EV CHARGER BOOKING SYSTEM

A

Project Report

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21CS2022

IDD IN CSE & AI

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Abstract

EV Charging System" project presents an innovative solution designed to meet the constant growing demand of Electric Vehicle (EV) charging infrastructure in India. This mobile application utilizes the Google Maps API to provide users with a user-friendly way to find various charging options. What makes our app unique is its integration of three types of charging points: public, private, and semi-public.

The primary goal of our app is to reduce the time EV owners spend waiting to charge their vehicles and offer them more choices throughout India. Users can easily locate and use publicly accessible charging stations for their journeys. However, the key feature of our app lies in its ability to connect users with privately-owned chargers, including those at residences, and chargers located at places like shopping malls and universities. This feature empowers users to effectively plan their charging needs, even in areas where public charging infrastructure may be limited.

By bringing together public, private, and semi-public charging options, our app significantly enhances the convenience of owning an EV in India. It contributes to sustainable transportation by making charging more accessible and reliable. As India's transition to electric vehicles gains momentum, our project plays a crucial role in improving the user experience and advancing the country's efforts toward a cleaner and more sustainable future.

1. Introduction:

Electric Vehicles (EVs) are becoming popular day by day due to their low emissions, energy efficiency, and reduced our dependence on the fossil fuels. But, the lack of charging infrastructure remains a big challenge for easy EV adoption. In India, the number of EVs on the roads is increasing day by day, but the charging infrastructure is still not sufficient. Therefore, it is important to develop an efficient and user-friendly EV charging management system that can provide real-time information about all the available charging stations and help users book slots in advance. The EV Charging Management System is a project aimed at addressing the charging infrastructure challenges faced by EV users in India. This system lets users book a public charger, a semi-public charger, or a private charger. The app uses Google Maps API to show users all the available chargers in their nearby radius. It also displays the current active hours for the charger and the speed of the charger. The system is designed to be user-friendly and easy to use and navigate through. The user can choose the type of charger they need and then see the available options. The app shows the active hours for the charger so that the user can plan their charging accordingly. The user will be able book a slot in advance to ensure that they have a charging spot reserved whenever they need it. The EV Charging Management System is important because the existing charging infrastructure in India is underwhelming, and this is a great problem for EV adoption. The lack of charging infrastructure leads to range anxiety and restricts the use of EVs.

2. Problem Statement:

The ”EV Charging System” project addresses a big issue growing from the evolving adaptation of electric vehicle (EV) adoption in India. As EVs increase in popularity, need for accessible and useable charging infrastructure has become increasingly important. India’s charging infrastructure in a early stage of development, and there is a increasing need to provide users with more options to charge their EVs efficiently. The challenge lies in the fact that India’s

electricity generation heavily relies on fossil fuels and non green sources particularly coal. Knowing it is impractical for the government to solely rely on the construction of new charging infrastructure to meet the growing demand. Building more charging stations without a sustainable energy source would undermine the ultimate goal of making the transportation sector greener.

Hence, there are two problems: first, there's a lack of accessible and diverse charging points options for EV owners, and second, the charging infrastructure must align with environmental goals. Our project seeks to close this gap by providing a user-friendly platform that connects public, private, and semi-public charging points, thereby expanding charging options while taking into account the imperative to transition to cleaner energy sources for a greener planet.

3. Objectives:

The objectives of the "EV Charging System" project focus on enhancing user options for chargers. To start with, the project aims to enhance charging availability for electric vehicle (EV) owners. This will be achieved by developing a user-friendly mobile application that enables easy access and location of various charger types, including public, private, and semi-public chargers. A key goal is to optimize the user experience through an intuitive interface providing real-time information on charger availability and payment options. The ultimate aim is to ensure a seamless and convenient EV charging experience. Furthermore, we are dedicated to promoting sustainability through the encouragement of electric vehicle (EV) adoption and sustainable transportation practices. Despite the ongoing development of charging infrastructure in our country, we strive to provide a solution that connects public and private charging stations, addressing any existing limitations. Additionally, our project aims to facilitate long-distance travel by assisting EV owners in locating and utilizing charging stations along their routes, ultimately reducing any concerns about range anxiety. By minimizing waiting times at charging points.

4. Scope:

The ”EV Charging System” project focuses on creating and implementing a mobile application that will simplify the process of charging electric vehicles (EVs) in India. The goal is to integrate different types of charging points within this project scope. The project aims to provide users with a comprehensive charging network, including public, private, and semi-public chargers. To enhance accessibility, real-time location tracking and availability information will be integrated using the Google Maps API. The project also involves user registration and authentication for EV owners and institutions to list their charging stations. However, it does not include the physical installation of charging infrastructure or address energy source management or environmental impact assessment. Initially, the project’s geographical coverage is limited to specific regions but may expand in the future. It serves as a proof of concept with ongoing support and maintenance considerations.