## Summary

6 years in Embedded Hardware design experience in (HVAC, Energy, Smart IoT Products and Automotive domain) To work with an esteemed organization which nurtures a work culture for developing Technical, Managerial and Interpersonal skills wherein my creative working capabilities are utilized to its best.

## Professional Experience

**June 2022 – Current Wipro Limited**

1 Year

# Sr. Hardware Engineer



June 2022 – Current, Bengaluru - India

Core: | Requirements | Hardware Design| Electric-Vehicle | Automotive

* Define product and user requirements - Gather requirements, develop business requirement documents (BRDs) with project manager and obtain sign-offs from the appropriate parties
* Involved in design a new ST tool for the development in automotive domain for the E-rickshaw vehicle – (Designed: Power-supply, Watchdog timer, MCU selection, I2C, SPI, CAN, UART)
* Experiment in existing E-rickshaw to understand the working mechanism, Instrumentation cluster, Throttle connecting with the ST board and verifying the boards interface
* Contribute the design review with internal and external team members of the final design and board file
* Bench test set-up preparation for the customer of the board- with Actual load with motor
* Contribute to - Design documentation, preparation of functional testing template, hardware test plan, BOM preparation and shared with team
* Functional Testing- Completed the 15 boards, performed each of them and documented it
* Test procedure preparation for EMI/EMC

**April 2017 – Jun 2022 Johnson Controls**

5 Years

# Engineer II – Embedded systems



May 2021 – Jun 2022, Pune - India

Core: IoT Products | Design | Testing | Environmental | Building | Certifications

* **Global Team Parts shortage**: Working closely with global team, (finding the alternate parts of the components) Rechecking all the alternate parts in (Digi-key, Mouser, Avnet, findmychip.com) etc.,
* **Refrigeration Product P215 Fan speed controller**: Replace the FR4 board to Ceramic board with existing components and replacing the TRAIC chip. Doing the functional testing & performing the environmental chamber testing with -40 C to 125 C

# Engineer I (Associate)– Innovation & Strategies Product

Aug 2017 – May 20, Pune - India

Core: Hardware design | Testing | Thermostat | Refrigeration Products | BMS

* **BMS/HVAC control system Unit Control Board (UCB):** RTU (Roof Top Unit) basically it designed to control Heating/ Cooling equipment using the thermostat input. Involved supporting the cost reduction and designing the UCB to low-cost variant.
* **TEC-3000 Thermostat:** Series Single- or Two-Stage Economizer Thermostat Controllers are stand-alone
* Contribute in (Power-supply section, design calculation, design documentation, functional testing)
* **Wireless Energy Sensor (Using self-powered device):**
* Low-power energy sensor- wireless self-powered using energy harvesting technique and achieved the minimum size of the product with a compact design measuring (IoT devices) Transmitting through wireless using sub 1 Ghz
* Presented energy saving ideas in a **Tableau dashboard** to senior management
* Contribute the hardware design, board bring up, Functional testing, RF range testing, Derating analysis, BOM preparation, ESD testing, Documentation of the product design
* Performed the testing outside lab for Immunity and Emission test and passed the Class A
* Performed Pre-compliance tests such as EFT Burst, ESD, Surge, Voltage dips and short interruptions in the in-house lab. The board successfully passed the Emission standards

Key Project Achievements

* **Electric Vehicle (EV) Project - ST board design implementation award from customer (Honda) PSAT (6/7)**
* **P215 Product- Fan speed controller replaced with cost savings idea - Received Pat on the Back and R&R program**
* **IoT Products – Wireless- self powered devices in Smart Buildings (1st price in Tech challenge)**
* **Global Team – Appreciation for the compliance standard preparation for entire JCI products**
* **Global Compliance – Provided the Pat on the Back for compliance activities**
* **Wireless Current IoT Sensor Product Development (Snap-on) – Patent Filed**
* **Tec challenge Innovation (JCI-Internal Project) well appreciated by the management**

## Skills

### Technical Skills

* I2C, SPI, UART, CAN, BLE, Wi-Fi
* USB, Ethernet, DDR, Signal Integrity
* ARM/SAM/PIC - Microcontroller design 16- bit design

### Testing

* Functional Testing for hardware boards
* Software testing (Agile Methodologies)
* Board-Bring up Testing
* JIRA, Git-hub

### Product Development Activities

* Analog design, Mixed signal
* Requirement Traceability matrix
* Block diagram with functionalities
* Hardware Lifecycle, (DFMEA, Derating, Worst-case Analysis, Power Budget)
* BOM-Preparation / VAVE Activities
* Component selections

### Simulation Tools

* Mentor Graphics
* Allegro/OrCAD
* LT-Spice, TI-Tina

### IT Software

* Microsoft Azure Basic
* MS Word, Excel, PowerPoint, SharePoint
* MS Project, MS Visio

### Programming

* Python Basic
* Embedded C
* Debugger- Software

### Standards / Certifications

* EMI – Electromagnetic interference
* EMC- Electromagnetic compatibility
* ESD, Surge Test, Voltage dip

### Lab Tools/Test Equipment’s

* Multimeter, Oscilloscope, Power supply
* Wire harness / Bench Test Setup
* Network analyzer tools

Patent Portfolio | **1** in Publication / Execution phase

* Soldering
* Environmental Chamber

1. **System and method for measurement of current using a hall sensor – Non-Provisional Patent Patent date**: Filed Sep 10, 2018

**International Application No:** PCT/US2018/055468

**Link:** <https://patentscope.wipo.int/search/en/detail.jsf?docId=WO2019075239>

## Certification & Trainings

### Awards

* + Patent filed award & Pat on the Back ward for 3 Projects in Johnson Controls
  + Customer appreciation PSAT rating awarded (6/7) & Top-Gear challenge award in Wipro

### Trainings

* + Cloud Computing & Analytics – Basics
  + Microsoft Office 365 – Word, Excel, PowerPoint Training

### Certification

* + Embedded C
  + Hardware Design course for Analog design- (Online - Udemy)

## Academic

**2019 – 2021** BITS Pilani – Pilani Campus,

Master in Technology of **Microelectronics (M.Tech)**

Result: 1st Class – 72%

**2013 – 2015** Bishop Heber College – Tamil Nadu

Master in Science of **Physics**

Result: 1st Class – 69.5%

**2010 – 2013** Bishop Heber College – Tamil Nadu

Bachelor in Science of **Physics**

Result: 1st Class – 74%