

PAKA NEHA

Embedded Software Engineer | Firmware Optimization | IoT & Wireless Protocols

☎ +91 8374149907 | ✉ @nehapaka13@gmail.com | 🔗 LinkedIn | 📁 Github | 📁 Portfolio

Professional Summary

Software Engineer with 2 years of experience in building efficient, reliable embedded systems. Skilled in C/C++, micro-controllers, and communication protocols like UART, SPI, I2C, Zigbee, and MQTT. Passionate about clean code, hardware-software integration, and agile development.

Technical Skills

• Embedded Programming:	C, C++, Embedded C, Real-Time Systems, Interrupt Handling, FreeRTOS
• Microcontrollers & Platforms:	ARM Cortex-M, ESP32, Raspberry Pi, Renesas
• Communication Protocols:	UART, SPI, I2C, CAN, Zigbee, MQTT, Modbus, TCP/IP
• Embedded Tools & IDEs:	Arduino, CS+, VS Code, Linux Eclipse
• Hardware Interfaces:	GPIO, ADC/DAC, PWM, Timers, Sensors, Actuators
• Debugging & Testing:	JTAG, Logic Analyzer, Serial Debugging (PySerial)
• Version Control & CI/CD:	Git, Docker (for simulation/testing), Shell Scripting
• Operating Systems & Drivers:	Embedded Linux, Bare-metal, Kernel Configuration, Device Trees
• Development Methodologies:	Agile Scrum, SDLC, Documentation, Code Reviews
• Soft Skills:	Problem Solving, Critical Thinking, Communication, Team Collaboration

Work Experience

Software Engineer

Eficaa Ensmart Solutions Pvt Ltd – Hyderabad, India

February 2023 – Present

- Optimized firmware in communication modules, cutting deployment time by 30%.
- Refactored embedded Linux gateway systems, improving data throughput by 40%.
- Developed Python-based tools (Tkinter) for real-time modem communication and diagnostics.
- Implemented MQTT and UART protocols in embedded systems with 99.9% data reliability.

Intern – Publicity Team Lead, College Radio Younify

August 2021 – January 2022

- Led digital campaigns, creating multimedia content for campus radio events.
 - Boosted student engagement by 60% through strategic branding and outreach.
 - Coordinated with cross-functional teams on content creation and promotion.
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Education

Bachelor of Technology – Computer Science and Engineering

Jawaharlal Nehru Technological University | Graduated: 2022

Certifications

- Embedded Systems Essentials – Coursera (University of Colorado Boulder)
 - Introduction to Embedded Systems Software and Development Environments – Coursera
 - C Programming for Embedded Systems – Udemy
 - Bits and Bytes of Computer Networking – Google
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Projects

Embedded Gateway Optimization | 🔗

- Refined firmware handling and optimized communication stacks in Linux-based gateways to reduce system latency and improve throughput by 40%.
- Tuned UART buffer sizes, implemented efficient polling mechanisms, and introduced watchdog timers for enhanced reliability in edge data collection and transmission.

ESP32-based Dynamic WiFi + MQTT System |

- Designed and implemented a real-time connectivity model using ESP32 micro-controllers.
- Built custom firmware to enable dynamic switching between WiFi networks based on signal strength and availability, ensuring uninterrupted MQTT communication with a central broker.
- Achieved near-zero downtime in data transmission for mobile IoT nodes.

Wirepas 5G Mesh Network Deployment |

- Led the deployment of a large-scale Wirepas mesh network for industrial IoT applications.
- Configured routing parameters and node placement to ensure optimal signal coverage and reliability.
- Integrated sensor data aggregation via SPI/UART interfaces and successfully validated network stability under load.

Python GUI for Modem Diagnostics |

- Developed a desktop application using Python's Tkinter library for real-time monitoring of modem behavior over serial ports.
- Displayed live signal strength, error codes, and transmission statistics. This tool significantly improved field diagnostics and reduced debugging time during deployments.