

Charles Zhao

Mechatronics Engineering Student · University of Waterloo

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EDUCATION

University of Waterloo

Sep 2023 – Expected Apr 2028

Honours Mechatronics Engineering, Co-op · Third year

TECHNICAL SKILLS

Electronics: Altium Designer, KiCad, analog front ends, power regulation, PCB assembly and testing

Embedded: C/C++, STC8/8051, ESP32, STM32, Keil C51, UART/SPI/I²C, RS485, Modbus

Software & tools: TypeScript, React, Electron, Node.js, Python, Git, SolidWorks, 3D printing

EXPERIENCE

Minebea Intec GmbH

Jun 2026 – Jul 2026

Engineering Internship

- Designed or modified more than 20 PCBs across two work periods at Minebea Intec in 2025 and 2026.
- Designed the PR5170 analog acquisition mainboard, digital communications mainboard, and shared power and industrial-interface baseboard.
- Developed standard and Ex ec (gas Zone 2) variants of both analog and digital mainboards.
- Adapted two Embedded C firmware branches for acquisition, calibration, filtering, and RS485 communication on STC8/8051 controllers.
- Developed TConfig with Electron, React, and TypeScript for instrument monitoring, parameter configuration, and calibration workflows.

Charles Tech

Started Jul 2025

Embedded Systems Engineer & Owner

- Delivered PCB design services for global clients, translating requirements into manufacturing-ready schematics and high-speed layouts.
- Established the engineering workflow and shifted the business toward proprietary electronic product development.

Minebea Intec GmbH

Jan 2025 – Apr 2025

PCB Designer

- Designed PR5170 measurement, power, communication, HMI, and protection-board variants.
- Integrated ADC and MCU circuitry, regulated supplies, RS232/RS485 interfaces, and 4–20 mA output functions.

Ningbo Chengzi Network Technology Co., Ltd

May 2024 – Aug 2024

Website Developer

- Developed a WeChat Mini Program prototype that attracted more than 100 early users in its first month.
- Improved LLM workflows through prompt engineering and context management; analyzed more than 10 competing products.

SELECTED UNIVERSITY PROJECT

Geese waste-cleaning robot

Oct–Dec 2023

Programmed motor control and sensor integration in RobotC; iterated a 3D-printed collection mechanism through more than 20 test cycles.