An Android/IOS Application for Car Parking System Using GPS

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Abstract - *Parking is fundamental to sustainable urban development. The waste of commuter's time, congestion and increased carbon emissions, lost productivity and economic opportunities, are some of the effects faced due to inefficient parking systems. Unorganized parking creates the problem on multiple fronts.*

We have analyzed that to alleviate such traffic congestion and improve the convenience for drivers, many smart parking systems aiming to satisfy the involved parties (e.g., parking service providers and drivers) have been deployed. This system enhances the components of existing parking system available today. It runs on a mobile phone platform and provides a visual display of parking lots available to the user according to the current location with the help Google API that the user can book or reserve a space. The Quick Response QR code is affixed to every parking space. The user needs to scan the QR Code while he enters and when he exits the parking lot. The action of the user is then reflected in the database and accordingly, the time is calculated and the amount is paid by the user through PayPal (secure gateway or wallet).

Thus using the concept of smart parking we can develop a technology that digitizes any type of parking for best Return on Investment (ROI) possible. Its suite of services makes a complete smart parking ecosystem which serves the suppliers (API integration), parking management (enterprise solutions), government (smart city) and the consumers (discovery and transaction app).

Key Words: Google API, Smart Parking, PayPal, QR Code.

1. INTRODUCTION

In the year 2012, 159 million new registered vehicles were reported compared to the year 2002 where there were only 58 million new registered vehicles, which makes it a rough estimate of 100% increase in a span of 10 years (Statistical Yearbook India, 2016). Referring to the aforesaid statistics provided by the Indian Ministry of Road Transport & Highways, the current transportation infrastructure and car park facilities are deemed insufficient in sustaining the influx of vehicles on the road. Therefore, problems such as traffic congestion and insufficient parking space inevitably crop up. Due to an anonymous increase of traffic in India, which leads to pollution and poor quality roads, the major problem that has come to the light is the issue of parking. There are two types of parking's, they are off-street parking and the other is on-street parking. One of the most adopted culture known as off street parking which are seen at big shopping malls, theatres and huge offices. In off-street parking vehicles are parked in a more systematic fashion to utilize the parking space at its most, whereas in on street parking vehicles are parked in a disorganized or chaotic manner anywhere on the street which results in , misuse of land ,poor quality urban transport and increasing social and environmental costs. This paper highlights the difficulties faced by customers when searching for spaces while parking vehicles, showcases the difference between manual and automated parking systems, and how a dynamic slot allocation is done and the devices required implementing it.

2. SUMMARY CONTENT

The previous section offers various discussions of current research and provides conclusion. Chapter 3 is about existing parking system, chapter 4 about proposed systems, chapter 5 is methodology, chapter 6 system evaluation, chapter 7 is the conclusion of the paper and finally, chapter 8 is about references.

3. EXISTING PARKING SYSTEMS

Time and Cost are the two most important factors in human life. More and more difficulties are increasing and affecting all the human life physically as well as mentally. One of which is car parking problem rapidly arising.

Nowadays parking problem is faced due to parking space falling short of the current requirements in the country as the total number of motor vehicles exceeds the total number of heads per family. In Indian cities, the parked cars claim a lot of space which leads to congestion and traffic problems. Thus fundamentally parking is a problem of space. With the growing culture of automobile dependency in INDIAN cities, the demand for parking spaces is also increased. This is especially because the infrastructural growth of our cities is unable to keep up with the growing demand for spaces to park. The other aspects of urban life has begun to spill over in form of congestion, fuel loss, dispersed land use and low air quality due to the scarcity in parking spaces. It is, therefore, strongly desired to provide an effective strategy to address these concerns. The Fig-1 gives us a rough idea of the problems caused by parking.

Fig -1: Problems caused by parking

4. PROPOSED SYSTEM

There are several ways of managing the parking problem. One approach is by increasing the parking space but this will lead to huge investment. However better management will be a wise method for the existing parking spaces.

The Internet is the most important and widely used in this world. With the help of the internet, we can manage the parking system. In this proposed system we can drastically change parking issues with the help of an Internet-enabled smartphone. The overall system design consists of the following modules which provide a complete solution for the problems faced due to parking by the citizen of Indian.

4.1 Modules

(a) Registration: In this module both the user and admin has to create an account for themselves with valid details which will then be used further for verification while logging in the system.

(b) Login: This module is mainly for authentication for the user and admin. The user has a username and password which acts a verification door to their respective user-interface.

