Pham Huu Nghia

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Experience

8/2024 – PRESENT

Working as a freelancer in embedded IoT programming

As a freelance Embedded IoT Programmer, I specialize in collaborating closely with clients to transform their ideas into reliable, high-performance IoT solutions. Combining strong expertise in embedded systems, low-power optimization, and IoT protocols. I ensure seamless communication at every stage of the project. I pride myself on quickly learning and adapting to new technologies, enabling me to tackle diverse challenges and deliver innovative, scalable solutions. My commitment to technical excellence and client satisfaction ensures businesses can effectively integrate cutting-edge IoT technology into their operations.

8/2023 – 11/2023

C/C++/Embedded Dev Engineer (Intern)| TMA Solutions | District 12, Ho Chi Minh City

During my internship, I gained experience in programming with C/C++, developing and optimizing applications in real-world environments. I worked on the Linux operating system, proficiently using tools such as Git, Bash Script, and system management. Additionally, I became familiar with the Agile methodology, participating in activities like sprint planning, daily stand-ups, and reviews to ensure project progress. Besides technical skills, I also developed soft skills such as effective team communication, flexible problem-solving, time management, and the ability to learn quickly in a dynamic technology environment.

Education

SEPTEMBER 2020 – SEPTEMBER 2024

Bachelor of Computer Engineering Technology | HCMC University of Technology and Education | Thu Duc City

Skills

• **Programming Languages/Hypertext:** C/C++, Python, Bash Scripts, HTML, CSS, Java Script, C#.

• **Programming Methods:** OOP, RTOS.

• **Microcontroller/Embedded Computer:** AVR, ESP32, STM32, 8051, Raspberry Pi, Jetson Nano.

• **FPGA:** TangNano9k, Xilinx Spartan 3E.

• **Communication Protocols:** UART, SPI, I2C, I2S (CS43L22), CAN.

• **Tools:** VM Ware, Cadance Virtuoso, Vivado, Eclipse, Xilinx ISE, Matlab/Simulink, VS Code, GDB, Git, Valgrind, STM32Cube, Altium, Proteus, Vim…

• **OS:** Linux.

• **Frameworks/Library:** PyTorch, Keras, PyQt5, Pandas, Numpy, OpenCV.

• **Non-Tech:** Problems-Solving, Good Communication, including communicating with English. Japanese (Beginner).

Achievements

• 3rd prize for the Xmas Gift model designing and LED effect programming competition (Organized by the Faculty of Electrical and Electronics Engineering, HCMUTE).

• Study Encouragement Scholarship (2023) (B type).

Projects

Design and Simulation of a Digital Signal Processing FIR Filter on FPGA

Programming Languages	MATLAB, Verilog
Team Size	1
Decription	The FIR Filter project focuses on designing a digital filter for signal processing on an FPGA, offering key functionalities such as noise removal and unwanted frequency filtering. Its high-performance implementation on FPGA enables faster signal processing compared to traditional CPUs or MCUs, ensuring real-time compatibility with minimal latency for embedded applications. Practical applications include filtering sensor signals in IoT systems, audio signal processing in communication devices, and enhancing signal quality in medical devices such as ECG or EEG systems.
Tools	MATLAB, Vivado (Simulate), Gowin
Hardware	TangNano9K
Github	https://github.com/Jerguel02/FIR_IIR_Filter.git

The automatic mulberry cultivation system uses hydroponic methods

Programming Languages	C++, Python
Team Size	2
Decription	The mulberry cultivation system is cared for through automatic observation and utilizes IoT knowledge to implement the system, using ESP32 hardware and controlled via a web interface and TFT touchscreen. Communication between the web and ESP32 is done through Firebase, optimizing and enhancing the system's smoothness by using FreeRTOS.
Tools	Arduino IDE, VS Code, Altium.
Hardware	4" TFT screen, ESP32, sensor, motor, ACS712 (30A), Relay.
Processes/Tasks/Interfaces	SPI, I2C + Interrupt, FreeRTOS, multitasking.
Frameworks	FreeRTOS, PyQt5 (Design an application with an interface that converts images to hex code, and creates images by drawing pixels on the app.

YOLO-based Sign Language Recognition for Deaf, Blind and Dumb Individuals

Programming Languages	C++, Python, BashScripts

Team Size	2
Decription	Use YOLOv8 algorithm to recognize sign language gestures. Translate gestures into text and audio and analyze facial expressions to understand the user's emotional state better. Use push buttons combined with interrupt handling to perform a task inside a PyQt5 application.
Model	YOLOv8
Hardware	Jetson Nano, Camera, Screen, Speaker/headphone
Processes/Tasks	Interrupt Handling, Multithreading.
Frameworks	PyQt5, PyTorch.
Github	https://github.com/Jerguel02/YOLO-Based-Sign-Language-Recognition-for-Deaf-Blind-and-Dumb-Individuals-For-Jetson-Nano

THE MUSIC PLAYER UTILIZES STM32.

Programming Languages	C
Team Size	1
Decription	Using STM32 as the central memory unit for the music player, controlling phone operations connected via Bluetooth to HC05, communicating with STM32F4 via UART interrupts, retrieving song data from the memory card via USB, and outputting sound through I2S and CS43L22.
Tool	STM32Cube
Hardware	STM32F407-DISC, HC05, CS43L22, Speaker.
Processes/Tasks/Interfaces	UART, I2C, I2S, USB, Bluetooth, UART Rx Interrupt Handling.
Github	https://github.com/Jerguel02/STM32F4-Music-Player

DESIGN BILLBOARD ADVERTISEMENT USING P5 LED MATRIX

Programming Languages	C, C#
Team Size	2
Decription	Write a C program to load into the microcontroller for displaying desired images on a P5 LED matrix. The data input to the module will go through a conversion step from an image to Hex code using Winform. Develop a program to accomplish this task.
Tool	STM32CubeMX, STM32CubeIDE, KeilC, Visual Studio.
Hardware	STM32F1, STM32F4, P5 Led Matrix
Processes/Tasks/Interfaces	USB, Interrupt Handling.
Github	https://github.com/Jerguel02/QuangBao