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EV Charging Stations Management System using Al Chatbot

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Abstract: *The rapid adoption of electric vehicles (EVs) has led to a growing demand for efficient EV charging station management around the world. Operated by Natural Language Processing (NLP) and Artificial Intelligence (AI), chatbots have been developed as valuable tools to improve the user experience and operational efficiency of EV charging stations. In this article, we examine existing research on chatbot integration in EV charging stations and explore the applications, benefits and challenges. Identify key areas of chatbot applications, including user support, operational monitoring, and secure payments, highlighting challenges such as integration complexity and concerns about data protection models. Future research instructions are discussed to improve these gaps and further improve EV station management.*

Along with the building of charging stations, automakers like as TATA have introduced new electric vehicles to the market. However, when the stations are fully utilized, delays may occur due to the current charging duration, which ranges from 15 to 30 minutes. To address these issues, our proposal calls for connecting all EV charging stations into a single network. Users can locate and select their preferred station with ease, which ultimately saves time and is particularly helpful when driving electric cars long distances. Users can reserve slots when they become available; if not, the system asks them to select a different time. A portion of the amount must be paid for the online booking confirmation. Additionally, our system provides charging stations with a management interface to govern reserved and open slots and displays the fastest route to the selected station. Our web-based application senses direction using the Google Maps API and time-slot allocation algorithms. An online payment gateway expedites transactions, and our chatbot technology allows voice commands to be utilized to control the program. Customers can save a great deal of time by using our technology to locate and reserve appropriate charging stations.

Keywords: Management system, Charging slot, EV Cars, GMap

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