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EV Charging Station Near Me

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Abstract: *Over the past decade, electric vehicles and charging technology have made remarkable progress. In addition to reducing emissions, electric vehicles are proving to be much more efficient as they have better power output and can use regenerative braking to charge the battery while driving. Despite many advantages, electric vehicles still lag behind when it comes to installing charging stations. Unlike people who drive conventional cars, EV owners cannot refuel their vehicles at every gas station. Electric vehicle drivers must charge their vehicles before departure. The need for infrastructure development such as charging stations cannot be denied. The Charging Stations app is designed to help EV drivers find nearby available charging stations. Once a charging station is found, users can also reserve a slot at the station to charge their vehicle.*

Keywords: Charging Stations, Distance, Booked Slot

I. INTRODUCTION

The technology for charging electric vehicles has made enormous strides in the last decade. Electric vehicles are more effective and have greater power delivery in addition to reducing pollution since they can use regenerative braking to replenish their batteries while moving. Even with all of their benefits, electric vehicles still struggle with things like finding charging outlets. Unlike drivers of conventional vehicles, owners of electric vehicles are unable to recharge their automobiles at any gas station. Electric vehicle owners must keep their vehicles fully charged before leaving. There is no disputing the necessity of building infrastructure like charging stations. To assist EV drivers in finding available charging stations nearby, the Charging Station app has been created. Users can reserve a time slot to charge their vehicle at a charging station after finding one.

II. LITERATURE REVIEW

Charging your vehicle while travelling can be though task , as we have no idea about the location of setup of charging station , as most of the population is fully functional on traditional IC vehicles .There are two techniques by which effort of charging by reducing the waiting time can be done.

A. Tracking Location

In this method the location of nearest charging stations is provided and based on the load on that charging stations and the traffic on related route is made . The slot will be booked by the user based on his preference . Immediate Proximity Mobile Units or IPMUs are introduced as smart devices registered with the EV, typically in the form of a smartphone or smart tablet which can work parallel to or substitute .

B. Tracking on user input

Sometime user will book the slot on his preferred location irrespective any parameters for this purpose this input has been provided .Here the data provided by user will be processed at the backend and the slot booking request will be made to the operator and this whole slot booking procedure will work in FIFO mode as the data is stored in stack

II. METHODOLOGY

The innovation for charging electric automobiles has advanced dramatically in the recent decade. Since they can utilise regenerative braking to recharge their batteries while moving, electric vehicles are more efficient, offer higher power delivery, and produce less pollution. Electric vehicles still have difficulties, despite all of their advantages, with things

