Thomas Jefferson R

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Objective

Pre-final year Electrical and Electronics Engineering student with a strong foundation in power electronics and instrumentation, driven to contribute to the development of intelligent electromechanical systems and real-time control applications.

Education

Amrita School of Engineering, B.Tech in Electrical and Electronics Engineering — Oct 2022 – May 2026
- CGPA: 9.06/10.0
- Achievements : Qualified **GATE** 2025, Academic **Rank 02** (Dept. of EEE), LeetCode 100+ questions solved

Kendriya Vidyalaya — Aug 2020 – May 2022
- Grade : 90%

Skills

- **Programming:** C, C++, Python, Embedded C, MATLAB, Bash
- **Power Electronics:** Control circuit design,Switching modulation, Battery Management, SMPS
- **Simulation & Design Tools:** MATLAB, Proteus, LTspice, KiCad, ANSYS, Altium, EasyEDA
- **Software Development:** React.js, Node.js, MongoDB, PostgreSQL, SocketIO, MQTT
- **Version Control & Platforms:** Git, GitHub, Linux, VS Code

Experience

Inplant Trainee, ISRO, Mahendragiri — June 2024 – Jul 2024
- Gained hands-on experience with PLC microcontrollers and RTOS applications in rocket propulsion systems.
- Analyzed control systems used in rocket test stands, contributing to a better understanding of real-time automation in aerospace engineering.

Projects

DOPPLE RADAR FFT ANALYSER — View GitHub
- Implemented motion detection and velocity measurement using the HB100 Doppler radar. incorporating sallen-key based signal conditioning for noise reduction and FFT analysis for real-time speed estimation.
- Tools Used: STM32 Cube IDE, Proteus

DUAL ACTIVE BRIDGE — View GitHub
- Currently engaged in developing an isolated 98% efficient bidirectional EV charging Dual active bridge with 48V to 200V power sides to perform vehicle to grid and grid to vehicle bidirectional charging applications.
- The overall setup also achieves ZVS by closed loop current and phase shift control.
- Tools Used: Atium,KiCAD,MATLAB,PROTEUS, MPLAB X IDE

50kHZ HF TRANSFORMER FABRICATION — View GitHub
- Designed and simulated a high-frequency transformer in ANSYS Maxwell, focusing on core selection and winding layout. Optimized for reduced losses and improved efficiency through electromagnetic and thermal analysis.
- Fabricated and verified the hardware and software parameters of the transformer
- Tools Used: Ansys Maxwell, peMag, pmXprt

FOUR QUADRANT DATA ROVER
- Made a Darlington pair based optocoupler isolated gate drive 4 quadrant operation rover that is Wifi controlled and can transmit sensor data onto a custom made IoT interface.
- Tools Used: Arduino IDE, ReactJS, Node.JS, Node-RED