**Ngo Duc Hieu (Hieu Ngo)**

Embedded Hardware/Firmware Developer

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**SUMMARY**

I graduated as a salutatorian from HCMUTE with a GPA of 3.32, specializing in Embedded Systems, IoT, RTOS, C/C++ programming, and strong hardware design. At Viettel, I conducted research and developed applications for network technologies such as LTE and NB-IoT, enabling advanced solutions for IoT devices.

I love turning knowledge into practical solutions that solve real-world problems. Working in teams is something I enjoy, as I believe collaboration and sharing ideas lead to the best results. I’m passionate about creating innovative projects that make a real impact.

**TECHNICAL SKILLS**

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| --- | --- |
| **Programming Languages**: C/C++/Python | **Hardware Design Tools**: Altium, EasyEDA |
| **Version Control**: Git | **Protocols**: MQTT, HTTP, LORA, NB-IoT, LTE, etc |
| **Platforms**: ThingsBoard, AWS, Innoway |  |
| **Foreign Language:** TOEIC 725/990 |  |
| **Operating Systems**: FreeRTOS, Centos 7 |  |

**EDUCATION**

**HCMC University of Technology and Education (HCMUTE)** 09/2020 – 09/2024

* Studying Computer Engineering.
* Degree Classification: Distinction - GPA 3.32/4 (Graduated as Salutatorian in the Field)

**PROJECTS**

**Viettel Networks** 08/2024 – Now

**Position:** Hardware/Firmware Developer

**Project:** LTE Signal Quality Monitoring System for DAS Networks

* **Project Description:** Developed a system for periodic LTE signal monitoring in buildings equipped with Distributed Antenna Systems (DAS). The system collects signal strength data, compiles daily reports, and provides real-time warnings via ThingsBoard and email when poor signal quality is detected.
* **Technology:** SIM7677S module, STM32L4 microcontroller, MQTT protocol, EasyEDA (hardware design), C programming.
* **Team Size:** 5
* **Responsibilities:**

- Designed and developed the hardware using EasyEDA, adhering to STM, SIMCOM, and Texas Instruments design guidelines.

- Developed the firmware in C, including flow design, coding, and debugging.

- Conducted extensive testing and optimization to ensure device stability and performance.

- Ensured the device's energy efficiency and longevity, enabling it to operate for 3 years on an 8.5Ah LiSOCl₂ battery.

**Viettel Networks** 01/2024 – 07/2024

**Position:** Firmware Developer

**Project:** Narrowband IoT (NB-IoT) Water Metter

* **Project Description:** Developed a water meter utilizing NB-IoT technology for periodic data collection and transmission to the Innoway Platform.
* **Technology:** SIM7022 module, STM32L4 microcontroller, MQTT protocol, C programming.
* **Team Size:** 5
* **Responsibilities:**

- Ensured seamless connectivity and data transfer between the device and NB-IoT networks.

- Defined software architecture and flow diagrams based on 3GPP standards.

- Developed firmware for SIM7022 NB-IoT modules in C.

- Designed core modules (device/network/data/power management, drivers, debugging, etc).

- Optimized energy consumption for long-term operation, ensuring device longevity more than 10 years on an 8.5Ah LiSOCl₂ battery.

**HCMC University of Technology and Education (HCMUTE)** 02/2023 – 08/2023

**Position:** Hardware/Firmware Developer

**Project:** NarowBand IoT Smoke Detector

* **Project Description:** Designed and developed a smoke detection system utilizing Narrowband IoT (NB-IoT) technology to send real-time alerts to web and mobile applications.
* **Technology:** BC660K module, STM32L4 microcontroller, BM22S2021 smoke sensor, EasyEDA (hardware design), CoAP protocol, C programming.
* **Team Size:** 2
* **Responsibilities:**

- Designed hardware circuits using EasyEDA following STM and Quectel guidelines.

- Designed firmware flow and developed it in C to handle sensor communication, integrate with NB-IoT networks, process data, and optimize energy efficiency.

- Tested and optimized the device to ensure it works reliably for 10 years on a 3Ah battery.

**ACHIEVEMENTS**

* The title of Runner-up Valedictorian in CET at HCMUTE 2024
* Top 3 Outstanding Participants in the Viettel Digital Talent Program 2023