(c) Admin: Here the admin can add his available space for parking, which will be reflected in the map with a marker so that it will be visible to the users while searching and booking a parking slot.

(d) Google API Map: This module helps us create a map with user's current location and displaying the required parking slots with the base amount/hr.

(e) Date & Time Selection: Through this module, the user can select the desired date and time for reserving or booking the slot.

(f) Payment through PayPal Sandbox: Once the user has booked a slot, he has to pay the base amount of the slot through PayPal (secure gateway or wallet) so that there will be no security problem

(g) QR Code Generation: Every user will be provided a QR code automatically which contains all the necessary details of the user. The user has to scan the QR code will entering and leaving the parking area.

(h) Database: Database used here is MySQL, where the complete information obtained, is stored. For any request, the data can be fetched easily and delivered as data is stored in the form of connected tables.

The block diagram of our system is given in Fig -2, which tell us the way our system can help in solving the parking issues in India (Our project is a small demonstration of car parking system which is localized and can be used globally).

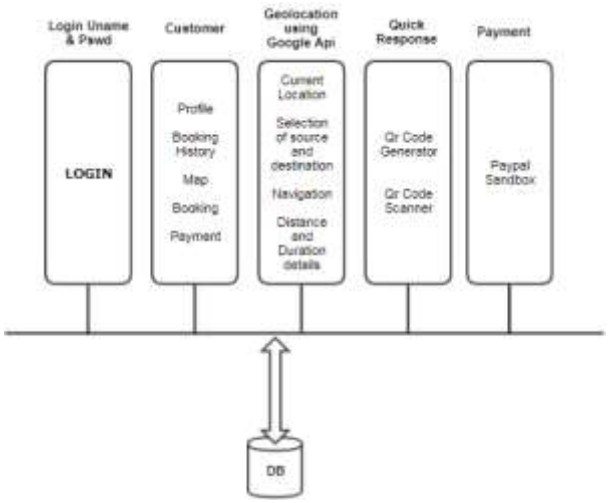

Fig -2: Block diagram of the application

5. METHODOLOGY

The Fig -2 shows us the flow our application.

(a) First, the admin (a normal user who has parking spaces available) has to register in our app. Once the registration is done his parking space will be available to the entire user who is searching for the space to park.

(b) Before accessing the parking space the customer has to register himself.

(c) This is the compulsory step which the customer has to do. After successfully registering himself he can use the app and through GPS he can find parking spaces within 15km radius based on his/her current location.

(d) Once he has booked a slot for a particular time and day, he will have to pay the base amount of the slot and then a QR code will be generated which he has to scan while entering the slot.

(e) Once he leaves the slot he has to again scan the QR code which will directly deduct his money from his PayPal account and space will show free for the other customer.

(f) Once the parking slot is booked that space will not be available to other customers.

(g) Timely notification will be sent to the customer who has booked the slot about his status.

6. SYSTEM EVALUTAION

Advantages

(a) Paperless and fast transaction

(b) Save time to spend in searching for parking slots and time spent in searching for the parked cars

(c) Improved security, safety for the cars.

(d) Has reduced traffic as fewer cars are required to drive around in search of an open parking space.

(e) Reduced pollution as searching for parking burns around one million barrels of oil a day.

Disadvantages

(a) Somewhat confusing for unfamiliar users.

(b) Internet Connection is must for accessing our App.

7. CONCLUSIONS

The system gives a visual display to the user regarding the current parking scenario. The system reduces work of manual parking process by converting the entire parking process to automation. The system makes it easy for the user to book or reserve a space on the smartphone. Thus smartphone acts as a park finder. This ultimately reduces the time that every driver spends for searching a parking space which then reduces the fuel consumption, traffic volume, and environmental pollution by increasing the efficiency of transportation.

8. REFERENCES

[1] Shinde Smita N., Shinde Komal V., Nagpure Rashmila D. , Tupkar Avanti S., Prof. Ankoshe M. S.," An Android Application for Parking Management and Dissemination System" ,IJARCET,Volume 4 Issue 3, March 2015.

[2] Prof. Yashomati R. Dhumal, Harshala A. Waghmare, Aishwarya S. Tole, Swati R. Shilimkar, "Android Based Smart Car Parking System",IJAREEIE,Vol. 5, Issue 3, March 2016.

[3] Hina Kousar *, Kavitha Kumar**, Shoney Sebastian ***,"Reservation Based Parking System with Dynamic Slot Allocation",International Journal of Scientific and Research Publications, Volume 5, Issue 3, March 2015.

9. BIOGRAPHIES

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