

# Nikil V

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## OBJECTIVE

Aspiring embedded engineer seeking opportunities to take on challenging projects and contribute to innovative solutions, and grow continuously by learning new technologies and improving my technical expertise.

## KEY SKILLS AND COMPETENCIES

**Operating System** - Linux(ubuntu),Windows.

**Programming Languages** - C,C++,Rust.

**Microcontrollers** - LPC2129,nrf52840.

**Communication Protocols** - UART,I2C,SPI,CAN,QSPI.

**Softwares Known** - VsCode,Keil,Proteus,Linux GCC,nrf power profiler kit.

## EDUCATION

**HSC & SSLC :**Isha Vidhya Matriculation Higher Secondary School,Coimbatore (2019).

**B.E ECE :** Sri Ramakrishna Engineering College ,Coimbatore (2019- 2023).

**EMBEDDED SYSTEM CERTIFICATION :** Vector India Pvt.Ltd,Chennai (2023).

## WORK EXPERIENCE

Jr Embedded Developer, Sterna Security Pvt Ltd, Coimbatore (Dec 2023- Dec 2024).

Worked on a Smart Locking System and Secure Control System using Rust, focusing on BLE communication, 1-Wire protocol implementation, and firmware development for efficient hardware integration and security enhancements.

### Safelock:

A smart locking system integrating Bluetooth Low Energy (BLE) technology to manage lock states, control solenoids, and provide secure firmware updates.

### **Role:**

I was responsible for implementing communication protocols, managing hardware operations, and securing data transmission.

### **Key Contributions:**

- 1) Implemented sending and receiving data between the lock and a mobile app, facilitating remote control.
- 2) Managed solenoid operations, including forward and reverse control for locking and unlocking mechanisms.

3) Implemented Aes-128-cbc algorithm for encryption and decryption for secure data transmission and reception.

#### **Access Control:**

The system enhances security by authenticating users and controlling physical lock and Ethernet modules to communicate with the server. Designed to automate access, eliminate key management, and provide scalable, flexible control.

#### **Role:**

I was responsible for developing hardware-software communication interfaces and ensuring secure data handling.

#### **Key Contributions:**

- 1) Developed a communication interface to read card data using I2C protocol with the card reader.
- 2) Implemented Ticker Concept for precise timings in system tasks.
- 3) Implemented EEPROM Storage using qspi to store, fetch and delete the card id and its data.
- 4) Contributed in TCP communication by implementing Aes-256-gcm algorithm to ensure secure data transmission and reception.

## **PROJECTS**

#### **Alcohol Detection and Speed control system for Vehicle:**

**(Mentor: Mrs.M. Jaishree, M.E, Assistant Professor, Dept of ECE)**

The objective of this project is to restrict the drunken individual from driving the vehicle using the Mq3 smoke sensor and limit the speed of the Vehicle by detecting the symbols of school and hospital zones with the help of a camera which uses Haar Cascade algorithm for image detection. **(Published in ICESC july 2023).**

#### **Multilevel Security Access Control:**

The system ensures heightened security by generating a one-time password (OTP) sent to a designated phone number upon successful password entry, with a strict limit of three attempts. To further fortify the defense, both password and OTP authentication have a three-strike limit. Only when these dual layers are successfully navigated does the system activate LED and motor drive functionalities.

#### **Body control module using CAN protocol:**

This project consists of 4 CAN nodes(1-Transmitter & 3-Receiver) through the CAN bus these nodes communicate with each other, From the transmitter node with a unique Message Id messages are sent to turn ON the LEDs in the receiver node.

#### **Positions of Responsibility:**

I solemnly declare that all the above information is correct to the best of my knowledge and belief.

Place: Coimbatore

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