

VINAY GOUD VADLAKONDA

Embedded Firmware Developer | Embedded Systems Engineer

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Summary

Detail-oriented Embedded Engineer with over 3 years of experience validating firmware across various embedded systems. Adept at hardware-software integration, structured debugging, and system testing. Demonstrated strengths in component selection, BOM preparation, and full-cycle product development while ensuring timely delivery. Experienced in firmware development using AI- assisted tools for rapid prototyping and optimization. Known for strong problem-solving, adaptability, and efficient cross-functional collaboration.

Core Competencies

- Embedded C, C++, Python (Basics) with AI Assistance
 - Firmware Development, Peripheral Drivers, Debugging Tools
 - Protocols: UART, SPI, I2C, RS485, Wireless Communication
 - Power Management, Sensor Interfacing, Display Modules
 - Tools: MPLAB IDE, Arduino IDE, Vivado (Basic), MPLAB Harmony
 - Hardware Documentation, BOM Management, Internal Calibration & Internal Quality Testing
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Current Learning

- Working with STM32G491RE (ARM Cortex-M4) and Free-RTOS for real-time task scheduling, DMA, and peripheral integration.
 - Exploring Raspberry Pi Pico W (ARM Cortex-M0+) for low-power wireless embedded applications with Arduino IDE
 - Developing hands-on skills in RTOS concepts, multi-tasking, and real-time communication protocols.
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Experience

Embedded Systems Engineer

Noki Technologies Private Limited, Hyderabad

May 2022 – June 2025

Roles & Responsibilities:

- Designed, implemented, and tested firmware for multiple embedded platforms.
 - Performed functional testing and debugging of hardware subsystems during development and validation phases.
 - Selected suitable electronic components and created detailed Bill of Materials (BOM).
 - Managed sourcing and procurement activities, ensuring timely availability of components.
 - Conducted inward component inspection and internal hardware quality testing.
 - Integrated and validated communication between various hardware modules.
 - Collaborated with cross-functional teams for seamless hardware-software integration.
 - Integrated Supporting utilities and services to facilitate system communication and data handling.
 - Documented design specifications, hardware configuration, and firmware development processes.
 - Used AI-assisted tools and IDEs to accelerate development and improve code quality.
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Projects

Xtract-10 – Automated Extraction System

Engineered an automated fluid management system with sensors and pumps. Enhanced reliability and modularity through optimized firmware and structured testing. Technologies Used: Arduino Mega, DAC, TMC Motor Drivers (UART), MQTT

Stack Monitoring System

Developed a real-time monitoring system to capture environmental data and transmit securely to cloud services. Managed hardware-software integration and communication stack. Technologies Used: Arduino Mega, Beagle-Bone Black, RS485, MQTT

Survey Meter & AGM

Built portable handheld monitoring systems with high-accuracy readouts and modular calibration support for field applications. Technologies Used: ESP32, PIC32MX250F128D, DAC, Nextion Display (UI), MQTT, MCP2200 (UART to USB)

Radio TLC – Thin Layer Chromatography

Created a motorized plate reader with precision step control. Created efficient firmware and interfaced feedback sensors. Technologies Used: Arduino Mega, PIC32MX250F128D, DAC, MCP2200 (USB to UART) and Python Service (USB to MQTT) with AI Assistance

Waste Packet Analyzer

Developed a detector positioning system to evaluate packet-level contamination using automated controls and efficient data handling. Technologies Used: Arduino Mega, PIC32MX250F128D, TMC Motor Drivers (UART Half-Duplex), DAC, MCP2200 (USB to UART), MQTT, Python Service (USB to MQTT) with AI Assistance

Hand-Foot-Cloth Monitoring System

Developed a compact detection system with wireless data logging to support personnel contamination analysis. Technologies Used: ESP32, PIC32MX250F128D, MCP2200 (USB to UART), MQTT, Python Service (USB to MQTT) with AI Assistance

Certifications

- Internship – DRDO (ELOIRA Project) – 45 Days
 - Internship – Resolute Electronics Pvt. Ltd. – 30 Days
 - MSME Solar-Based Entrepreneurship Development Program
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Education

Bachelor of Technology – Electronics & Communication Engineering

CMR Institute of Technology, Hyderabad | 2018 – 2021 | CGPA: 7.01

Diploma – Electronics & Communication Engineering

VNR VJIE, Hyderabad | 2014 – 2018 | 62.75%

SSC

ZPHS Govt High School | 2014 | CGPA: 8.8

Date:

Place:

Vinay Goud
Vadlakonda