

Bhanu Prakash Talari

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Professional Summary

Embedded Software Engineer with 3+ years of hands-on experience in firmware development for automotive and industrial embedded systems. Skilled in low-level programming, ASW/BSW integration, and diagnostics using CAN, SPI, UART, and Embedded C. Proven ability to deliver robust solutions across the full software development lifecycle— from design and coding to debugging, integration, and validation—ensuring compliance with industry standards like MISRA C and ASPICE.

Technical Skills

- **Microcontrollers:** Cortex-R4F (TMS570LS0914), dsPIC33EP512GP506, NXP S32K311.
- **Communication Protocols:** CAN, UDS, SPI, UART, I2C.
- **Programming Languages:** Embedded C, Python (basic).
- **Tools & IDEs:** iSYSTEM iC7 mini, CANoe, PCAN, LDRA Testbed, CCS, MPLAB IDE, winIDEA, S32 Design Studio, Vehicle Analyzer, JTAG Debuggers.
- **Development Practices:** MISRA C:2012, Static Code Analysis, Functional Testing, SVN, GIT, ALM.
- **Embedded Concepts:** Bare-metal programming, ASW/BSW Integration, Diagnostics, NVM Handling, Bootloader Development, RTOS (FreeRTOS).
- **Additional Knowledge:** Data Structures in C, Simulink (basic modeling).

Education

- **B.E. (AMIE), Electronics & Communication Engineering**
The Institution of Engineers (India) — 2020 | **CGPA:** 7.27
- **Diploma in Mechatronics**
NTTF, Hyderabad — 2016 | **Score:** 86%
- **SSC**
Right High School, Hyderabad — 2013 | **CGPA:** 9.0

Technical Certification

- Professional Diploma in IoT and Embedded Systems, Cranes Varsity.

Professional Achievements

- **Certificate of Appreciation** (Q3 FY24) from Head of Product Development for outstanding contribution to embedded software development.
- **Divisional Excellence Award** by MD & CEO for spearheading the **163Ah BMS development**, enabling next-generation EV battery deployment.
- **Departmental Excellence Award** for achieving successful **BMS Certification of T350**, ensuring compliance with industry safety and regulatory standards.
- **Excellence Award** for driving on-time delivery of **BMS Lite Software**, improving product launch timelines and customer adoption.

Work Experience

Assistant Manager – Firmware & Integration (Nov 2024 – Present)

Tivolt Electric Vehicles Pvt Ltd (Ti Clean Mobility, Murugappa Group Subsidiary)

- Focused on developing and maintaining interface and abstraction layers for embedded systems in electric 3-wheeler Battery Management Systems (BMS).
- Mapped and routed measurement, control, diagnostic, and memory signals between ASW and BSW layers.
- Designed charger handshaking protocol logic for battery charging, enabling modular integration for different voltage ranges.
- Developed NVM functionality for calibration data and power-fail recovery, with optimized buffer handling and memory management.
- Performed cross-functional integration testing and debugging, ensuring seamless communication across modules.
- Supported system diagnostics, ASW-BSW integration, and internal toolchain configuration using NXP S32K311 and S32 Design Studio.
- Applied best practices in low-level embedded C programming for reliable, portable code.

Assistant Manager – Embedded Systems – BSW & ASW (Apr 2022 – Nov 2024)

Mahindra Last Mile Mobility Limited (Transferred from Mahindra & Mahindra Limited).

Key Accomplishments and Responsibilities:

- Developed and optimized software solutions for Mahindra's 48v electric vehicles, focusing on the Battery Management System ECU within a bare-metal environment using C on ARM and PIC based microcontrollers.
- Played a crucial role in the software development life cycle, from requirement analysis and deriving software requirements to issue analysis, bug fixing, and software deliveries.
- Demonstrated accountability for software deliveries, ensuring timely and high-quality releases to meet project milestones.
- Proactively identified and resolved issues, contributing to the enhancement of software reliability and functionality.

Project Details:

1. NewGen for 3-Wheeler/TREO (230Ah Battery Pack):

- Configured the Digital & Analog Inputs like Temperature, Throttle, Foot Brake, FNR Mode Switch, ECO/Boost Switch etc., using ADC, DIO's and also output relays using Relay driver IC (TLE75602-ESD) as per the Software Hardware Integration & Design Document.
- Developed Snapshot/Freeze Data function to store the latest DTC's (up to 10) along with the required parameters data from ECU's (VCU, BMS, CHARGER and MCU) into the external flash memory.
- Implemented the UDS IO Control function (2FSID) to trigger the relay output of thermal buzzer for EOL Testing.
- Implemented Summary parameters function to store the required vehicle data in to the onboard external flash memory.
- Implemented UDS Read function (22SID) to read the summary parameters data from the external flash memory based upon the current cycle number (extracted with respective to cycle no's end of discharge & charge data).
- **Responsibilities:** Base & Application software development, software debugging, functionality testing and supporting CFT's for any BMS related queries.

2. BMS Lite for 3-Wheeler/TREO (163Ah Battery Pack):

- Developed and optimized ASW for BMS functions like Charge and Discharge sequence, State of Charge, Cell Balancing, Limphome Mode current derating, LV Battery management, Range and Charge Time Estimation, Thermal Propagation, Ampere Hour Calculation, Fault Management and Handling etc.,
- Optimized the output relay configuration (from HSD to LSD & vice-versa) and implemented thermal buzzer alarm function (Thermal Propagation) as per AIS-156 regulation.
- **Responsibilities:** Application software development, software debugging, functionality testing and supporting CFT's for any BMS related queries.

3. BMS2.0 for 3-Wheeler/TREO (72/100Ah Battery Pack):

- Developed and Tested BMS functions like Charge Sequence and Distance to Empty.
- Analyzed the system & sub system requirements and tested on bench to gain practical knowledge on the project.
- Performed Static Analysis on BMS source code using LDRA tool to ensure software quality by reducing the mandatory and required violations as per the MISRA C 2012 compliance.
- **Responsibilities:** Static Analysis, software debugging, requirement analysis and supporting team on the bug fixing and testing.

Personal Details

- Date of Birth : 12/06/1998
- Marital Status : Single
- Nationality : Indian

Declaration

I, hereby declare that the information furnished above is correct to the best of my knowledge.

Date:

Place:

Bhanu Prakash Talari