Ho Quoc Thai

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PROFILE

Final year student in software engineering enthusiasm in embedded software development. Hands-on experience developing a complete operating system in C for ARM-based micro controller and building an end-to-end IoT weather station with cloud integration. Seeking for internship or entry-level embedded software engineer role to apply skills in software development, hardware interfacing, and system-level problem-solving.

KEY SKILLS

- Good knowledge in C/C++, Python and Java
- Good knowledge in hardware architect and communication protocols: SPI, I2C, MQTT
- Team working
- Hardworking
- Communication & Presentation
- Strong Critical thinking skills
- Leadership
- Problem Solving
- Organizing

WORK EXPERIENCE

Bare Metal OS and App development for Micro controller **March 2024 – September 2024**

- Contribute to develop a complete bare-metal operating system from the ground up in C for the Raspberry Pi platform, focusing on low-level hardware interfacing and OS fundamentals.
- Help with developing a robust Command Line Interpreter (CLI) with features like command history, tab-based auto-completion, and dynamic parameter handling.
- Responsible for implementing UART communication, allowing for real-time changes to baud rate and stop bit configurations.
- Responsible for implementing a frame buffer graphics driver to render complex visuals, including custom bitmap fonts, ARGB32 images, and a video playback system achieved by decoding and displaying sequential image frames.
- Responsible for building a multi-level interactive game application that ran on the OS, especially handling user keyboard input and logging game state data back to the CLI for debugging.

Technologies: C, ARM Assembly, Bare-Metal Development, ARMv8 Architecture, QEMU, GCC, UART & Frame buffer Drivers.

IoT Weather Station **August 2025 – September 2025**

- Designed and built a Wi-Fi-enabled weather station using an ESP32 to collect and transmit real-time environmental data.
- Engineered a robust data pipeline, transmitting sensor readings as JSON payloads to a cloud MQTT broker for remote access.
- Developed firmware in C++/Arduino to interface with a suite of sensors via I2C, including a BME280 (temperature, humidity, pressure) and a SGP30 (air quality).
- Visualizing the collected time-series data using a Grafana web dashboard, allowing for historical trend analysis.
- Tracked my own budget and assessed where resources should be spent.

Technologies: C++, ESP32, Platform IO, I2C, MQTT, JSON, Git, Grafana.

EDUCATION

RMIT University Vietnam October 2021 – February 2026 (EXPECTED GRADUATION DATE)

Bachelor of Software Engineering

INTERESTS & HOBBIES

- I am a big fan of IoT solutions for home management, living quality enhancement and environmental.
- I enjoy learning and implementing new technologies in software development and embedded systems.
- I’m currently self-learning Python for AI and Machine Learning implementation.