Andrew Du

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TECHNICAL SKILLS

Hardware: **Altium, LTSpice, PCB Manufacturing, Oscilloscopes**, FPGAs, MCUs (STM32, RPi, Arduino), SOLIDWORKS, OnShape
Software: **Python, C/C++**, Java, MATLAB, Linux, Git

PROFESSIONAL EXPERIENCE

Tesla - Vehicle Hardware Intern — May 2025 - Present

Hardware design for Tesla vehicles.

- With Altium, led the design, layout, and bringup of an **8-layer processor-in-loop (PIL) PCBA** for the TI AM6421 microprocessor, **enabling testing and emulation of 4 different high-voltage controllers** with scalable design for validation of future variants.
  - Implemented components on PCBA including multiplexers, level shifters, power supplies, communication transceivers, BGA microprocessor, flash memory and DDR RAM.
  - Integrated board with existing Tesla testing architecture using **K26 SoM** (FPGA + ARM Core) to facilitate emulation of diverse test cases and different high-voltage controller configurations for microprocessor.
  - Designed and routed **high-speed transmission lines** for various signals including PHY, CAN, OSPI, SERDES.
  - Managed board bring-up, including testing, debugging, and verifying end-to-end functionality.
  - Collaborated cross-functionally with software validation engineers to align hardware and software integration, and ensure design requirements were met to deliver a scalable PIL validation architecture.
- Designed and implemented a Hardware-in-Loop (HIL) tester used in fault injection for etherloop communication.

UBC AeroDesign - Avionics Hardware — September 2023 - Present

Engineering design team competing in annual SAE Aero Design Competition.

- Designed and manufactured avionics hardware:
  - A wiring hub PCB to consolidate power distribution, sensor modules, and peripheral systems.
  - A power distribution buck converter PCB using a LM5146 controller chip; responsible for power efficiency, component selection, schematic, layout. Employed oscilloscopes, digital multimeters, for performance characterization.
- Wrote firmware in C for STM32 and RTK GNSS module to communicate with plane.

PROJECTS

Autonomous Racing Robot

In six weeks, designed a line-following robot to compete in racing competition.

- Designed and hand-soldered h-bridge circuits for **motor control**, infrared sensing circuits, collision detectin circuits, and IMU.
- **Implemented PID control algorithm** for steering and speed optimization using **STM32** as well as created a state machine based on sensor data inputs from sections of racetrack.
- Designed metal robot chassis on OnShape and employed the use of light power tools, laserjet, waterjet, 3D printing techniques for manufacturing.

Closed-Loop Motor Speed Controller

Designed a feedback control circuit to adjust the speed of a motor.

- Circuit was constructed using digital logic counters, clock pulse generators, digital-to-analog converters.
- Used function generators, logic analyzers, oscilloscope, for bring up and debugging.

EDUCATION

Engineering Physics, University of British Columbia — Graduation: April 2026

Engineering Physics combines honors-level math and physics with applied learning in electrical and computer engineering.

- Relevant Coursework: Signals and Systems, **Electronic Circuit Design**, Microcontrollers and Digital Systems.