SMART VEHICLE PARKING SYSTEM

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Abstract: The world is getting smarter, smart cities and detailed planned townships are part of us. With such population of vehicles on our road there is a need of parking system that emphasize on handling the traffic problems of the modern world. This research presents idea of a system to handle and book a parking spot on different locations of a city limit. Locations varying from multi storey parking spots or a shopping mall. The system was designed for ease of convenience of person commuting to different locations to manage the time and have multiple options of parking at user’s convenience. This research paper presents an architecture of a parking system based on a simple idea of providing a platform for booking a parking spot in an area.

Keywords: smart parking system

I. INTRODUCTION

As the world moves forward with the momentum of globalization, India has seen quite a growth in terms of vehicle ownership which leads to multiple troubles viz. road tragedies, traffic-clogging and misuse of energy. Vehicle parking is one of the most glaring issues as the number of parking spaces are quite inadequate. Having at least some sort of management system is a must where we are striving for more and more efficient alternatives. A large number of government offices, outlet stores and academic centers are prime premises where people drain much of their time, energy and fuel in search of a parking point. With India speeding up the metamorphosis of smart cities across the country, people are more and more likely to use an application for a certain task rather than being dependent on a staff based system but there is still a huge scope remaining for the people in India and abroad as well to get even more tech based to get to peak efficiency. People opting more for the conventional parking management systems supervised by staffs is the root cause of the continuity of the situation. The human error part of the problem comprises of having no or less knowledge of available spaces. With modern technical advancements technological aspects of the problem at hand can undoubtedly be harnessed and tackled through a centralized application.

Parking is the biggest issue of the industrialized society running on machines. There are numerous problems due to lack of parking spots.. The more conventional option seems to be the better. Interesting techniques are being developed for speech recognition but in the current market, there is actually no real commercial product for sign recognition. The idea is to make machines to understand human language and create user-friendly interfaces for human computers (HCI). Making a machine understand speech, facial expressions and human movements are some moves in that direction. Gestures are the non-verbally exchanged information. Innumerable amount of gestures can be performed at an instant by a person.

There can be certain policies but Indian youth need to follow them strictly so that it can be properly use but these policies will only lead to short term solution. For the longer term solution, Indian government needs a plan. Transport in India needs to be managed. Till public transport in India becomes more advance, if people will use cars alone while all other seats are vacant this problem will never solve.

We have come up with an advance solution which can help us managing our Indian parking systems so that there could be less traffic on road and people can reach their destination on time

II. LITERATURE SURVEY

The survey started from the idea of searching something that makes parking possible without any extra effort of roaming around in search of space. In man-made structures like shopping malls or cinema halls, the parking is quite easy but is a time taking process of checking and making payment and then routing to the parking spot. Instead the idea was to pre-book the spot and reduce the time taken. We look onto the matter and no viable option was seen, there were research papers discussing the idea of a smart parking system using IOT and sensors but the cost of developing such application was high and required professional help. One such paper was published by Abhirup Khanna and Rishi Anand in 2016 describing the use of IOT and sensors for detecting each and every parking spot and cross checking for availability of the space. In another paper published in 2018 by Muhammad Alam describes a decentralized system of peripheral devices that detect empty spaces and uploads to the cloud, big poles of sensors are installed in Pisa, Italy near a roadside parking facility near a famous tourist attraction which uses digital image generation and AI for detection of empty spaces. The problem with all these research was it was strictly on paper and implementation of these require a good budget with good development and deployment. We concluded with these research that without any hardware support we can simply create a platform that provide easy interface and focuses primarily on booking and tracking of spot. The user can freely search and book a spot for any duration and can manage time. The research area was to create such application without any hardware support with
low bearing cost to parking authorities. We look onto the application like BookMyShow and Paytm that provide similar functionalities with movie and event booking, our implementation was inspired from these apps.

III. PROPOSED SYSTEM

The purpose of the research was to develop a smart vehicle parking system which should be completely automated to minimize human participation in controlling the parking facility. This system was for multiplatform support in android operating system and iOS. The application was designed in such a way that user has minimum effort for locating and pre booking the parking spot in any public places like shopping mall, market complex, theatre etc. The application uses google Databases, Google Firebase as main backend for the application. The firebase database provides authentication services like Google and Facebook Sign in also having option for User profile creation and syncing. SMS feature and email notification are provided also by the Firebase Database for notification and information sharing with user. Firebase Cloud provides option for storing details of user and parking lots. The application shows nearby parking lots as well as custom search for any particular location. The user can choose from multiple options and can choose the vehicle type i.e. two wheelers or four wheelers for booking. The booking process can be automated without any extra interference of parking lot owners or administration team, it dynamically updates data for collision of user choices and spots are appointed on first come first serve basis. The user has choice for choosing over multiple parking options based on availability of spots for duration that can be chosen and can be extended. The application was well fitted with in app notification providing updates and warnings of booking status and time remaining for the booking.

Various actors were involved in illustrating the use of the application. The user, server, and the facility provider. All acts in accordance with the system to administer the work.

Call flow of the System
- The Smartphone sends location of user to the server for nearby parking location.
- The platform checks the parking area and finds the empty slots
- The customer selects the space of choice and also provide the time duration.
- When the payment is done the application lead the user to the parking facility.
- If the parking time is over, the provider would send a message if he want to continue if yes then user must have to give time duration and applicable payment.

Fig 3: Process flow diagram

IV. RESULTS

These images are of application used for booking the spot

Fig 4: Login screen
V. CONCLUSION

The result was an application, the first part was user authentication methods login and signup screen the development was shown in figure where it can be seen different methods of login and creating a profile for use of access. The next part is for booking and handling the parking. The application shows various options for booking. It shows multiple options for choosing the vehicle and it shows nearby parking spots. The user can choose from multiple locations at their convenience, timing slot and payment options.

Parking is a global issue which we have tried to offer a simple solution to it.

REFERENCES


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