

# Martin Wu

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## Education

### University of British Columbia

Bachelor of Applied Science in Engineering — GPA: 3.89/4.33

Sep 2025 – 2029

Vancouver, BC

## Technical Skills

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

**Frameworks & Tools:** React, Flask, PyTorch, NumPy, Git, GitHub Actions, Docker, InfluxDB, Grafana

**Embedded & Hardware:** STM32, SPI, CAN bus, HAL drivers, PT1000 RTD sensors, MAX31865

**Developer Tools & Platforms:** WSL2/Linux, STM32CubeIDE, VSCode, Vercel, vast.ai, HuggingFace

## Experience

### Co-Founder & Software Engineer

Dec 2025 – Present

AI/ML Startup (*Seed Round*)

Vancouver, BC

- Developed LLM optimization system reducing 70B parameter model requirements from 8x A100 GPUs (640GB) to 2x RTX 4090 (48GB)
- Optimized PyTorch inference pipelines for Llama-3.1-70B on vast.ai GPU infrastructure
- Built production deployment architecture with HuggingFace integration and memory-efficient loading

### Embedded Systems Engineer

Sep 2025 – Present

UBC Solar

Vancouver, BC

- Engineered PT1000 RTD temperature sensing system with MAX31865 after motor failure at competition revealed telemetry gaps
- Analyzed Altium PCB schematics and integrated hardware to driver dashboard for real-time monitoring
- Developed STM32 firmware in C implementing SPI communication and MAX31865 register configuration
- Achieved  $<1^{\circ}\text{C}$  temperature measurement accuracy through ADC-to-temperature conversion, improving from multi-degree variance
- Integrated sensor data over CAN bus to dashboard, enabling safety monitoring independent of base station
- Configured Docker/Tailscale/InfluxDB/Grafana pipeline in WSL2/Linux via Sunlink radio for live vehicle diagnostics
- Conducted design reviews and debugging sessions using breakpoints and step-through analysis
- Developing external lighting control with dashboard button integration

## Projects

### Useful Tool Hub | *Python Flask, JavaScript, yt-dlp, Instaloader, Vercel*

2025 – Present

- Built full-stack web app with Python Flask backend for media downloading
- Integrated yt-dlp and Instaloader for Instagram carousel and YouTube video extraction with format selection
- Deployed Flask backend on Vercel with GitHub Pages frontend; live at [martinw500.github.io/Useful-Tool-Hub](https://martinw500.github.io/Useful-Tool-Hub)

### Algorithmic Trading System | *Pinescript v6, Python, TradingView*

Q1 – Q3 2025

- Developed quantitative trading strategies achieving 179% growth in backtesting with 1.05% alpha
- Implemented long/short strategies yielding 8.3% Q1 and 12.4% Q2 portfolio growth
- Built Python integration for strategy validation across 7-year historical dataset

### Math Quiz Generator | *React, MathJax, Python Flask, GitHub Actions*

2024

- Developed quiz platform with adaptive difficulty and weighted operation selection across 10 levels
- Integrated MathJax for mathematical notation; deployed via GitHub Actions to GitHub Pages

### Haar Wavelet Image Compressor | *Python, NumPy, Pillow, CustomTkinter*

2024

- Implemented Haar wavelet transform for lossy RGB image compression using NumPy
- Built CustomTkinter GUI with real-time compression parameter adjustment and visual comparison

## Awards & Achievements

### Mathematics Competition Awards

2023 – 2025

- Canadian Senior Mathematics Contest:** Top 0.5% (71st place) with score of 52/60
- AIME Qualifier (2x):** Top 5% on AMC 12 A & B with score of 118.5
- Euclid Contest:** Top 2% with score of 85