

# VENKATESH PASUPULETI

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## Career objectives

As an electronics enthusiast and engineer with rich experience in product design and expertise in embedded systems for the automotive industry, I seek a challenging role to apply my skills in hardware development, PCB design, and system integration. Passionate about electronics both professionally and as a hobbyist, I aim to contribute to organizational growth and deliver innovative solutions through continuous learning and creativity.

## EXPERIENCE

<b>AEPL R&amp;D private limited. Pune, M.H</b> Senior Hardware Engineer.	<b>Aug'2023 – Onwards</b>
<b>AEPL R&amp;D private limited. Pune, M.H</b> Hardware Engineer.	<b>Jan'2023 – Jul'2023</b>
<b>Sednoid Technologies Private ltd. Pune, M.H</b> Embedded Engineer.	<b>Jan '2020 - Jan'2023</b>
<b>Worked as a freelancer, Vijayawada, A.P.</b> Hardware designer and developer.	<b>2018 – Jul'2020</b>

## EDUCATION

<b>Masters at Birla Institute of Technology &amp; Science - Pilani</b> In Automotive Electronics*	<b>2023 – 2025</b>
<b>Software training at NXT wave Disruptive Technologies</b> Industry Ready Certification in Full-stack Development	<b>Feb '2021 – July'2021</b>
<b>Bachelors at Andhra Loyola Institute of Engineering and Technologies, Vijayawada, A. P</b> 2018-21 In Electrical & Electronics (EEE) [CGPA 7.5/10]	
<b>Diploma at Bapatla Polytechnic College, Bapatla, A. P</b> In Electrical & Electronics (EEE) [93%]	<b>2015 - 2018</b>
<b>Vocational course at Sri Krishna ITC, Darsi, A. P</b> In Electrical course [87%]	<b>2011 - 2013</b>
<b>Secondary Education at Govt High School, Darsi, A. P</b> Secondary School Certificate [55%]	<b>2011</b>

\*Courses yet to be completed

## SKILL Set

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- **Circuit Design:** Proficient in analog and digital circuit design (R, L, C, diodes, FETs, BJTs, op-amps, voltage regulators, LDOs, PMICs).
- **Microcontrollers & Processors:** Skilled in architecture features (Registers, PWM, DMA, ADC, DAC, Timers) and chip selection.
- **IoT & Communication:** Expertise in IoT technologies (GSM, GPS, LTE 4G, Wi-Fi, BLE) and protocols (RS232, SPI, UART, Ethernet, CAN, LIN).
- **Component Selection:** Experienced with capacitors (electrolytic, ceramic), NTC, PTC, PPTC, MOV, relays, and actuators.
- **Switching Circuits:** Knowledge of switch debouncing, multiplexers, encoders, and decoders.
- **Hardware Debugging:** Proficient in JTAG programming, hardware debugging, and embedded system troubleshooting.
- **PCB Design:** Skilled in layout design, signal/power integrity analysis, SMD/through-hole soldering, and rework.
- **Testing & Compliance:** Hands-on with thermal testing, safety testing, EMI/EMC compliance (ISO 7637, ISO 16750-2).
- Know about automotive Tools like ASPICE, **ISO26262**, **HARA**, **ASIL Levels**, **DFMEA**, **FMEDA**.
- **Motors & Sensors:** Experience with motors, actuators, sensors, and measurement systems.
- **Memory Systems:** Familiar with NOR, NAND, eMMC and SRAM technologies.
- **DFx Principles:** Knowledgeable in DFMEA, DFM, DFA, DRC, and related methodologies.
- Good expertise in Power Supplies, DSO, Function Generator, DMM, Datalogger, Debuggers, Electronic Load, Thermal Chamber.
- Good Knowledge in Power electronics like MOSFET & Stack, IGBT, PFC, Motor controllers

## PROJECTS

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### Network Access Device (NAD):

Developed a Linux-based open CPU architecture device designed for controlling wireless and wired networks in automotive applications. Integrated 4G telematics, Navigation, Wi-Fi, Bluetooth 5.0, Automotive Ethernet(1000BASE-T1), and CAN FD to enable high-speed wired communication (up to 4MBps) between ECUs, primarily for ADAS applications. Additionally, it supports E-Call functionality for emergency services.

