Chenyu Pan

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Education

University of Waterloo   Waterloo, ON
*Bachelor of Applied Science – BASc, Electrical Engineering (**3.76 GPA**)*   *Expected Graduation: 2030*

Skills

Hardware: Microcontrollers (STM32 / ESP32 / Arduino), Oscilloscope, Function Generator, Power Supply, Hot Air Station / Rework, DMM, Soldering (SMD / THT), PCB Design, Embedded Systems
Software: C / C++, Python, Altium, KiCAD, Git / GitHub, AutoCAD

Experience

Systems Engineering Intern   Jan 2026 – Apr 2026
WSP Global   *Toronto, ON*

- Incoming Winter 2026, part of the Rail & Transit division and the Union Station Enhancement Project (USEP).
- Providing support to system lifecycle development, integration, testing, and deployment activities, while conducting verification / validation of system requirements and design.

Electrical and Firmware Team Member   Dec 2025 – Present
Midnight Sun Solar Car Team   *Waterloo, ON*

- Engineered a high-performance PCB for a 15V-to-5V DC/DC buck converter using Altium, incorporating optimal layout strategies to optimize impedance pathways and ensure stable output.
- Installed and routed electrical harnesses for MSXVI, ensuring system integrity and adherence to rigorous safety standards for optimal vehicle performance.
- Developed an interface using FreeRTOS in C to read from an ADS1115 ADC with an STM32.

Data and Technology Intern   Sep 2024 – Jan 2025
City of Vaughan   *Vaughan, ON*

- Analyzed and compiled 250+ spatial data points across 20+ public works datasets in ArcGIS Pro and AutoCAD to support infrastructure planning and data standardization for Corporate Asset Management.
- Conducted city-wide field work using Field Maps to reevaluate 200+ road segments, supporting urban planning.
- Integrated newly acquired GIS hardware scans into ArcGIS Online using Arcade to achieve sub-10 cm GPS accuracy, improving precision for location-sensitive assets by 80%.

Top Projects

VectorDrive 1.0 – Omni-Directional Drivetrain (WIP) 🔗 | *KiCAD, STM32, PCB Design, ESC Design*

- Engineered a custom STM32-based omni-directional drivetrain controller breakout board using KiCAD, selecting and integrating H-bridge motor driver ICs to handle peak motor currents effectively.
- Devised critical electrical components, including shunt resistors for current sensing, bulk capacitance for stability, and voltage regulators to provide reliable power to the STM32 and peripheral components.

100W USB-C PD Sink Board 🔗 | *Altium, STM32, PD Controllers, PCB Design, Power Electronics*

- Designed a 100W USB-C PD board to automatically negotiate high-power profiles (up to 20V / 5A) for electronic power applications, achieving 98.5% efficiency.
- Curated compact solution with integrated safety features (ESD / over-voltage), reducing power regulation footprint by 40%; integrated STM32 I^2C interface for telemetry tracking and dynamic voltage requests.

HRVita – Wrist-Wearable Delirium Screener 🔗 🐙 | *ESP32, C++, Low-Power, System Design*

- Created an ESP32-based wrist-wearable device programmed in C++, powered by a 3.7V LiPo battery, to compute heart rate variability (HRV) and predict Hospital-Based Delirium onset 2-4 hours in advance.
- Implemented live tracking over WiFi networks to a custom website with support for multiple patients, visually-appealing dashboards, and an integrated specialized AI agent, allowing for easy patient monitoring.