Allan Zhou

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Education

University of Toronto Sep. 2023 – Apr. 2029
Bachelor's of Engineering Science in Electrical and Computer Engineering *Toronto, Canada*

- Cumulative GPA: **3.84/4.00** (Dean's List with Honours Recipient)

Technical Skills

CAD: Altium Designer, KiCAD, LTspice, Solidworks, Rapid Harness
Software & Protocols: C/C++, Python, Java, Git | CAN, I2C, SPI, UART, LTE-M
Lab Tools: Oscilloscopes, Function Generators, Electronic Loads, Spectrum Analyzer (VNA), DMM, Soldering

Professional Experience

Electronics & Powertrains Student Placement Jul. 2026 – Jun. 2027
Red Bull Racing & Red Bull Racing Technology | Formula 1 Racing Team *Milton Keynes, England*

- Incoming 12-month industrial placement at Red Bull Ford Powertrains, supporting electronics and powertrain development for high-performance Formula 1 Energy Recovery Systems (ERS) and electrical systems.

Electrical Engineering Intern May 2025 – Jun. 2026
EDL | Engineering Consulting Company *Toronto, Canada*

- Drove PCBA design, firmware integration, and electrical architecture development for embedded systems on a novel electric vehicle with innovative amphibious abilities and over **30 km** of range in harsh Arctic environments.
- Designed, integrated, and validated motor control PCBAs for actuator-driven vehicle systems using EDA tools (KiCAD, LTspice) and test equipment (oscilloscopes, power supplies), resulting in **5 km** of reliable vehicle testing.
- Designed in-house cellular electronics integrating with vehicle control unit products for micromobility fleets.

Low Voltage Architecture Lead Sep. 2023 – Jun. 2026
University of Toronto Formula Racing | Formula SAE Electric Team *Toronto, Canada*

- Designed PCBs using EDA tools (Altium), established test plans for PCBAs, and troubleshooted electrical systems within fast-paced race environments, contributing to **500 km** of testing and **80 km** of failure-free racing.
- Leading development of power, communication, and safety architectures with automotive harness designs projected to reduce total PCBA footprint size by over **10,000 mm^2**, enabling more compact mechanical packaging.

Hardware & Firmware Engineering Researcher May 2024 – Sep. 2024
University of Toronto | Safety, Equity, and Design Lab *Toronto, Canada*

- Integrated gyroscope and accelerometer sensor hardware and firmware onto cardiopulmonary resuscitation (CPR) assistance devices, improving rescuer compression rate and recoil by **12.45%** and **18.18%**, respectively.
- Developed Python scripts for automatic data acquisition, improving test efficiency by **10 hours** over **120 trials**.

Robotics Team Captain & Mentor Sep. 2019 – Aug. 2024
FIRST Robotics Competition | Team 6135 *Toronto, Canada*

- Led electrical and software design, testing, and troubleshooting of electronics and embedded firmware, leading to reliability in **91%** of competition matches and the team's first qualification to the World Championships.

Projects

Cellular Connectivity Module | *Electronic Control Unit*

- Designed cellular electronics featuring nRF microcontrollers with GNSS, LTE-M connectivity, cloud integration, and firmware-over-the-air (FOTA) updates, achieving **96%** antenna power transfer for robust wireless performance.

Steering Control PCBA Module | *Electric Transportation Vehicle*

- Designed electronics for **144 W** steering actuators, developing interrupt-driven STM32 firmware leveraging timers, DMA, watchdogs, encoders, and CAN communication to achieve closed-loop steering control with **0.1°** resolution.

Vehicle Data Acquisition System | *Formula SAE Electric Racecar*

- Assembled and integrated data acquisition electronics and manufactured vehicle harnesses to maintain signal integrity and minimize EMI, enabling successful data sampling of **16 additional vehicle sensors** at **100 Hz**.