Smart Android Base Parking Application To Degrade Traffic Jam In India

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Abstract - Traffic jam is one of the common problem in the developing countries like India. This problems are mostly occurs in metropolitan cities in world. Due to traffic people lose their valuable time in their busy schedule. One of the prime reason of traffic jam is parking vehicles on road side so we need to evolve to develop a parking system so it can decrease traffic jam in feature. The paper focuses on a smart android based parking control application which will help you to find out nearest parking location in our near by areas. The mobile application will also assist you to pay the parking charge by online/offline payment system. A counter will be there in the application which will help you to count the amount of time that your car have spent in the parking lot. This application will also track the entire process and all the previous records.

Keywords : Traffic jam, Parking Area, MAC address, Attendance System, Smart Android Based Mobile Parking Degrade Application, Location, Track, Counter.

1. INTRODUCTION

There are lot of crowded cities in our country for example, Mumbai and Hyderabad city is the one of the most crowded and busiest city in India. Nearly 15 million people are living in both the cities. Lot of vehicles are moving daily in both the cities. Thousands of people are moving from one place to another with their personal work. Due to dis organized traffic management system, lack of approach bad traffic foundation facilities, it always takes more time to go from one place to another. Because of this unsupportable traffic inside the city, people missing their important work, or cant even reach their respective destination in due time.

One of the major reasons for this traffic jam is parking vehicles by the side of roads. Unnecessary parking vehicles on the roads make the roads busy and thus create heavy traffic jam. In a metropolitan city like Mumbai, if drivers park cars in the busy roads, the roads become restricted. It will take more time to cross the roads. This outline is seen in front of school buildings or offices. A huge number of cars are being parked in the nearby roads and create this heavy traffic in India [5].

So, we need to come up with a digital plan to solve the parking problem in this metropolitan city. After observing all the parking problems of Mumbai this proposes a smart android parking degrade system which will help you to find out the nearest parking area or any parking slot which is being empty if the owner of that parking may have taken his/her car somewhere else. If a car owner finds a parking slot in anyone's parking area, when he/she will enter into that parking area, the timer will begin by the parking lot owner. When the car owner wants to leave the parking slot, he/she will call the parking owner to halt the counter. When the counter will halt, it will automatically generate a parking bill for the car owner[6].
2. BACKGROUND WORK
In the existing system we have observe to achieve a smart parking control and management system for Mumbai city in an Android plat-form. This will alternate our temporary problems, leading towards a better lifestyle. where the user can book parking-lots with the help of RFID[1-4]. The payment could be done by double checking the check-in and out time. But the system allowed to pay after checking out from the lot, then later paying the fines for further checking-in, which clearly didn’t help the scarcity of parking necessity hence anyone could take advantage of the system time. They had focused on the problem that drivers usually faced regard-ing parking ticket issues. But this technology was also based on different sensors and GPS technology. So, this research also relied on hardware and the complexity of the hardware was not warmly welcomed by the general people because if the hardware disturbs the entire system will collapse.

- **Hardware Requirements** – Processor:i3 Processor, RAM:4 GB, HardDisk:500 GB
- **Software Requirements**: Operating System :Windows 7 or above, Front End : Android UI Programming language : Java, Back End : Java, Database : Sql lite IDE Tool : android Studio 3x

3. PROPOSED SYSTEM

After observing all the parking problems of Mumbai, this proposes a smart android parking control system which will help you to find out the nearest parking area or any parking slot which is being empty as the owner of that parking may have taken his/her car somewhere else. If a car owner finds a parking slot in anyone's parking area, when he/she will enter into that parking area, the timer will start by the parking lot owner. When the car owner wants to leave the parking slot, he/she will call the parking owner to stop the counter. When the counter will stop, it will automatically generate a parking bill for the car owner[7].

The proposed system implements an android application to provide communication between parking area owner and requester. This system allows area owners to add parking area, view requests, set the area details, timer on, and requester search the area based on location, send request, and pay the amount[8]. This system efficiently and effectively offers communication and solve the traffic problems in metro cities. In this section, the system design is discussed. To discus the system architecture, we have worked on two processes[9-10]

- In traditional parking system, it takes a lot of time to find a parking slot. So, it is kind of time-consuming.
- Generally, traditional parking system requires hardware equipment, which makes the entire system complex.
- If the hardware system disturbs, the entire traditional Parking system collapses for that day until the hardware Problem resolves. At that time, the whole organizations maintain the parking system by writing the details of a car in a paper.
- There is no rules found in the tradition parking system, if the car is being parked in the area for 1hr or for the whole day.