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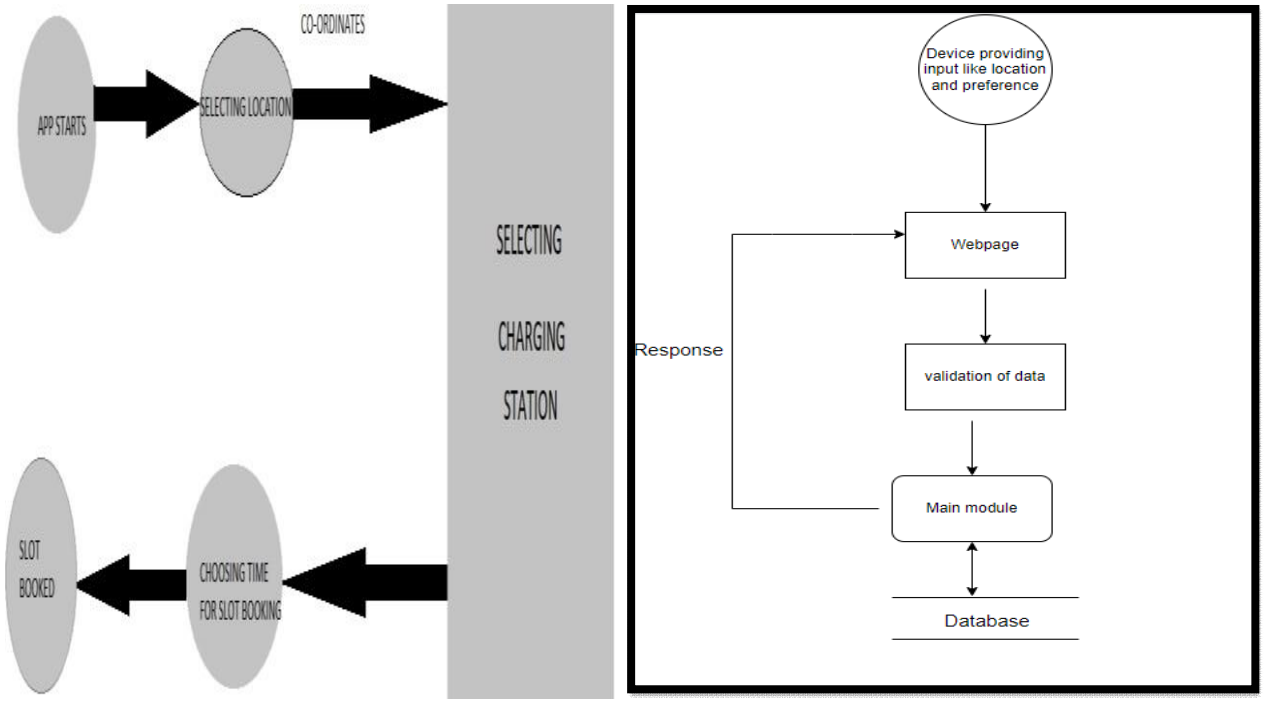
like locating charging stations. Owners of electric vehicles are unable to recharge their vehicles at any petrol station, in contrast to drivers of conventional vehicles. Owners of electric vehicles are required to leave their vehicles fully charged. The need for infrastructure like charging stations cannot be contested. The Charging Station app was developed to help EV drivers locate nearby charging stations that are open for business. After locating a charging station, users can schedule a time to charge their car there .Most of the application system developed for this problem implement the FCFS algorithm ,while we already developed a new algorithm named RAWT (Reduced average waiting time) which calculates a decide factor based on user's distance from the charging station , the slot time and the duration required to reach the station

III. RESULT AND DISCUSSION

In this system, the user can manage all of his EVs from the app, and he may search for and reserve a charging station spot in advance. A user may also look for an EV station based on their location, city, or distance. If you enter your source and destination together with the number of kilometres you want to travel, the system will also give you a route with charging stations along the way. The administrator will oversee each station and slot.

IV. SIMULATION RESULTS



The above diagram shows the functioning of the system i.e. the user should provide the correct credentials then the request of user will be forwarded to the backend or server were the algorithm , RAWT will be functioning

