca](mailto:allan.zhou@mail.utoronto.ca)  
[linkedin.com/in/allanzee](https://www.linkedin.com/in/allanzee) | [github.com/allanzee](https://github.com/allanzee) | [allanzee.github.io/allan.zhou/](https://allanzee.github.io/allan.zhou/)

## PROFESSIONAL EXPERIENCE

### Driverless Firmware Lead Engineer

September 2023 – Present

*University of Toronto | Formula SAE Electric*

*Toronto, ON*

- Architected **C++ state machine firmware** for microprocessors and onboard computers communicating via **CAN protocols** to control **electric vehicle systems** in **autonomous** and **driver-controlled** operations.
- Constructed a vehicle data acquisition system with **custom printed circuit boards, harnesses, and firmware**, adding **16 additional data sources** for analyzing and improving vehicle cooling systems and dynamics.
- Performed **root-cause analysis** to debug electrical systems and improve reliability using **testing equipment**.

### Engineering Research Intern

May 2024 – Present

*University of Toronto | Safety, Equity, and Design Lab*

*Toronto, ON*

- Designed **hardware** and **firmware** for a feedback device using **I<sup>2</sup>C** communication, improving compression rate and recoil for rescuers performing cardiopulmonary resuscitation (CPR) by **12.45%** and **18.18%**, respectively.
- Created custom **Python scripts** for automating device data acquisition and visualization, reducing time spent on data analytics and organization by **10 hours** over **120 experiments**.
- Effectively **communicated** team findings in written papers, scientific presentations, and conferences.

### Team Captain & Mentor

September 2019 – Present

*FIRST Robotics Competition | Team 6135*

*Toronto, ON*

- Applied engineering design principles to rigorously design, construct, test, and validate 3 team robots, leading to qualification at 2 Provincial Championships and 1 World Championship.
- Led hands-on workshops to train members in **mechanical, electrical, and software engineering** skills, enhancing overall team expertise and resulting in the retention of **20+** students.
- Managed logistics and team finance, raising over **\$20,000** from sponsors and grants in the 2022/2023 season.

### Software Engineering Intern

October 2023 – June 2024

*LifeTein*

*Remote*

- Optimized **CSS, HTML, and JavaScript** code to enhance speed and accessibility using website analysis tools, improving website performance by **10%** (based on Google Lighthouse analytics).
- Used **version control** (Git) and local servers (PHP) to track and test code changes.

## EDUCATION

### University of Toronto

Toronto, ON

*Electrical and Computer Engineering (Engineering Science Specialization)*

*September 2023 – Present*

- CGPA: 3.84**
- Minor in **Engineering Business**

## PROJECTS

### Vehicle Data Acquisition | Formula SAE Electric Vehicle

September 2023 – Present

- Soldered and tested custom **printed circuit boards** designed for data acquisition using analog signals.
- Built sensor **harnesses** for motor and inverter cooling, strain gauges, damper pots, and tire temperatures.
- Wrote **C++ firmware** to transmit data from interrupt and analog signals using **CAN** protocols.

### Callisto | FIRST Robotics Competition World Championship Robot

August 2021 – June 2022

- Constructed **command-based teleoperation** and **autonomous control systems** for a tank drivetrain, flywheel shooter, and climb system using **Java**, Gradle, and **version control** (Git, GitHub).
- Deployed PID controllers, encoders, gyroscopes, and cameras for precise control during driving and shooting.
- Wired, crimped, and soldered **electrical** components and deployed **firmware** to electrical control units.

## SKILLS & EXPERIENCES

**Languages:** Java, Python, C++, JavaScript, HTML/CSS

**Tools:** Altium, Git, GitHub, Visual Studio Code, PlatformIO, MATLAB

**Awards:** University of Toronto Engineering Research Fellowship, Susana Arnott Robotics Leadership Award

**Certifications:** Swim & Lifesaving Instructor, Canadian National Lifeguard, Standard First Aid with CPR-C

**Experiences:** Aquatics Administration & Program Management, Community Facility Supervisor