EV BATTERY & CHARGING STATION SIMULATION

Theme:

- Mobility and Transportation Innovation.

Team CMS

cms college of engineering

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Problem Identified

⑩PROBLEM DESCRIPTION

- ❑ Inclusive Green Mobility
- ❑Range anxiety problem
- ❑ Existing solutions & limitations
- ❑ Clear problem description

Background:

- ❑ Rapid increase in EV usage
- ❑ Need for smart charging solutions
- ❑ Lack of real-time guidance

Research findings

- ❑ User pain points (battery < 30%)
- ❑ Charging station availability issues
- ❑ Market survey insights
- ❑ Gaps in existing systems

Product specifications

Components required:

Technical Requirements:

HTML, CSS, JavaScript

Real-time simulation

Browser-based execution

Human Factors:

Simple and user-friendly interface

Clear low-battery alerts

Easy navigation and route visibility

Constraints:

Offline and lightweight system

Simulation-based data

No external APIs used

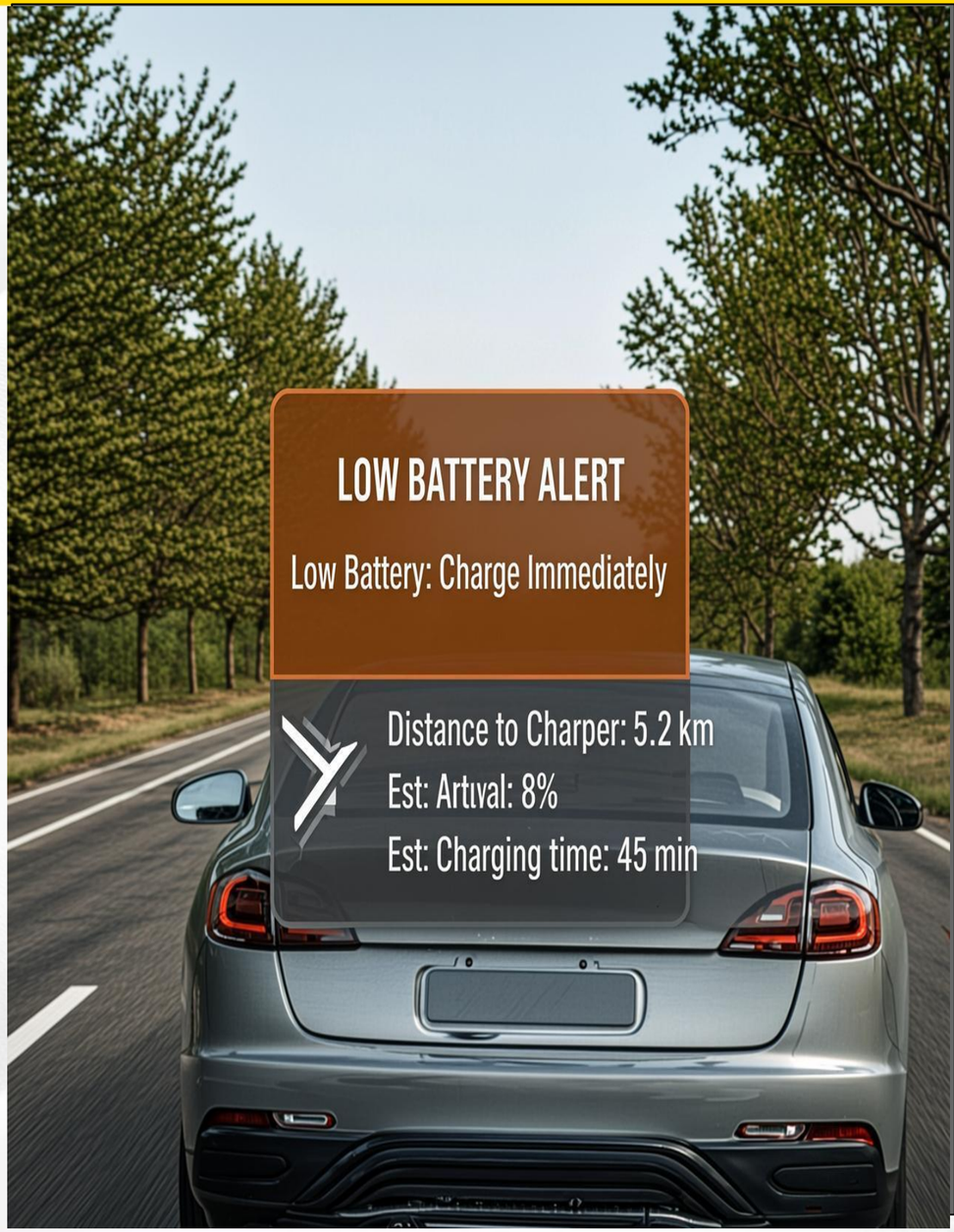
Final solution and innovation

Problem Identified

- ❖ Monitors battery level and calculates remaining driving range in real time
- ❖ Automatically detects low battery and finds reachable charging stations