### Intelli Connect Body Control Module (ICB):

Combined 4G LTE telematics with Body Control Module (BCM) functionality for automotive systems. Incorporated Navigation, Wi-Fi, high-speed CAN FD, and LIN communication. Equipped with 14 High Side switches (IPD-based, 60W per channel) and 4 Low Side switches for controlling inductive loads via relays. Features 2 High-speed CAN FD PHYs for FOTA & OBD-II and 1 LIN for reverse parking assistance.

### Body Control Module (BCM):

Designed for controlling body-connected loads in light commercial vehicles. Integrated 16 High Side switches (IPD-based) and 4 Low Side switches for managing inductive loads. Supports load monitoring, diagnostics for individual channels, and CAN FD for firmware flashing to other ECUs and OBD-II diagnosis.

## **Telematics Control Unit (TCU):**

Developed to monitor and track commercial vehicles in compliance with AIS-140 standards. Equipped with 2 CAN-FD, 1 RS232, two SOS emergency inputs /outputs, and digital I/O. Includes an Accelerometer-gyro for dead reckoning and can record up to 10,000 events during network loss. Provides tamper detection and driver behavior monitoring for fleet management with 4G LTE CAT-II and dedicated GPS modules.

## **Current Voltage Temperature Sensor (IVT-S):**

Designed for Electric Vehicles to measure battery bank voltages (100V-400V), current (up to 400A) through shunt, and provide temperature compensation. Data is transmitted via CAN PHY to ECUs for real-time monitoring.

**Four-Wheel Electric Vehicle Development:** Designed and developed a 4-wheeler electric vehicle with a 700kg load capacity and 50 km/h top speed. Achieved a 50 km range per charge using a PMSM 4kW motor and 6kW LiFePo4 battery pack with 330 cells and passive cell balancing.

**EV 2-Wheeler Display:** Developed a PCB for a 2-wheeler EV display showing key information such as speed, battery status, and temperature. Used ESP32 microcontroller, CAN protocol for battery communication, I2C for RTC, and Wi-Fi for IoT and firmware updates.

**Force Sensor Module:** Designed a 25-force sensor module for industrial applications, measuring force via resistance changes using a potential divider network with the microcontroller's analog port.

**AC Dimmer and Relay Unit for IoT:** Developed 3 dimmers (including a capacitive dimmer for inductive loads) and 3 relays for IoT-based control, designed with ATmega328 and ESP32 microcontrollers.

**Capacitive Touch controller for Water Purifier:** Developed a capacitive touch sensor PCB for controlling a domestic water purifier, featuring 5 touch sensors monitored by an STM32 controller to activate solid-state relays.

## **Other Projects**

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- Smart Electrical Power Distribution.
- Axial Flux motor.
- V-Gate motor.
- 2kw spot welding machine
- 72v, 84Ah, 6kwh LiFePo4 EV grade battery pack.
- Smart agricultural system
- Automatic lead acid battery charger.
- Gesture control vehicle (tested with small one) using accelerometer sensor.
- Design and developed a 24v 6A SMPS.
- Automatic Transformer Parallel Operation
- Triac based A.C voltage controller
- Fully Automatic Water Tank controller.
- Square wave Inverter.

## Key Responsibilities at Workplace

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- Design and analyze electronic systems, ensuring performance across tolerances and variations.
- Create schematics using CAD tools (Altium, Eagle) and collaborate on PCB layout development.
- Perform simulations and validations (e.g., tolerance analysis, temperature drift) for design reliability.
- Collaborate with firmware teams for hardware-firmware integration.
- Conduct experiments, perform root cause analysis (RCA), and implement corrective actions.
- Coordinate with packaging teams to address physical constraints and optimize designs.
- Validate systems through testing, including thermal, regulatory (ARAI, BIS, IEC), and pre-compliance evaluations.
- Engage in supplier discussions, benchmarking, and component selection.
- Promote design reuse to improve TTM, reduce costs, and enhance quality.
- Adapt to dynamic environments while excelling in cross-functional collaboration.
- Design and Develop, Bench level validation, testing of Hardware.

## ACHIEVEMENTS AND AWARDS

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- Got first prize in GORA Science Expo.2018
- Got Second prize at Amaravati Tech Fest.2017

## OTHER ACTIVITIES

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- Actively participated as a volunteer in NSS
- Actively participated various Blood donation camps.
- Member of WE ARE WITH YOU organization.
- Participated various tech fests at college level.