Martin Wu

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Education

University of British Columbia **Sep 2025 – 2029**
Bachelor of Applied Science in Engineering — GPA: 3.89/4.33 *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*

- Developing configuration-level LLM optimization system reducing 70B parameter model hardware requirements from 8x A100 GPUs (640GB VRAM) to 2x RTX 4090 (48GB VRAM) for enterprise deployment cost reduction
- Testing and optimizing inference pipelines using PyTorch and Llama-3.1-70B on vast.ai GPU infrastructure
- Building production-ready deployment architecture with HuggingFace model integration and memory-efficient loading

Embedded Systems Engineer **Sep 2025 – Present**
UBC Solar *Vancouver, BC*

- Engineered PT1000 RTD temperature sensing system with MAX31865 breakout board after motor failure at competition revealed telemetry blind spots; analyzed Altium PCB schematics and wired hardware integration to driver dashboard
- Developed STM32 firmware in C using STM32CubeIDE and VSCode in WSL2/Linux environment; implemented SPI communication protocol, MAX31865 register configuration, and ADC-to-temperature conversion achieving within 1°C accuracy versus previous multi-degree variance
- Integrated real-time sensor data over CAN bus to driver dashboard, enabling local heat monitoring independent of base station telemetry for critical safety improvements during competition
- Configured remote data collection pipeline using Docker, Tailscale VPN, InfluxDB time-series database, and Grafana dashboards via Sunlink radio system for live vehicle diagnostics and performance analysis
- Conducted design review presentations and technical debugging sessions using breakpoints and step-through analysis
- Currently developing external lighting control system with driver dashboard button integration

Projects

Portfolio Website | *HTML/CSS/JavaScript, GitHub Actions* **2025**

- Built responsive personal portfolio with dark/light theme toggle and scroll-triggered animations
- Implemented CSS custom properties for dynamic theming and optimized performance with efficient animations
- Automated deployment pipeline with GitHub Actions for continuous delivery to martinwu.tech

Useful Tool Hub | *Python Flask, JavaScript, yt-dlp, Instaloader, Vercel* **2025 – Present**

- Built full-stack web application with Python Flask backend APIs for media downloading functionality
- Integrated yt-dlp and Instaloader libraries for Instagram carousel and YouTube video extraction with format selection
- Deployed Flask backend on Vercel serverless platform with GitHub Pages frontend; live at 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 alpha of 1.05%
- Implemented separate long and short strategies yielding 8.3% Q1 and 12.4% Q2 portfolio growth
- Built Python integration for data analysis and strategy validation across 7-year historical dataset

Math Quiz Generator | *React, MathJax, Python Flask, GitHub Actions* **2024**

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

Haar Wavelet Image Compressor | *Python, NumPy, Pillow, CustomTkinter* **2024**

- Implemented Haar wavelet transform algorithm for lossy RGB image compression using NumPy matrix operations
- Built desktop GUI with CustomTkinter enabling 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