Solution Innovative

- ❖ AI-based station selection using multiple parameters (distance, cost, speed, availability)
- ❖ Proactive charging recommendations to reduce range anxiety



Design process

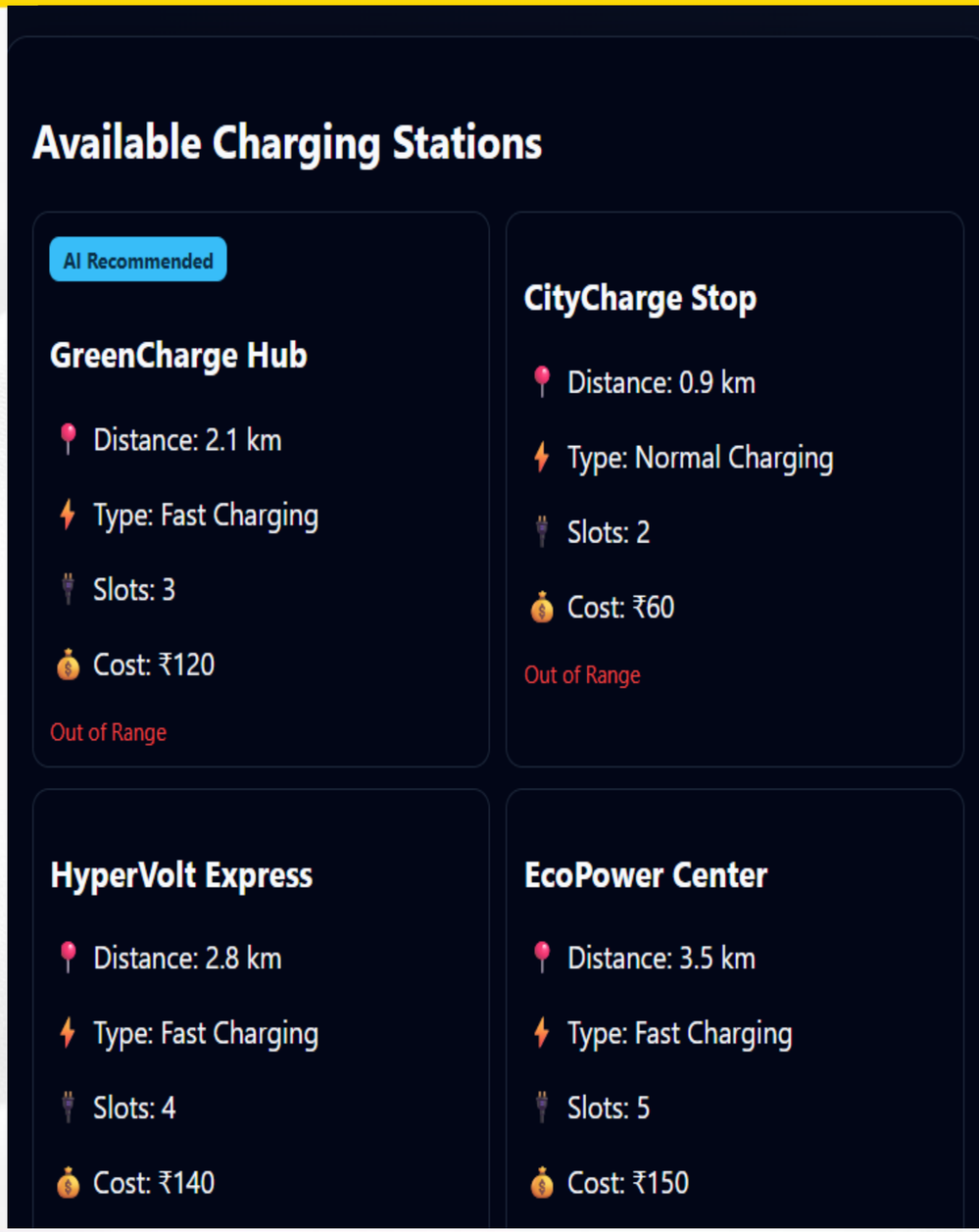
- Identified range anxiety and charging station accessibility as key EV Problems

•Analyzed user needs, existing solutions, and charging infrastructure

•Conceptualized a smart EV charging recommendation system

•Designed a web-based system with battery monitoring and 3D navigation

•Simulated and tested battery behavior, routing, and station selection



SIMULATION PROCESS

- The simulation starts with the electric vehicle at **100% battery level** and a fixed driving range.
- As the vehicle moves, the **battery level decreases continuously** and the remaining range is calculated.
- When the battery drops **below 30%**, an alert is generated and AI-based charging logic is activated.
- The system **selects the best nearby charging station** based on distance, speed, slots, cost, and reachability.
- The vehicle is **navigated to the selected charging station** on a 3D map until the destination is reached.

SUPPLEMENT LINK

Thank You!

Acknowledgements

Industry experts

Research participants

Technical advisors

Supporting organizations

References

Industry reports

Academic papers

Technical documentation

Market analysis data

Credits

Research team

Project coordinators

Questions? Contact us at

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