

SNEHA KADARI

Junior Embedded Engineer

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Professional Summary:

Embedded Engineer specializing in **firmware development** and **IoT solutions** with expertise in **Embedded C, ESP32, STM32, LoRa, and GSM modules**. Skilled in communication protocols (**UART, SPI, I2C, MQTT**) and adept at **coding, debugging, and testing** embedded systems. Passionate about creating **efficient, secure, and real-time applications** while continuously advancing in **bare-metal programming** and **RTOS**. Proven ability to take ownership of **end-to-end firmware development**, from **requirement analysis** to **deployment**, ensuring **reliable and scalable solutions**.

Technical Skills:

Programming Languages:

- **C, Embedded C.**

Microcontrollers & platforms:

- **ESP32 (ESP32-C3)**
- **Arduino (Uno, Nano)**
- **Quectel MC60 (for cellular communication)**
- **LoRa E5 (Long-range communication)**

Development tools:

- **Keil uVision, PlatformIO, Arduino IDE, Android Studio**
- **Proteus (Simulation), GitHub (Version Control)**

Communication Protocols

- **UART, SPI, I2C, LoRa**
- **MQTT (for IoT communication), HTTP (for web integration)**

Sensors & Modules:

- **MMWave Sensor, RTC Module, DHT22, MPU6050, Ultrasonic, PT100, PIR, IR Receiver**

IoT & Cloud Platforms:

- **Azure IoT Hub, MQTT Explorer, REST APIs (HTTP/HTTPS, MQTT),**
- **Postman for API testing**

Database & Tools:

- **phpMyAdmin (MySQL database), data capture and posting workflows.**

File Systems:

- SPIFFS, LittleFS (for storage management)

Debugging & Testing:

- **Firmware debugging.**

Version Control & Code Management:

- Git for version control and collaboration
- Code refactoring and versioning best practices

Other Expertise:

Operating System & Process Management:

- Process management concepts (scheduling, synchronization)
- Basics of **FreeRTOS** (tasks, queues, semaphores)

Professional Experience:

Junior Embedded Engineer – Procom India Pvt. Ltd.

Madhapur, Hyderabad | Mar 11, 2025 – Present

Projects & Responsibilities:

- Designed and developed firmware in Embedded C for 2, 4, and 8 module smart boards, enabling control via capacitive touch inputs, IR remote interface, and load switching(**Firmware developer**).
- Integrated devices with Azure IoT Hub using **MQTT, HTTP/HTTPS, and REST APIs**, establishing secure device-to-cloud and cloud-to-device communication.
- Configured IoT resources, functions, and message routing for efficient device management through cloud platforms.
- Implemented PIR sensor **firmware drivers** for motion-triggered automation such as auto ON/OFF lighting and intrusion detection alerts.
- Designed and programmed **MMWave Sensor** sensor-based motion handling (motion presence, detection, undetection for advanced occupancy monitoring).
- Built a real-time scheduler using the RTC module, integrated with MQTT commands, for timer-based automation of lights and appliances.
- Developed and validated **xPOE DC lighting firmware**, enabling energy-efficient centralized smart lighting solutions.
- Created and tested device communication flows using Postman, MQTT Explorer, and phpMyAdmin database, ensuring seamless data posting, storage, and retrieval.
- Collaborated with **hardware and testing teams for firmware debugging**, load validation, and end-to-end system integration.

Eurth Tech Internship:

Embedded Engineer Intern – Eurth Techtronics Pvt. Ltd.

Kondapur, Hyderabad | Oct 14, 2024 – Jan 14, 2025

- **GPS Tracker (Firmware Development):** Developed **firmware for the MC60 GSM/GPS module**, implementing **LIST, 505, and RST commands** for device control and monitoring. Ensured smooth GPS integration and real-time performance through **rigorous debugging and testing**.
- **LoRa-Based Data Transmission:** Configured and integrated **LoRa E5 modules** for **LoRaWAN communication** with **TTN and ChirpStack**. Developed **robust communication protocols**, optimizing **low-power transmission** and improving performance.
- **Multi-Level Security Device Access Control:** Designed and implemented **secure firmware with multi-tier authentication**, encryption, secure boot, and hardware-level security to safeguard device integrity and data protection.

Education:

- **B.Tech in Electrical and Electronics Engineering**
CVR College of Engineering, T.S | 2019–2023 | Aggregate: **79.06%**
- **Board of Intermediate Education, TS**
Sri chaitanya junior kalasala | 2017–2019 | Aggregate: **90.2%**
- **Board Of Secondary Education, TS**
Hayath nagar High School,Hayath nagar, | 2015–2016 | Aggregate: **92%**

Certifications:

- **Embedded Systems Course**
VECTOR INDIA | oct 2023 – April 2024
Focused on embedded programming, **real-time systems**, and **IoT development**.

Professional Interests:

- Interested in **IoT-based automation, cloud-connected embedded systems, and energy-efficient smart solutions** with a focus on **firmware development, debugging, and low-power scalable applications**. Keen to advance in **wireless protocols (LoRa, MQTT, 5G IoT)** and **secure device-to-cloud integration**.

Strengths / Other Expertise:

- **Problem-Solving & Prompts:** Skilled at framing **clear problem statements and prompts**, enabling faster debugging, solution design, and technical decision-making.
- **Adaptability & Learning:** Strong ability to **quickly understand requirements** and deliver **firmware or IoT solutions** aligned with project needs; adaptable to new tools, protocols, and microcontrollers.
- **End-to-End Ownership:** Proven capability to handle the **entire firmware lifecycle** – from requirement analysis, coding, and debugging to testing, deployment, and integration with cloud/IoT platforms.

Declaration:

I sincerely proclaim that all the particulars mentioned above are true to my belief and I am accountable for their accuracy.

Place: Hyderabad

Signature: (Sneha K)