DEVSHOUSE

Idea Title

Team Name: VoltAir

Domain: IOT & Smart Devices

GDG on Campus

VIT
Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)
CHENNAI

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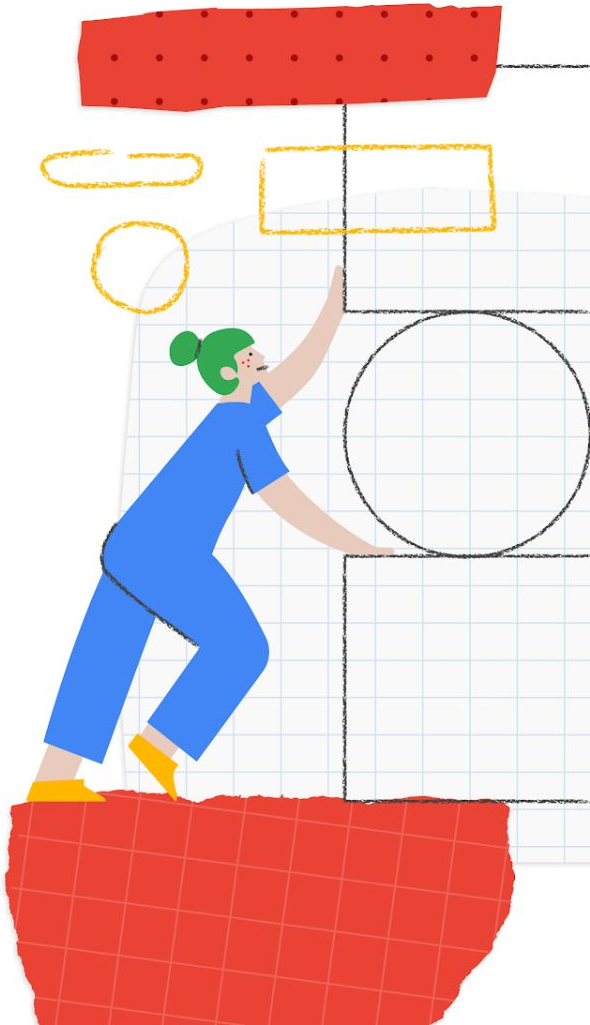
Problem Statement

Optimized Wireless EV Charging System to overcome the limitations of wired charging, improving efficiency and convenience

EV charging faces **long wait times, safety risks, and high costs**, while wireless solutions struggle with **misalignment and energy losses**. This project enhances **efficiency, safety, and reliability** with **AI-driven optimization and IoT monitoring**..



Product Idea

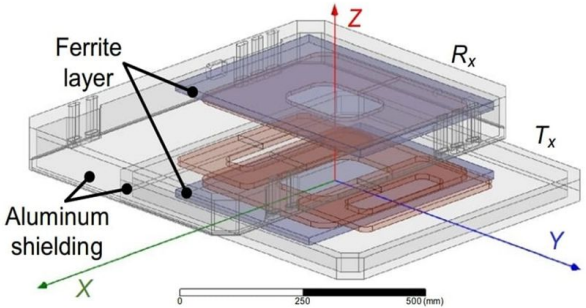
- **How does your Product solve the problem?**

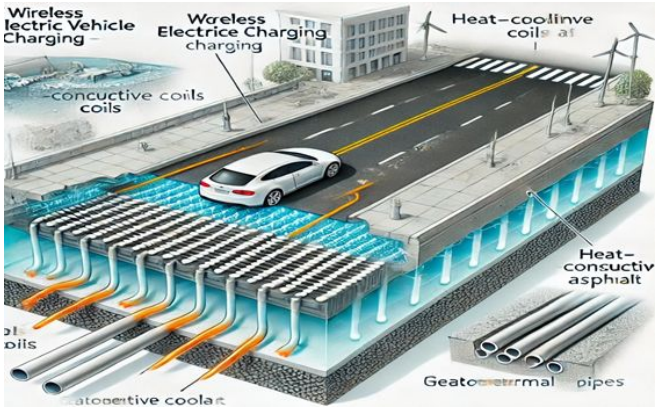
1. ENSURING SAFETY
2. OVER HEATING OF COILS
3. MISALLIGNMENT

FEASIBILITY:-

EV Adoption Rates: With increasing EV adoption globally, the demand for convenient and fast charging solutions is rising. This trend supports the long-term feasibility of wireless EV charging.

Consumer Demand: Convenience is a major selling point for wireless charging. **Dynamic charging**, where vehicles charge while moving, offers unparalleled convenience, reducing the need for charging stops, especially for long-haul drivers.

