Nguyễn Hoàng Minh Quôc

Embedded Engineer Intern

0389378725 quoc20053008@gmail.com https://github.com/Biu2005 Phường Phú Thuận, TP.HCM

CAREER OBJECTIVE

Seeking an Embedded Engineer Intern position to apply C/C++ skills in microcontroller firmware development, real-time task management, and peripheral interfacing. Eager to gain hands-on experience contributing to reliable embedded systems and IoT integration.

EDUCATION

University of Science - VNUHCM 2023 - 2027

Bachelor: Electronics and Telecommunications

- **GPA: 8.7/10**
- **Co-author and presenter of the paper:** "VQASEP: Applying AI Technologies to develop a Vietnamese Q&A System on an Embedded Platform," successfully accepted and presented at the prestigious 14th Scientific Conference (VNUHCM-US Conf 2024). The project involved building a standalone voice assistant using a Raspberry Pi and Google Gemini API to deliver an intuitive, hands-free Q&A experience in Vietnamese. (**Git:** https://github.com/Biu2005/PeeDee_assistant).

SKILLS

Embedded Programming	C/C++, Embedded C, FreeRTOS
Microcontrollers, Mini pc & Architecture	ARM Cortex-M, STM32, ESP32, ESP8266, Raspberry Pi, Arduino
Interfaces & Peripherals	SPI, I2C, UART, ADC, Timers, GPIO, Interrupts
Hardware & PCB Design	PCB Design: Altium, Proteus Prototyping: Proficient in soldering SMD (QFN, TQFP, 0603) and through-hole components
Tools & Environments	Git, Github, STM32CubeIDE, Keil C, VS Code, ESP-IDF,

MY PROJECTS

IoT Attendance System (RFID & Google Sheets) 22/08/2025 - Present

Role: Firmware Developer and Hardware Engineering

Description:
Developed an ESP32-based IoT attendance device focusing on real-time task scheduling, peripheral interfacing, and reliable IoT connectivity with Google Sheets as the cloud client.

Responsibilities & Achievements:

- Designed and assembled a custom PCB (ESP32 + RC522 RFID + power supply) using Altium.
- Integrated **SPI-based RFID module (RC522)** for card reading and authentication.
- Implemented **FreeRTOS tasks** to manage RFID scanning, WiFi communication, HTTPS data transmission, and system status update.
- Developed **WiFi communication** with retry and error handling for reliable cloud connectivity.
- Integrated **HTTPS client** with certificate validation to securely sync attendance records directly to **Google Sheets**.
- Optimized **power consumption** using deep sleep and wake-on-interrupt from RFID module.

Technologies: ESP32 (ESP-IDF, FreeRTOS), SPI (RC522), UART (debug logging), HTTPS (Google Sheets API), Altium PCB, Embedded C
Git: https://github.com/Biu2005/attendance_SYS.

Calculator with Keypad and LCD 06/2025 - 19/08/2025

Role: Firmware Developer and Hardware Engineering

Description:
Built a handheld calculator on STM32, applying FreeRTOS for task scheduling and peripheral interfacing to handle keypad inputs, perform calculations, and display results on an LCD.

Responsibilities & Achievements:

- Designed and assembled a custom PCB (STM32 + Keypad + LCD) using Altium.
- Implemented **keypad input handling** with debouncing to ensure reliable multi-step operations.
- Integrated **LCD 16x2 module** via GPIO to display real-time results.
- Applied **FreeRTOS tasks** to process (input polling, calculation, display update).
- Extended functionality to support **first- and second-degree equations** in addition to basic arithmetic.

Technologies: STM32, FreeRTOS, GPIO, UART (debug logging), LCD 16x2, Altium PCB, Embedded C
Git: https://github.com/Biu2005/Caculator

TEAM PROJECTS

LiteHouse - Smart Home System (STM32)

- Team size : 3 (1 Hardware + 1 Firmware + 1 Software)
- Role: Firmware Developer

- Programmed an **STM32-based smart home system to control devices (servos, relays)** via a **Bluetooth mobile app (MIT APP INVENTOR).**
- Implemented an automated fire-response safety feature that triggers alarms, sends mobile alerts, and opens doors upon gas detection (MQ2 sensor).
- **Git: https://github.com/Biu2005/LiteHouse**
- **Video project: https://drive.google.com/drive/folders/1IyHeAX215S69uxc0pfSo29VWZflstxH-?usp=sharing**

Checkpoint Timing System (ESP32)

- Team size: 2 (1 Firmware + 1 Software(Web))
- Role: Firmware Developer
- Developed firmware for a race timing system using **ESP32** to capture vehicle lap times at checkpoints.
- Utilized **WebSockets** to transmit real-time data to a web dashboard, ensuring low-latency delivery and accurate time synchronization for the competition.
- **Git: https://github.com/Biu2005/Checkpoint-System**

ACTIVITIES

Robotics & IoT Club (HCMUS) 08/2023 - 08/2025

STEM Educator: Led and instructed Arduino courses (basic & advanced) covering embedded programming, UART communication, and hardware integration for club members.

Technical Supporter (ROBOCUS Competition 2024, 2025): Provided live technical support and troubleshooting (C/C++, Arduino) for teams with line-following and remote-controlled vehicles.

Ngo Quyen High School 11/2024 - 01/2025

Technical Advisor

- **Provided solutions and optimization strategies for remote-controlled vehicles (Arduino) communicating via Bluetooth (HC-05, UART) with an MIT App Inventor mobile app.**

American Center 12/2024 - 01/2025

Technical Supporter

- **Served as a technical support member for a STEM outreach program, assisting with workshops and technology demonstrations at universities across the Mekong Delta.**

CERTIFICATE

English: VSTEP B2 (Overall: 6.5/10) 15/06/2025