

# 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

<b>Programming:</b> Java, Python, Embedded C	Communication
<b>Core Concepts:</b> Power Electronics, Control Systems, EV Systems, Thermal Management	<b>Tools &amp; Software:</b> MATLAB/Simulink, Arduino IDE, VS Code, ModelSim, Proteus, Git
<b>Embedded Systems:</b> Arduino, ESP32, RFID, Sensors, Serial	<b>Other:</b> 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.