

NIMMY AJ

📍 Bengaluru, India 📞 + 91 8281982870 ✉ Nimmyaj99@gmail.com

Summary

A dedicated Embedded Firmware Engineer with experience in developing firmware for embedded systems. Strong expertise in nRF52 series, embedded C programming, and sensor integration. Proven skills in firmware development, hardware debugging, and embedded communication protocols. Skilled in both independent work and leading teams, with a strong focus on improving business processes and meeting organizational goals.

Experience

Embedded Firmware Engineer • Icaltech Innovations Pvt. Ltd

Sep 2023 - Present

- Developed firmware for a Smart Inhaler project using a custom nRF52810 board, leveraging nRF52 DK and SEGGER Embedded Studio for development.
- Integrated and evaluated differential pressure sensors (SDP32, SDP31, DPS368) and accelerometer (ADXL345) for real-time data acquisition.
- Implemented BLE communication for sensor data transfer to a mobile app using the Nordic UART Service (NUS).
- Developed and tested SPI, I2C, and UART communication protocols, utilizing logic analyzers and oscilloscopes for signal analysis.
- Conducted Python programming for sensor data logging and visualization.
- Worked with RTC chips (DS3231, RV-3028-C7, RV-8263-C8, DS1307) and implemented SAADC for battery level monitoring.
- Collaborated with mobile app development teams and participated in client meetings to provide project updates.
- Executed OTA DFU for firmware updates and implemented finite state machines for program flow management.
- Utilized Git and Bitbucket for version control and project collaboration.

Sales Engineer • Prominent, Calicut, Kerala

Mar 2022 – Feb 2023

- Gained in-depth knowledge of electronics lab equipment and their specifications.
 - Provided excellent customer service and created a welcoming environment for clients.
 - Developed skills in business planning, sales & marketing, tender management, and leadership.
 - Proficient in MS Office for documentation and reporting.
-

Skills

Programming Languages: C, C++, Embedded C, Python
Communication Protocols: SPI, I2C, UART, BLE (Nordic UART Service - NUS), CAN.
Tools & IDEs: SEGGER Embedded Studio, Arduino IDE, Raspberry Pi, Logic Analyzers, Oscilloscopes
Version Control: Git, Bitbucket
Other Skills: RTOS, Finite State Machines, OTA DFU, Sensor Integration, Nordic Power Profiler Kit.

Certifications

Master of Embedded System and IoT Course
• ISM University of Skills, Bangalore

Mar 2023 - Aug 2023

- Key Skills Acquired:
- C Programming with Data Structures
 - Python Programming
 - ARM Cortex Architecture & Programming
 - Real-Time Systems (RTS) & RTOS Concepts
 - ATmega328p Programming and Architecture

- Arduino & Raspberry Pi Programming
 - IoT Projects using ESP8266 (WiFi module)
 - Embedded C Programming
 - Embedded Protocols: I2C, SPI, RS-232, CAN
-

Education

MSc Electronics Kannur University • OGPA:8.221	2020 - 2022
BSc Physics Kannur University • OGPA:8.015	2018 - 2020

Projects

Smart Inhaler

- Designed and implemented firmware for a BLE-based medical device using the nRF52810 custom board.
- Integrated differential pressure sensors for inhalation data collection via I2C communication.
- Enabled real-time data synchronization to a mobile app using BLE NUS.
- Developed battery monitoring using the SAADC peripheral, ensuring accurate power level tracking.
- Configured the GD25WD80C SPI flash IC for inhalation data storage and retrieval.
- Programmed an RTC chip to add precise timestamps to inhalation events.
- Conducted power consumption analysis using the Nordic PPK kit and implemented a deep sleep mode to minimize energy usage.
- Authored comprehensive documentation detailing firmware design, sensor integration, and power optimization strategies.

Neonatal Flow Sensor GUI Development

- Developed a Python-based GUI using Tkinter for real-time data collection from the SFM3400 Neonatal Flow Sensor.
- Utilized libraries such as os, matplotlib, mplotcursor, pandas, and serial for efficient data handling, visualization, and device communication.
- Implemented features for serial port connectivity, allowing users to connect the sensor and collect data seamlessly.
- Designed a data plotting interface to review and visualize previously stored data.
- Integrated an input feature enabling users to enter names for personalized data management.

Electromagnetic Simulation of Heat Sink Integrated Monopole Antenna

- Designed and simulated a monopole antenna integrated with a heat sink using Ansys HFSS 15.0.
 - Investigated and presented radiation and reflection characteristics at 3.4 GHz and 4.5 GHz.
 - Optimized antenna design through simulation and testing, achieving efficient performance.
-