**Input Design**

- In this design we maintain the user details and data set.
- We design the following pages to collect the data.
- They are
  - **Registration** - This page collects the data from users
  - **Login** - This page collects username and password from user, validate the data and store
Output design

- In the output design, we design the output pages to represent the results of the our proposed method.
- For that we design different page as follows:
- **Search Result** - This page shows the search results of the system. And other pages carry the details of users, user search history, location details and so on.

Developing the conceptual design

In this sub-section, the conceptual design of the system is given below which is the representation of the system. This will help you to understand it clearly. The block diagram of the system is given in

**Work Flow**

![Figure – 1 work flow](image)

Android Based Mobile Application

Android-based built-in security features like Android Application (which isolates the app data and code execution from other apps), application framework (Cryptography and permissions) are used so that it can significantly minimize the frequency and impact of application security issues.
The development of the app is designed in such a way with the default system and file permissions so that it can take difficult decisions about security such as User-granted permissions to restrain access system features and user data. For better understanding the whole technical process is depicted in Figure 4.

Proposed Architecture

User authentication is one of the prime factors of our proposed system. To make sure the user is authentic, we will use their mobile numbers to register. As, we all know in Mumbai, all the mobile numbers are being verified by the National ID. So, once the owners install the APK files of the system to their Android phones, they need to register himself with their phone numbers. After giving phone number, a 6 digit code will be given to an user for further process. The user needs to add the other

Owner: -

In this module owner is registering to the App by entering details like name, location, parking type… etc. Then he login to the system, he may change the status of parking area. Once he gets any request of parking area, he accepts (or) rejects requests if he accept the request then he started the timer before parking and then they have parking area stops the timer

And calculate the payment and check that they paid (or) not before Leaving parking area.

User

In this module user register and login to the system. Then he searches the location-based parking area and choose parking area, request to be sent. If owner gives acceptance then he checks the status if he wants to leave parking area he sees the payment and pay the amount user payment module.

Firebase

In this module, we create Database in the firebase and thus module is very useful to provide communication between owner and users their system can efficiently works and manages the data of owner and users.
Timer

In this module, the owner uses the timer to calculate the parking time efficiently based on this we calculate the fair.

Payment:

In this module, users can pay the amount to the owner by choosing different modes of payment based on cash, PayPal, upi

4. RESULTS AND DISCUSSION

In this system, we developed for “Displaying Smartphone Data on Desktop“ to improve sharing an information between smart mobiles and Desktops. The following screens show that, our system is more user-friendly and efficient. The user-interface of the android application, after successfully installing it into the smartphone is looks like as shown in the below screen in Figure-4.

![Figure-4 : Home page](image)

- The above figure is the starting page to the smart parking application when the user click on get start button the user will redirect to login page we can observe in figure-5.
Figure-5 : login page

- After redirecting into the login page in figure – 5 the user want to register with the help of mobile number and click on next button then screen will redirect to registration page. The registration page is observed in figure-6

![Registration Page](image)

Figure – 6: Registration page

- The user want to Register there details with the help of registration page.

![Parking Slot](image)

Figure – 7: parking slot

- After the details in next page two modules are available register as car owner and parking lot owner. When the user click on car owner the car owner gives details of car with car number, car owner name
- and valid id proof etc.
- When the user register as parking lot owner parking owner name,address,slot etc
- information like his/her name, Email Address, Car Number, Parking Slot Number. An user can register himself as a car owner, a parking slot owner or both.
Once, you have registered as a parking slot owner, you need to press the button empty whenever you want to give rent to your parking slot. Now, if you are a car owner, after completing the registration

you need to search by location. When you will search if any parking slot is found empty, it will notify you. The application will also show the nearest parking location from your current location.

Figure – 8: Booking Slot

If the parking slot is available, in the above figure-8 you will call the parking slot owner and ask him/her if you can park your car there. After the car is being parked, a timer will start to count the amount of time the car is spent in the parking lot. When the car owner wants to release the parking slot, he/she will take away the car and the timer will be stopped. After the timer is being stopped, an automatic report will generate about the rent of the car owner. Then the car owner can pay the bill to the parking slot owner and leave the parking area.

5. CONCLUSION

The proposed smart android based parking system has been developed using the existing technology. This system automates the process of parking system, thus saves a lot of time. It is also a cost-effective system because it relies only on a smart-phone. As this completely automates the parking system, it leaves no room for any kind of error. This system will provide a safety and hassle free parking to the car owners as the parking slot owners are being registered with details. Unused parking slots in working hours will add some extra money to parking slot owners. Thus, it will help both the parking slot owners and car owners. Our system will solve the excruciating traffic problem and make our life better and more productive.

REFERENCES


Author’s Profile

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