

Siddhant Mallik

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Objective

Enthusiastic Electrical Engineer with strong fundamentals in **power electronics, embedded systems, and control circuits**. Skilled in **IoT-based system design, renewable energy integration**, and hardware-software interfacing. Seeking to contribute to **Hyundai Motors** by developing efficient and sustainable electrical solutions for electric mobility and automotive innovation.

Education

Vellore Institute of Technology, B.Tech in Electrical and Electronics Engineering

Sept 2022 – Present

CGPA: 8.25/10 (till 6th semester)

Relevant Coursework: Power Electronics, Control Systems, Embedded Systems, Electrical Machines, Microprocessors, Data Structures (Java)

Prabhu Dayal Public School, Delhi

Class X: 86% — Class XII: 81%

Experience

VLSI Internship – VIT Systems Lab

May 2025 – July 2025

- Assisted in RTL design and low-power circuit simulation using Verilog and ModelSim.
- Developed and validated test benches for timing and power integrity.
- Worked with senior engineers to document debugging results and verification methods.

Key Engineering Projects

RFID-Based Solar Highway Toll and Access System (IoT + Power Electronics)

RFID Module, Arduino, Solar Panel, DC-DC Boost Converter, IoT Dashboard

- Designed a **solar-integrated smart toll collection system** using RFID for vehicle identification and automatic gate control.
- Integrated a **DC-DC Boost Converter** for regulating solar power supply to the control circuit.
- Demonstrated real-time vehicle logging and power efficiency under varying solar conditions.
- Focused on **energy reliability, circuit design**, and renewable integration for infrastructure automation.

Smart Regenerative Braking Energy Recovery System using Supercapacitor and DC-DC Converter

BLDC Motor, Supercapacitor, Buck-Boost Converter, Thermal Sensor, MATLAB/Simulink

- Developed a regenerative braking prototype to recover and store kinetic energy using a **supercapacitor bank**.
- Implemented a **bidirectional DC-DC converter** to manage energy flow between motor drive and storage unit.
- Integrated thermal sensors to monitor converter temperature and improve **EV thermal management efficiency**.
- Simulated performance using MATLAB/Simulink to analyze energy recovery percentage and heat dissipation.
- Focused on **energy recovery, converter efficiency**, and sustainability in electric vehicle systems.

Technical Skills

Programming: Java, Python, Embedded C

Communication

Core Concepts: Power Electronics, Control Systems, EV Systems, Thermal Management

Tools & Software: MATLAB/Simulink, Arduino IDE, VS Code, ModelSim, Proteus, Git

Embedded Systems: Arduino, ESP32, RFID, Sensors, Serial

Other: Debugging, Circuit Design, Team Collaboration

Leadership & Initiatives

Hackathon & Technical Events Coordinator

2022 – 2024

- Coordinated and mentored teams in power system and IoT hackathons focusing on energy-efficient designs.
- Guided participants in circuit debugging, documentation, and embedded prototyping.
- Led logistics for **TechnoVIT 2023**, managing 4000+ participants and 50+ technical events.

Achievements

- Published **2 IEEE Conference Papers** on IoT and Renewable Energy Systems.
- Hackathon Finalist – EV Power Management System (2024).
- Solved **300+ LeetCode Problems** in Java to strengthen logical and problem-solving skills.