

UJWALA KONTHAM

Embedded Firmware Engineer | Automotive ECU | CAN/J1939 | Power Electronics |

Embedded C | Python

India | +91-8501893144 | ujwalareddy09@gmail.com | [LinkedIn : ujwala-kontham-716423210](https://www.linkedin.com/in/ujwala-kontham-716423210)

PROFESSIONAL SUMMARY

Results-driven Embedded Firmware Engineer with **3.5+ years of experience** in automotive electronics, embedded systems, ECU firmware development, and power electronics. Strong expertise in **Embedded C, Python automation, CAN communication, SAE J1939, firmware validation, debugging, hardware-software integration, and system testing**. Proven ability to deliver production-ready firmware, improve system reliability, automate validation processes, and support complete product lifecycle in Agile environments.

CORE TECHNICAL SKILLS

- **Programming Languages:** Embedded C, Python
 - **Communication Protocols:** CAN, SAE J1939, UART, SPI, I2C
 - **Embedded Systems:** MCU Firmware, GPIO, PWM, ADC, Timers, Interrupts, Device Drivers
 - **Microcontrollers / Platforms:** STM32, TI C2000, NXP
 - **Automotive Systems:** ECU Development, Diagnostics, PGN Mapping, Real-Time Control
 - **Validation & Testing:** Unit Testing, Integration Testing, Regression Testing, Fault Injection
 - **Debugging Tools:** JTAG, Lauterbach, Oscilloscope, Logic Analyzer, Multimeter
 - **Development Tools:** Code Composer Studio, CodeWarrior, Eclipse, Visual Studio, Tasking
 - **Version Control:** SVN, Git
 - **Methodologies:** Agile, SDLC, TDD, MISRA C (Awareness)
-

PROFESSIONAL EXPERIENCE

Larsen & Toubro Technology Services

Firmware Engineer | Dec 2022 – Present

- Designed and developed embedded firmware for automotive ECU and power electronics applications.
- Implemented robust **CAN communication stack using SAE J1939 protocol** for diagnostics and control functions.
- Managed complete firmware lifecycle including requirements analysis, design, coding, integration, testing, and production release.
- Developed **Python automation scripts** to reduce manual validation effort and improve testing efficiency.
- Performed root-cause analysis and debugging for firmware, hardware, and communication issues.
- Collaborated with cross-functional hardware, validation, and systems teams in Agile development cycles.
- Prepared technical documentation including design specifications, test procedures, and release reports.

KEY PROJECTS

Automotive DC-DC Converter Firmware

- Developed control firmware for automotive DC-DC converter using TI controller platform.
- Implemented voltage regulation, over-current protection, thermal shutdown, and fault recovery logic.
- Performed hardware-in-loop testing and real-time debugging to improve reliability.

Fuel Pump Controller – SAE J1939 Communication

- Developed communication firmware using SAE J1939 PGNs over CAN bus.
- Implemented diagnostic messaging, PGN mapping, and ECU interface logic.
- Automated regression testing using Python scripts to improve test coverage and repeatability.

Global Vehicle Inverter – Validation & Automation

- Validated inverter state transitions, thermal control logic, and safety responses.
- Supported firmware integration with BMS and HV battery systems.
- Created automated test cases that reduced pre-release defects.

EDUCATION

Bachelor of Engineering (Electrical & Electronics Engineering)

BVRIT Hyderabad College of Engineering for Women | 2022 | 70%

Diploma in Electrical & Electronics Engineering

Government Polytechnic Mahbubnagar | 2019 | 89.6%

CERTIFICATIONS

- Python Fundamentals
- Cyber Security Fundamentals

ADDITIONAL STRENGTHS

- Firmware Debugging & Root Cause Analysis
- Hardware-Software Integration
- Test Automation & Validation
- Python automation tools.
- Strong Analytical Problem Solving
- Effective Cross-Functional Collaboration