TANMAN SARANGI

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Summary

Power Electronics Engineer with overall 2.8+ years of experience in **hardware design**, **circuit simulation,** and **functional testing**. Skilled in **DC-DC converter design**, **gate driver circuits**, **battery modeling**, **Model-Based Design**, **Electrical** & **environmental testing**, and **power circuit design** for real time, high reliability electrical and electronics systems in automotive and Industrial applications.

Skills

Technical: Circuit Design, Gate Driver Design, DC-DC Converter, DV/PV Testing, BMS, Battery Modeling, MBD.

Tools: MATLAB & Simulink, Simscape, LTspice, CAN analyser, Digital Oscilloscope, Data logger, DDMs, C, HIL, NI LabVIEW.

Publication: IEEE, Nov 2023 (https://doi.org/10.1109/ICCCNT56998.2023.10307471)

Work Experiences

L&T Technology Services — Bengaluru

Engineer | Oct 2024- Present

- Performed pre-compliance electrical, Environmental and EMI/EMC testing for design Validation (DV) and Product Validation (PV) of an automotive ECU at ARAI, an accredited laboratory, in accordance with customer-specific requirements and referencing standards ISO 16750-2, ISO 7637-2, IEC 60068-2, ISO 16750 and CISPR-25.
- Prepared comprehensive Test cases and executed 20+ Environmental Testing of ECU with 100% compliance with industry standards at ARAI (Automotive Research Association of India), in alignment with client requirements.
- Developed and assembled custom wiring harness to interface with the automotive ECU and load simulator, ensuring seamless connectivity for testing and improving testing efficiency by 20%.
- Performed component selection, circuit validation, and troubleshooting to ensure reliable performance across all test channels.
- Utilized CANedge and Python scripts for ECU data logging and analysis, integrating MinIO, CANcloud, and asammdf for secure data storage, signal validation, and diagnostic data verification, resulting in a 30% increase in analysis accuracy.

Post Graduate Engineer Trainee | Sep 2023- Sep 2024 — Bengaluru

- Worked on development of Al-Air battery prototype at an early R&D stage, including simulation modeling using MATLAB for performance analysis and system design.
- Modeled ECM (Equivalent Circuit Model), SOC (State of Charge), SOH (State of Health), and Degradation analysis of a Li-ion battery using MATLAB Simscape leading to enhance modeling accuracy.
- Performed electrical bench testing of battery prototype and deployed it in E-cycle for real-world performance validation.
- Designed a high-side driver circuit to control the solenoid valve with precise specifications, ensuring optimal system functionality and performance.
- Designed the front panel of an inverter based HILbox, selecting and integrating appropriate components.

Envirocare Infra-solutions Pvt. Ltd — Rourkela

Graduate Engineer Trainee | Nov 2020- Oct 2021

- Performed installation, erection, and commissioning of electrical systems, including transformers, MCC/PCC panels, and motor at 0.8 MTPA pellet plant project.
- Managed cable selection, routing, and connections for distribution systems, ensuring compliance with safety standards and reducing installation time by 20% through efficient planning and execution.

Projects

- Developed and simulated a DC microgrid in MATLAB/Simulink integrating PV, wind, and battery storage, implementing an advanced control and optimization strategy to ensure efficient and reliable power flow to the load.
- Modeled and simulated PV-based energy generation in a microgrid, incorporating a supercapacitor-based energy storage system to enhance power stability and transient response using MATLAB Simulink.

Education

M.Tech, Power Electronics and Control — 8.86 CGPA, 2021-2023

Veer Surendra Sai University of Technology, Burla

B.Tech, Electrical Engineering — 8.24 CGPA, 2016-2020

Government College of Engineering Kalahandi, Bhawanipatna