Ashish Kumar

✉ jaiswalashish13109@gmail.com | 📱 +91 7667553191 | Mysore, Karnataka

PROFESSIONAL SUMMARY

Embedded Firmware Engineer with hands-on experience in designing and validating firmware for Power Distribution Units (PDU) and Electronic Trip Units (ETU). Skilled in **Embedded C**, **Bootloader development**, and **UART-based firmware upgrades**. Proficient in implementing algorithms for power quality analysis (voltage, current, power, energy, power factor, frequency, harmonics) and protection algorithms (Overload, Short-Circuit, Earth Fault, and Thermal Memory). Passionate about building reliable, real-time embedded systems through structured testing, debugging, and optimization.

PROFESSIONAL EXPERIENCE

L&T Technology Services - Embedded Firmware Engineer
March 2024 - Present —Mysore, Karnataka

- Designed and validated firmware for Power Distribution Unit (PDU) systems.
- Developed algorithms to compute Voltage, Current, Power (Active, Reactive, Apparent) and Energy (kWh, kVARh, kVAh).
- Implemented logic for Power Factor, Crest Factor, and Frequency measurement.
- Performed Harmonic Analysis for both Voltage and Current.
- Enhanced system reliability through optimized firmware and EEPROM data management.
- Developed and integrated a custom **UART-based Bootloader** for STM32 microcontrollers.
- Implemented in-field firmware upgrade via UART for reliable updates.
- Designed and validated **Thermal Memory Calculation** logic to improve trip accuracy.
- Conducted unit testing and debugging to ensure robust performance and compliance.

KEY PROJECTS

Advanced Grid Control using IoT (Major Project)
Designed an IoT-based grid control prototype for load monitoring and management. Integrated sensors for real-time voltage and current acquisition with Wi-Fi-based data transmission.

Advanced Irrigation System using IoT (Academic Project)
Developed an automated irrigation system with real-time soil moisture monitoring and water control using IoT modules.

EDUCATION

2020 – 2023	B.Tech in Electrical and Electronics Engineering	
	C.V. Raman Global University,Bhubaneswar	
2017 – 2020	Diploma in Electrical Engineering	
	Al-Kabir Polytechnic, Jamshedpur	
2005 – 2016	ICSE (Matriculation)	
	DBMS English School, Jamshedpur	

Certificates

L&T Technology Services (2025)	Mastering Microcontrollers with Embedded Driver Development, Basics of Threads and IPC in Linux OS, Getting Started with ARM-Based Microcontroller, Overview of Embedded Systems, Essentials of C Programming.
Other (2024–2025)	Essentials of Object-Oriented Concepts using C++, Introduction to Cyber Security (Great Learning), BACnet Device Profiles, BACnet Basics (The BACnet Institute).

Skills & Technical Expertise

Languages	Embedded C/C++, C
Microcontrollers	STM32, ESP32, Arduino
Communication Protocols	UART, SPI, I2C, Modbus, BACnet
Tools & IDEs	STM32CubeIDE, Keil µVision, CubeMX, Git/GitHub
Debugging Tools	ST-Link, Logic Analyzer, Oscilloscope
Core Concepts	Firmware Design & Optimization, Protection Algorithms (Overload, SC, Earth Fault, Thermal), ADC, Timers, Interrupts, DMA, EEPROM Management, Real-Time Data Acquisition

Languages

English, **Hindi**