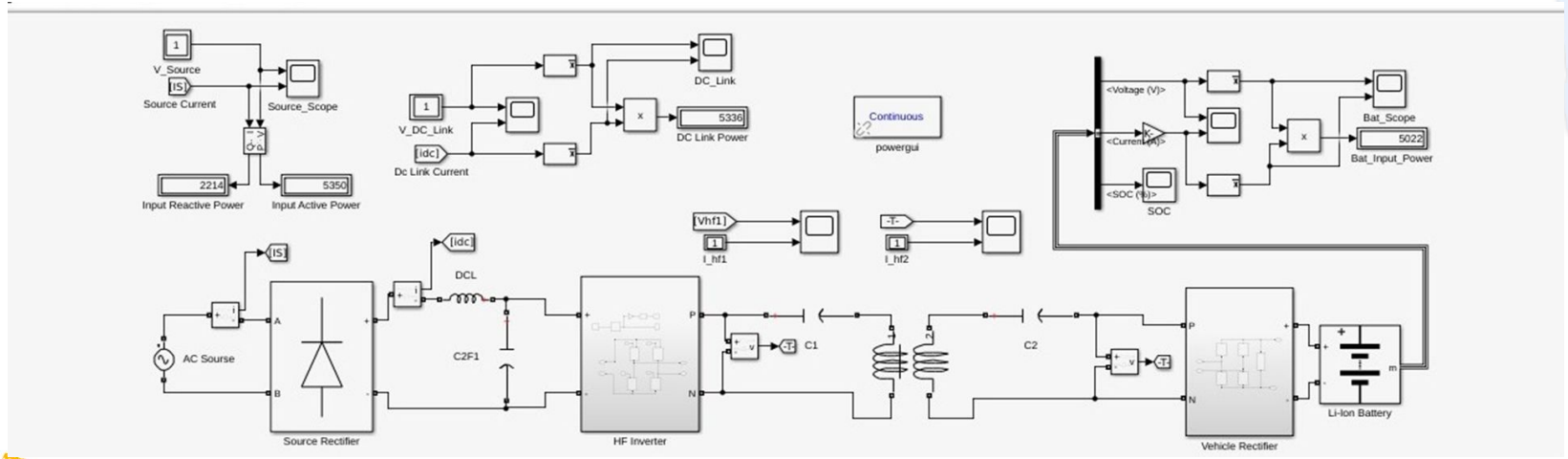




Additional Info

TECHNICAL APPROACH

- Matlab Simulink for the simulation of our prototype



How Unique is it?

- **Existing Work vs Coined Novelty**

Traditional **wired EV charging stations** requiring manual plug-in.
Stationary wireless charging with **fixed** transmitter and receiver coils.
Low **power transfer efficiency** and **misalignment issues** in early wireless models.
Lack of **real-time monitoring and optimization** in many existing wireless chargers.

Dynamic wireless charging capability (charging while the vehicle is moving).
Optimized coil alignment and power control using AI/ML for better efficiency.
IoT integration for real-time data monitoring and remote management.
Enhanced power transfer techniques to minimize losses and improve reliability

Tech Stack

Framework

- **MATLAB Simulink** (for simulation and analysis)
- **Embedded C/C++** (for microcontroller programming)

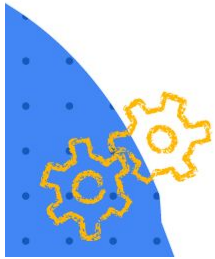
APIs

- **MATLAB Simulink API** (for integrating models with external tools)
- **Microcontroller APIs**

Machine learning

- **Predictive analysis of charging efficiency**
- **Anomaly detection in power transfer**

IoT Integration (monitor charging remotely)
AI-based Optimization (improve efficiency dynamically)
Scalability to full EV charging stations



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Team Members

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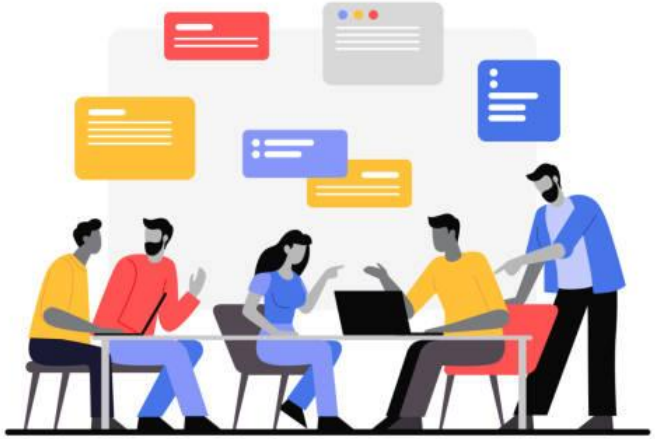

Reach out to Us!

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