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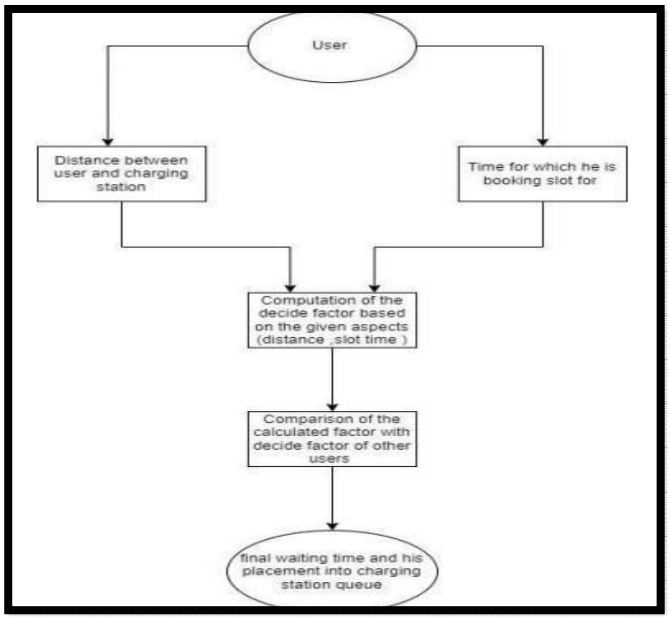
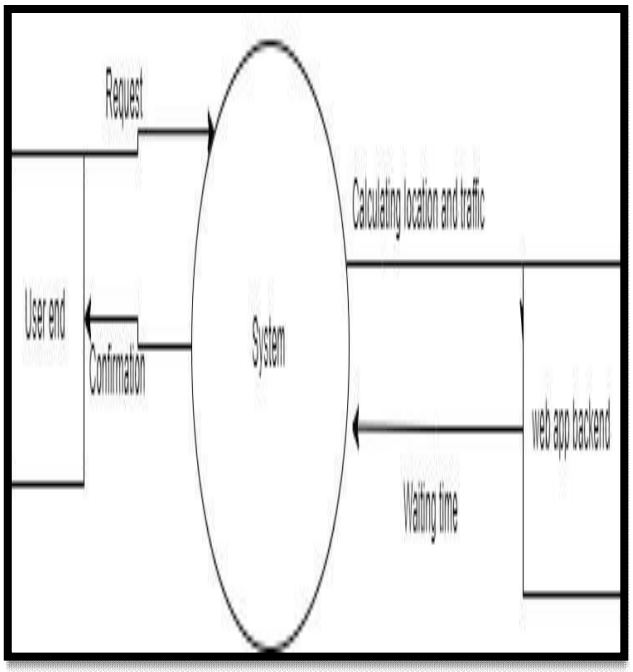


The above diagram shows the implementation of RAWT algorithm , which utilizes the user's distance from charging station , the slot timing and the duration required by the user to reach the charging station



The above diagram features how the data is transferred from one end to the other i.e. the flow of data and control , here firstly the user will enter his credentials , then this data will be transferred to the frontend for primary credentials after verification this data would be sent to backend or server and the necessary computations would be done and the user would be placed into the queue for the charging station

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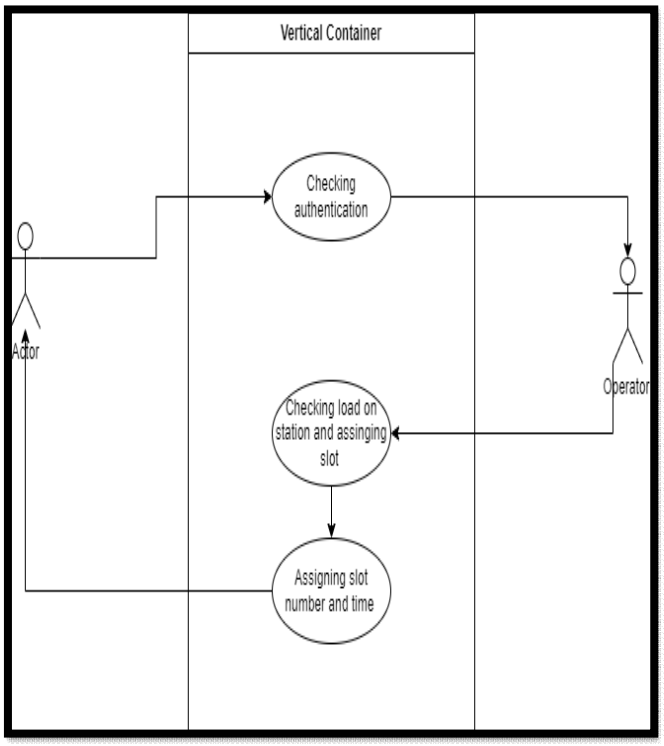

The above use case diagram describes the working of the system with respect to the user's interaction with the system , here the user will make a request for slot booking and accordingly he will be placed into the queue of the charging station

V. CONCLUSION AND FUTURE WORK

The user of this system may control all of his EVs from the app, and he can look for and reserve a charging station slot in advance. Additionally, a user can search for an EV station near them by city or distance. The system will also suggest a route with charging stations along the way if you specify your source, destination, and desired number of kilometres. Each station and slot will be under the administrator's control

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