

RUKMINI DEVI RAVURI

Embedded Firmware Engineer · Microcontroller & FPGA Systems

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PROFESSIONAL SUMMARY

Dedicated Embedded Firmware Engineer with ~2 years of industry experience delivering reliable, safety-critical firmware for defense applications. Proven expertise in C/Embedded C on STM32 and PIC18 microcontrollers, FPGA-based (Xilinx Zynq) platforms, and multi-protocol communication stacks (I2C, UART, SPI, Ethernet, RS-232/485/422, MIL-1553). Experienced in the full firmware lifecycle — from low-level driver development and bootloader implementation through integration testing and formal documentation (SRS, SDD, Validation Reports) — within a highly regulated environment.

TECHNICAL SKILLS

Languages	C, Embedded C, Python
Microcontrollers	STM32 (STM32CubeIDE), PIC18 Series (MPLAB X IDE)
Microprocessors	Xilinx Zynq (Vitis / SDK)
Protocols	I2C, UART, SPI, Ethernet, RS-232, RS-485, RS-422, MIL-1553
Memory	EEPROM, Flash
Other Skills	Bootloader development, interrupt handling, peripheral driver coding, test jig development
Sensors	LIS3DH accelerometer, ADXL accelerometer
Documentation	SRS, SDD, Test Plans, Validation Reports

PROFESSIONAL EXPERIENCE

Firmware Engineer – Embedded Systems · **Apollo Microsystems Ltd** May 2024 – Present | Hyderabad, India

- Develop and maintain production firmware in C/Embedded C for STM32 and PIC18 microcontrollers deployed in mission-critical defense systems.
- Design embedded control and interface solutions, ensuring deterministic real-time behaviour and hardware-software reliability.
- Implement multi-protocol communication stacks — I2C, UART, SPI, Ethernet, RS-232, RS-485, RS-422, and MIL-1553 — from scratch and through peripheral driver integration.
- Develop bootloaders and perform memory mapping on STM32 and PIC platforms to support secure firmware update workflows.
- Build automated test jigs to simulate hardware environments and verify unit communications, significantly reducing manual validation effort.
- Integrate hardware-software interfaces on Xilinx Zynq (FPGA) platforms using Vitis/SDK, supporting system-level testing and validation.
- Author and maintain formal engineering documentation (SRS, SDD, test plans, validation reports) to defense-grade standards.
- Collaborate with hardware teams on LIS3DH and ADXL accelerometer integration, debug, and signal characterisation.

| KEY PROJECTS

SAFM - Safety Arming and Fuzing Module (Payload & Integrated Versions)

- Developed mission-critical embedded firmware on STM32 covering low-level driver development, safety-logic implementation, and peripheral communication for a defense fuzing system.
- Ensured system reliability through rigorous hardware-software integration testing and validation aligned with defence safety requirements.

ATM & STM Fuzes

- Designed and implemented triggering and timing-control firmware on PIC18 microcontrollers, ensuring safe and accurate fuze activation under defined environmental conditions.
- Coordinated directly with hardware teams to align firmware timing parameters with system specifications and test criteria.

Automated Test Jigs

- Built automated test software that simulates real-world operating conditions for embedded units using I2C and UART interfaces.
- Accelerated hardware and firmware sign-off by reducing validation cycle time and increasing fault coverage across unit-under-test scenarios.

SFM - VSHORADS Missile System

- Developed real-time control and communication firmware for the SFM unit in the VSHORADS missile programme using PIC18.
- Implemented embedded communication protocols, safety checks, and responsiveness requirements; supported integration testing with external subsystem modules.

| EDUCATION

B.Tech - Electronics & Communication Engineering

IIIT Basar, Telangana, India

Graduated: 2023