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Survey on EV Stations Management System Using AI Chatbot Support

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ABSTRACT

Automotive manufacturers like TATA have launched new electric automobiles on the market along with the construction of charging stations. However, the current charging duration varies from 15 to 30 minutes, which might cause delays when the stations are completely utilised. Our idea entails linking every electric car charging station into a single network to overcome these problems. Users can quickly find and choose their chosen station, which is especially useful for long-distance driving in electric cars and ultimately saves time. When slots are available, the system allows users to reserve them; otherwise, it prompts them to choose a new time.Online booking confirmation requires a portion of the cost. Our technology also shows the quickest path to the chosen station and gives charging stations a management interface to control open and reserved slots. Our Android-based solution makes use of time-slot allocation strategies and the Google Maps API to sense direction. Through our chatbot system, voice instructions may be used to operate the programme, and an online payment gateway speeds up transactions. By utilising our technology, consumers can find and reserve suitable charging stations quickly and with a significant time savings.

Keywords --Smart management, charging slot, EV Cars, Map,Chatbot.

I. INTRODUCTION

Recent years have seen an increase in global warming and the use of fossil fuels. the twin, urgent global issues of fossil fuel depletion brought on by irresponsible energy consumption and global warming. To solve these issues, renewable energy systems devoid of fossil fuels must be installed. The Feed-in Tariffs (Fit) initiative of the government has sped up the adoption of solar installations in Japan. However, the voltage distribution and system frequency have been negatively impacted by the rising output from these systems.The Japanese government is now reevaluating the Fit system as a result. Additionally, photovoltaic installation prices are decreasing annually, which indicates a future with significantly lower PV electricity bills. This study proposes the use of EV charging

stations as energy aggregators, mainly receiving power from PV systems in smart homes and transferring it to EVs and smart homes. For the exchange of electricity, these charging stations require fixed batteries.

In this project, we want to provide clients with a platform where they may schedule charging sessions at open charging stations in accordance with their needs. A few of the features the system offers include an AI chatbot, mapping capabilities for direction sensing, digital payment options, as well as notifications alerts for each activity.Electric vehicles can be recharged using a variety of charging infrastructure types, each tailored to specific locations and requirements. This chapter underlines the need of taking local design and implementation for EV charging networks into consideration by highlighting technical specifics and EV charger standards.

II. LITERATURE SURVEY

This paper [1] Cloud based Smart EV Charging Station Recommender Sarika P.R,Shivraj P 2022,Random Forest Algorithm (RFA) is applied for finding stations that are near the vehicle location; Linear Search Algorithm (LSA) for filtering stations that satisfy the user requirements.

[2] Electric vehicle charging station planning with dynamic prediction of elastic charging X. Bai, Z. Wang, L. Zou, H. Liu, Q. Sun, and F. E. Alsaadi 2021 In this study in this study, a novel approach based on the dynamic forecast of charging demand has been developed to address the problem of planning EV charging stations.

[3] Optimize strategy of wireless charger node deployment based on improved cuckoo search algorithm Y. Wang, F. Wang, Y. Zhu, Y. Liu, and C. Zhao 2021 In this paper, we have proposed model and algorithm's accuracy and efficacy are also confirmed.

[4] Cuckoo search algorithm for multiobjective optimization of transient starting characteristics of a selfstarting HVPMSM. L. Wang, H. Guo, C.D. Shaver, and N. Bianchi 2021 This survey aims a multiobjective optimization strategy based on QRSM and the Cuckoo search algorithm is proposed in this study.

[5] Stochastic planning of electric vehicle charging station integrated with photovoltaic and battery systems D. Yan and C. Ma 2020 In this paper,the modelled charging demand of the charging station was made more realistic by taking into account a variety of EV charging behavior, charger configurations, and charging assignment models.In this paper,the modelled charging demand of the charging station was made more realistic by taking into account a variety of EV charging behavior, charger configurations, and charging assignment models.

[6] Optimal planning of charging station based on discrete distribution of charging demand. Daniel Nahmias, Aviad Cohen, Nir Nissim, Yuval Elovicia 2020 In this work,the use of SAR data for rice identification at various sites in northern Vietnam is demonstrated.

[7] Agentbased aggregated behavior modeling for electric vehicle charging load K. Chaudhari, N. K. Kandasamy, A. Krishnan, A. Ukil, and H. B. Gooi 2019

we study suggested a simulation model to forecast EV charging demand based on a number of key parameters.

[8] Influence of electric vehicle access mode on the static voltage stability margin and accommodated capacity of the distribution network Nir nissim, aviad cohen1, jianwu, andrealanzi, liorrokach, Yuval elovici and lee giles 2019. In this study, We research, the behavior of buses, t-taxis, and private vehicles were taken into account when developing the prediction model for the demand for charging power for electric vehicles.

[9] Current weakening control of coreless afpm motor drives for solar race cars with a three-port bi-directional dc/dc converter V. Rallabandi, D. Lawhorn, J. He and D. M. Ionel. This paper proposes the use of a coreless axial flux permanent magnet machine, which has the attributes of low stator mass, negligible core loss and virtually

zero cogging torque, as the propulsion motor. A three-phase inverter with its dc bus fed from a three-port DC/DC converter, which accepts inputs from a solar panel and battery powers the propulsion motor.
[10] Smart topology of evs in a pv-grid system based charging station by A. Hassoune, M. Khafallah, A. Mesbahi and T. Bouragba.This work focuses on a smart algorithm to optimize energy of electric vehicle charging station while considering numerous constraints as the instability of renewable energy sources and the potential limited power given by the grid.

III. LIMITATIONS OF EXISTING SYSTEM

A lot of work has been done in this field thanks to its extensive use and applications. This section mentions some of the approaches that have been implemented to achieve the same purpose. These works are mainly differentiated from the techniques for smart management of EV charging stationssystems.

IV. CONCLUSION

We have successfully developed the "Smart Management of EV Charging Stations" system using a hybrid approach to web application development. One of the key functionalities of the system is the ability to book charging slots based on the specific type of charging socket required by the car. To enhance user interaction and support, the system incorporates an AI chatbot capable of resolving queries and providing assistance. This chatbot ensures a seamless user experience and streamlines the process of accessing charging stations. Additionally, the system utilizes the GMAPS API to provide accurate direction sensing. Users can easily navigate and locate the nearest charging station using this feature, enhancing convenience and efficiency. In summary, the "Smart Management of EV Charging Stations" system encompasses a web application approach. It offers charging slot booking based on charging socket types, an AI chatbot for query resolution, and utilizes the GMAPS API for efficient direction sensing. This comprehensive system aims to simplify EV charging station management and improve the overall user experience.

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