

Govind Bhandari

Embedded Firmware Engineer

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PROFESSIONAL SUMMARY

Embedded Software Engineer with 2+ years of experience in developing firmware for microcontroller-based systems using Embedded C. Skilled in STM32 and ESP32 platforms, with strong expertise in communication protocols (UART, SPI, I2C, Modbus) and IoT systems using MQTT. Experienced in firmware development, debugging, and driver-level interfacing for real-time embedded systems. Strong understanding of microcontroller architecture and register-level programming. Completed industrial training in embedded systems with hands-on experience in microcontroller programming and peripheral interfacing.

TECHNICAL SKILLS

- **Programming:** Embedded C, C (firmware-level), Basic C++
- **Microcontroller Platforms:** STM32 (F1, F4 series), ESP32 / ESP8266
- **Communication Protocols:** UART, SPI, I2C, Modbus RTU, MQTT
- **RTOS & Firmware:** FreeRTOS (task scheduling, inter-task communication), Bare-metal firmware, device driver development
- **Development & Debugging Tools:** STM32CubeIDE, STM32CubeMX, Keil, SWD (ST-LINK V2), Logic Analyzer, Oscilloscope, Serial debugging tools (Tera Term, PuTTY, Hercules), Arduino IDE (for prototyping)

PROFESSIONAL EXPERIENCE

Junior Embedded Software Engineer

Tech Green Innovations, New Delhi | *January 2024 – April 2025*

- Developed embedded firmware in Embedded C for STM32-based systems and worked on ESP32-based systems, with exposure to AVR and Renesas platforms.
- Developed and debugged UART, SPI, and I2C drivers for STM32 microcontrollers.
- Performed board bring-up and hardware-software integration, including system-level debugging.
- Designed and developed firmware for an ESP32-C3-based energy monitoring system using Modbus RS-485 and MQTT, including Wi-Fi provisioning and automatic network recovery.
- Performed firmware debugging, testing, and validation during system integration and deployment.

Embedded Software Engineer

UTL Solar, Himachal Pradesh | *May 2025 – October 2025*

- Developed ESP32-based firmware for an IoT solar inverter monitoring system (UTL OnGrid).
- Implemented Modbus RTU communication and integrated ESP32 firmware with the existing UTL OnGrid mobile application via Firebase, enabling users to view inverter data remotely.
- Debugged and validated firmware during system integration and field trials.

Embedded Software Engineer

G.S. & CO. Pvt. Ltd. (GSPL) | January 2026 – Present

- Debugged and validated embedded firmware for Wi-Fi/LTE/BLE-based IoT devices
- Analyzed and monitored MQTT communication, ensuring reliable device connectivity
- Identified and resolved firmware-level issues during system integration
- Performed system-level debugging and log analysis during live device operation
- Collaborated with firmware teams to improve software stability and performance.

KEY PROJECTS - Tech Green Innovations

- **Controller for Linear Heat Detection Cable**
 - Developed embedded firmware using STM32F103C8T6 for fire detection applications.
 - Performed firmware debugging, hardware testing, and system validation.
- **Smoke Detector System (Standalone & Slave Module)**
 - Developed firmware and supported hardware debugging using ABOV A96L623AEN microcontroller.
- **RFID-Based Authentication System**
 - Designed an RFID-based authentication system using STM32F103C8T6 and MFRC522.
- **3.3kW Charger for Electric Vehicles**
 - Supported firmware bring-up, hardware debugging, and system validation during development.

Academic Projects:

- **Pluto 1.2 DIY Drone** – Integrated and configured embedded firmware for a quadcopter platform; validated flight control and directional movement using controller-based inputs.
- **Bluetooth-Controlled Robot Car** – Developed Bluetooth-based motion control using ATmega328P and HC-05 module; implemented command-based directional control.
- **Arduino-Based Door Alarm** – Developed an embedded security system using an ultrasonic sensor with threshold-based alert logic for intrusion detection.

EDUCATION

B.Tech in Electronics and Communication Engineering

PDM University, Haryana | 2019 – 2023

CGPA/Percentage: **86.5%**

Senior Secondary (Class XII) – CBSE Board | 2018

Percentage: 65%

Secondary (Class X) – CBSE Board | 2016

Percentage: 78%

ADDITIONAL INFORMATION

- Focused on low-level firmware development, device drivers, and real-time embedded systems.
- Open to embedded software roles in product-based, core electronics, and semiconductor organizations.

DECLARATION

I hereby declare that the above information is true and correct to the best of my knowledge.

Govind Bhandari