

# Tran Anh Khoa

+84 815 505 575 | [trankhoa130902@gmail.com](mailto:trankhoa130902@gmail.com) | Ho Chi Minh City | September 13<sup>th</sup> 2002

[www.linkedin.com/in/tran-anh-khoa-hcmute](https://www.linkedin.com/in/tran-anh-khoa-hcmute) | [github.com/khoamutou](https://github.com/khoamutou)

## EMBEDDED SOFTWARE ENGINEER

### ABOUT ME

Recent graduate with a Bachelor's degree in Computer Engineering with internship experience at Bosch Global Software Technologies Vietnam. Passionate about the embedded software development field, with hands-on experience from academic projects and internship. Eager to apply my technical knowledge and passion in a challenging role to develop and contribute to impactful projects in the embedded systems industry.

### EXPERIENCE

#### 04/2024-10/2024 Embedded Developer Intern at Bosch Global Software Technologies Vietnam

- Supporting Innovation team in conducting research and prototyping security solutions for Software-Defined Vehicle system.
- Collaborating with cross-functional teams, including ECU team and Security team. Assisting in coding and testing for CAN-TP based communication between the ECU and Gateway for Intrusion Detection System (IDS) demonstration.
- Participating in debugging the CAN communication between the ECU and Gateway. Experienced with tools such as TRACE32 JTAG debugger, logic analyzer and CAN Vector.
- Developing trusted application based on ARM Cortex-A TrustZone technology to enhance security functionalities while doing cryptographic operations.
- Investigating and integrating the security features of the Kuksa Server (VSS Server) into trusted application running on the trusted OS using the Rust programming language.

### PROJECTS

#### 03/2023-06/2023 Developing IoT board to automate home and remote control.

- Programming ESP32 microcontroller: auto mode, manual mode, timer.
- Building a web interface to control hardware using HTML/CSS/JavaScript.
- Designing PCB circuit for the board.

#### 09/2023-12/2023 STM32 Driver Development for Serial Communication Protocols

Based on the datasheet of the STM32 microcontroller and sensors, developing drivers for STM32 to communicate with peripherals based on serial communication protocols such as UART, I2C, SPI, 1-Wire, CAN.

- Exploring and investigating the STM32 microcontroller, peripheral's datasheet and STM32 Reference Manual.
- Investigating about serial communication protocols: UART, SPI, I2C, 1-WIRE, CAN.
- Configuring the registers of STM32 to develop drivers for peripherals and debugging with the logic analyzer.

#### 11/2023-12/2023 Grocery Store Management App using QT/C++

- Object-oriented design for classes: customer, merchandise and cart.
- Designing UI for the application.
- Developing functionality for customer information management, inventory management, invoice generation for customer's shopping cart.

#### 11/2023-12/2023 Digital Real-time Clock using STM32 Microcontroller

- Investigating the datasheet of the DS1307 and STM32 Reference Manual.
- Developing the driver for I2C communication between the microcontroller and the DS1307, LCD screen.
- Building the functionalities: adjusting time and date through buttons, setting the alarm when the desired time is reached, storing data when power is lost.

#### 04/2024-06/2024 Intrusion Detection System (IDS) demonstration

- Socket programming for receiving and sending CAN frames between the Gateway and ECU.
- Developing application for attacking to the CAN network with many attack scenarios.
- Following the rules of the AUTOSAR's IDS Protocol document, extracting data from receiving CAN frames and displaying detailed information about IDS protocol frames.

07/2024-09/2024 **Building and developing trusted application for OP-TEE**

- Exploring the document of OP-TEE, architecture of the Trusted OS.
- Developing the trusted applications for security application: creating a key pair, storing keys securely, loading the keys for cryptographic operation in OP-TEE.
- Configuring the Makefile to build the binaries, building the OP-TEE and deploying on Raspberry Pi for prototyping.

## EDUCATION

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2020-2024: **Computer Engineering Technology**  
*HCMC University of Technology and Education*  
GPA: 7.80 / 10

## CERTIFICATE

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**TOEIC Listening and Reading Certificate**

Total score: **725**

08/2023 – 08/2025

## SKILL

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**Programming Languages:** C/C++, Rust (Intermediate).

**Microcontrollers:** STM32, ESP32, 8051, Arduino.

**Communication Protocols:** UART, I2C, SPI, 1-WIRE, CAN.

**Lab Equipments:** Logic Analyzer, VectorBox.

**OS:** RTOS (Intermediate), Linux.

**Development Tools:** Git, Shell Script, Makefile.

**Others:** Experience working with Linux environment, knowledge in Object-Oriented Programming, Data Structures and Algorithms.