Chew Tzi Hwee

Electrical & Software Engineer
Email | LinkedIn | Github | Portfolio |

Skills

Programming: TypeScript, C/C++, Python, Java, Go, Verilog
Frameworks/Tools: React, NodeJS, .NET, Git, Docker, PostgreSQL, TensorFlow, PyTorch, CAD
Embedded/Hardware: ESP32, Arduino, Jetson Nano, Raspberry Pi, VLSI (HSpice, Virtuoso) 3D Priting, Laser Cutting

Education

National Tsing Hua University (NTHU) *09/2022-06/2026 (Expected)*
B.Eng. in Electrical Engineering and Computer Science *Hsinchu, Taiwan*

- Class & Graduation Representative, Recipient of Overseas Chinese Freshmen Scholarship A & B
- A+ in key courses: Logic Design, Computer Programming, Introduction to IoT, Satellite Electrical System Design, Practical Project I; strong in programming, design, and practical applications.
- Semester in Tokyo, Japan, achieving Japanese N3 certification and boosting cross-cultural confidence.

Experience

NTHUMods • Founder & Lead Developer *10/2023-Present*
Open-source, non-profit student platform addressing lack of centralized university info *Hsinchu, Taiwan*

- Architected full-stack system from scratch using React, PostgreSQL, Docker, Cloud VMs, and Cloudflare Workers, centralizing courses, grades, bus schedules, and announcements for 10,000+ users (8,800 peak MAU, 60% of student body).
- Recruited and managed 20+ contributors, overseeing product roadmap, technical strategy, sustainability, and succession planning; secured fiscal sponsorship from local tech firms and advanced official talks for integration into NTHU's systems.
- Incorporated ongoing freelance full-stack development in 2025, enhancing features while advocating open-source.

BioPro Scientific • ML Researcher & Engineer Intern *06/2024-08/2024*
EEG emotion classification project applying deep learning *Hsinchu, Taiwan*

- Implemented 4 deep learning models with TensorFlow and PyTorch with 17% increased accuracy with 60% feature reduction, mastering preprocessing, feature engineering, and validation techniques to improve accuracy in emotion detection from EEG data.
- Collaborated on dataset analysis and model optimization, contributing to biofeedback applications now in product development.

Google • Hardware Product Sprint *06/2024-08/2024*
12-week program from ideation to prototype for AI hardware solutions *Taipei, Taiwan*

- Led perception and inference software stack for Project 'Fresh'—AI food inventory system combating waste by tracking refrigerated items and expiry dates using Gemini API, TensorFlow, React, 3D printing, Arduino, and Raspberry Pi.
- Developed closed-loop prototype with proactive alerts (e.g., "Your milk expires tomorrow") and recipe generation based on soon-to-expire items; highlighted for 'Best-in-Class' Innovation for viable ambient AI solution.

Elliance • Software Engineering Intern *01/2022-06/2022*
Industrial automation & semiconductor protocol (SECS/GEM) deployment *Malaysia*

- Implemented Semiconductor Manufacturing equipment control protocol (SECS/GEM) in 10+ factories in Penang, navigated vendor-specific variations to ensure reliable industrial communication and integration.
- Developed AI Learning Kit for training Honeywell management on AI integration in production lines.

Projects & Awards

Autonomous Omnidirectional Rover • Robot Course Project *2024*

- Architected core perception (Jetson Nano with ROS2, OpenCV for pathfinding/object recognition) and control (ESP32 firmware with PID for precise movement); achieved 100% reliability in obstacle course with zero errors under competition conditions.

Restaurant Seat Tracker • Meichu Hackathon, 1st Runner-Up *2022*

- Team-led prototype using fiducial markers, OpenCV/Python, PixArt sensor, and Raspberry Pi for low-cost table tracking; optimized algorithms to improve efficiency over expensive Bluetooth alternatives.

IoT Classroom Clock System • Deployed at School *2021*

- Designed and deployed 56 synchronized clocks with temperature/humidity sensors using ESP32, Firebase, MQTT; built dashboard for monitoring and OTA updates, solving time-drift and providing environmental data - still in use.