



### **Professional Summary:**

I worked as a Junior Firmware Design Engineer at Smart Rotamach Pvt Ltd., a reputed organization, with over 1.6 years of experience. Where I was involved in projects related to power electronics, electrical motor driver (BLDC Drivers), battery chargers, which included studying, analyzing, designing and developing, simulating, and testing and debugging electronic circuits.

- Understanding customer and system requirements, along with project planning in accordance with the SDLC process.
- Developing high-level designs, including block diagrams, design calculations. and component selection.
- Performing simulations using MATLAB Simulink.
- Hands on Experience on Software peripherals like Clock, GPIO, ADC, DAC, PWM, CLB, DMA.
- Developed C code using software peripherals and communication peripherals.
- Knowledge on Communication peripherals UART, SPI, I2C, CAN.
- Preparing unit test plans, system test plans, and customer acceptance plans. Executing module testing, including unit testing, system testing, and customer acceptance testing.
- Preparing root cause analysis (RCA) for failures, debugging issues, and resolving problems.
- Conducting reverse engineering of existing products.
- Drafting paper schematics using OrCAD, Netlist generation, BOM generation.
- Preparing Bill of materials and optimizing costs.

### **Technical Skills:**

- **Controllers Used:** TMSF280039c, XMC1300, MM32F3270.
- **Protocols Used:** UART, SPI, I2C.
- **Software's Used:** CCS, Dave, Keil-Uvision.
- **Programming Languages:** C-language, Embedded C.
- **Product Development:** Embedded Firmware Development, Digital Electronics, Motor Driver, Power Electronics.
- **Design Tools:** Schematic Design, BOM Generation, Netlist Management.
- **Simulation Tools:** MATLAB, Tina-Ti.
- **Testing and Debugging:** RCA, DMM, DSO, LCR Meters.
- **Manufacturing:** Soldering.

### **Work Experience:**

Jr. Embedded Firmware Design Engineer  
Smart Rotamach Pvt. Limited  
October 2023 – Present

### **Projects Handled:**

1. **BLDC Motor controller**
  - **Description:** Firmware Development for BLDC motor controller (in both open loop and closed loop) using TMS320F280039C Controller.
  - **System Design:** In this design procedure Controlling the BLDC motor with software peripherals, in this method we can control the speed of the motor using UART command-based control and speed control mechanism.
  - **Functionality:** The Speed of the motor depends on the duty cycle of the PWM pulses.

## 2. 30 kW Electric Vehicle (EV) Charger

- **Description:** Testing and debugging of Power loop of EV charger module upto 5 kW.
- **System Design:** The charger comprises two key modules:
  - **PFC (Power Factor Correction) Module:** Converts AC power to a DC level of 800V.
  - **LLC Converter Module:** An isolated DC-DC converter featuring a resonant circuit (LLC), which adjusts the output voltage and current.

**Functionality:** The LLC converter module provides an adjustable output, allowing for charging of electric vehicle, and also it provides isolation for PFC and LLC section.

## 3. Human Machine Interface for EV charger

- **Description:** Design of Human machine interface based on key scanning.
- **System Design:** In this design procedure Intercommunication between PFC and LLC module can be done. Based on the Key scanning of the display it can display the output voltage, current, fault code of the system.

## 4. Thermal Test Vehicle (TTV)

- **Description:** Developed a MATLAB model of MOSFET array circuit for generating the power of 2KW.
- **System Design:** The system consists of a MOSFET array circuit connected in series-parallel combination and operates with the current source.

## Responsibilities during the Period

1. Understanding of product requirement spec provided by customer and making the documents like SyRS, SDD, Simulation, Test Plan (STP), Test Report.
2. Preparing Bill of Material by selecting the components based on Design requirement & procure for assemble.
3. Organize and Participate in Design Document Reviews like SDD, Schematic, RCA, Test results review.
4. Schematic drafting, Netlist generation, BOM generation in OrCAD.
5. Testing Support for HW team for debugging the testing issues.
6. Involved in project testings like Unit Testing, Integration testing, System Testing and Customer Acceptance Testing.
7. Involved in testing of circuits like Voltage Sensing, Current Sensing, Rectifiers, Inverters, GD section.

## ACADEMIC QUALIFICATION

Course	Institution	Specialization	% (or) CGPA	Year of Pass
B-Tech	PBR Visvodaya Institute of technology and Science, Kavali.	ECE	82	2023
Intermediate	Jawahar Navodaya Vidyalaya, Nellore	MPC	72.6	2019
CBSE	Jawahar Navodaya Vidyalaya, Krishna Puram, Nellore.	NA	9.4	2017

## PERSONAL PROFILE

<b>Date of Birth</b>	: 07-Feb-2002
<b>Gender</b>	: Female
<b>Languages</b>	: Telugu (mother tongue), English
<b>Nationality</b>	: Indian
<b>Marital status</b>	: Single
<b>Hobbies</b>	: Reading books, listening to music
<b>Parment Address</b>	: Kammavaripalem Village, Nellore District, Andhra Pradesh, 524223.
<b>Present Address</b>	: Khairathabad, Hyderabad 411057

**Declaration:**

I here declare that the information mentioned above is true to the best of my knowledge.

Date:

**Kakani Pavithra**

Place:

**(Signature)**



