E-Parking System Based on Resource Allocation and Reservation

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***Abstract*- We propose a futuristic "E-Parking" system for an urban environment. The system allocates and reserves an optimal parking space based on the driver's cost function that combines nearest to destination and parking cost. It also allows the customers to view the parking status. The system is developed because the problem of congestion and collision of the vehicle in parking area is increases day by day with population. Therefore the project aimed at solving such problems by designing a web based system that will enable the customers to make a reservation or booking of available parking space before one hour prior to his expected arrival. The customer can pre-book a slot in the area he desires if it is available. The proposed project is a smart online parking booking system that provides customers an easy way of reserving a parking space online using web portal. Customers can view various parking spaces and select nearby or specific area of their choice to view whether space is available or not. If the booking space is available, then customers can book it for specific time slot this system provides an additional feature of cancelling the bookings.**

Index Terms- E-Parking, GPS, Resource allocation, Android, Vehicle, Parking guidance and information, traffic congestion.

I. INTRODUCTION

Now a day there is no quality parking system to check parking spaces. The system heavily expects a human interaction with the physical space and entity. This conduct wastage of human manpower and also parking spaces at times. These parking lots are dependent on Human-to-Human Interaction which is not efficient. Previously, various techniques have been proposed to overcome such problems. Smart parking with help of short messaging service was devised to provide an entry and exit time with unique id which would allow the customer to authenticate them at the entry/exit point.

The E-Parking system that is design to make it easier for customer to book parking space online before arriving. Our online reservation system is created to reduce the cost of hiring people and for optimal use of resources for vehicle-park owners. The common method of finding a parking space is manual where the driver usually finds a space in the street through experience. This process is very time consuming and may lead to the worst case of failing to find any parking space if the customer is driving in a city with high vehicle density. In this system we will address this issue and present our systematic solution to this challenging obstacle by introducing an online based parking reservation system. Moreover, online booking makes it easy, fast, and safe to grant a parking spot, and also enables the businesses of service providers to grow.

This system deals with assigning the parking place online by using web portal, this will ultimately reduce the traffic congestion .The propose system provides effortless solution to the parking problems.

II. METHOD AND MATERIAL

Generally, the use of smart phones is so common for the people with having the internet. So, this proposed web app named, "Where I Park" Web Application that helped local residents for finding the parking spaces in nearby areas.

In the "Where I Park" Web App, users can enter the area's address of a spot where they wanted to reach or the parking place in a particular area, or places from which they reach his destination by walking, as show in Figure1.

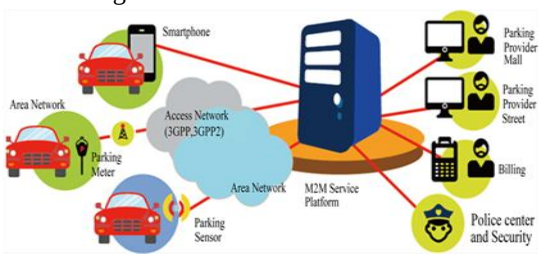

Figure 1 Using procedure of 'Where I Park', Web App.

III. PROPOSED SYSTEM

It provide the easy parking spaces by using this technique that allow people to reserve parking in advance or very accurately predict where they will likely find a spot. When deployed as a system, smart parking reduces the emission of fuel wastage by reducing needlessly circles in city blocks for searching parking. By using this app, other users nearby will see that spot vacancy on the mobile phones or laptops, with leaving time of the first user, if they search the area.

The flow diagram shows the method of working of online parking system. Figure2 shows the flow of system.

Figure 2 System Flow Diagram

This project offers a web based reservation system where users can view various parking areas near to them and select the space by the view whether space is free or not. The difficulty roots from not knowing where the parking spaces are available at the given time, even if this is known; many vehicles may follow small number of parking spaces which in turn leads to serious traffic load. Users can even make payment online via credit/debit card or by any online payment system. After making payment users are notified about the booking via email along with unique parking's slot id.

This system divides into three modules:

1) Admin: He controls all the agent and user, agents are added by admin. He has right to remove agent by his performance. Firstly admin gives warning to improve his performance otherwise he will fired.

2) Agent: Agent gets login by with his unique user id and password. Agent can view the request sent by customer or user. Agent provides a slot to user according customers request. Agent can view all information registered by customer.

3) Customer/User: for using this application user have firstly registered with his detailed with user id and password. Then he can select parking slot by login and reserved and allocate his slot according availability of space and made payment online also.

System Architecture & design

Figure 3 System Architecture

The system architecture shows the three main components Parking zone, user and admin. As a result, the state of parking resources is changed by users parking choice. The management system i.e. receiving and assigning parking to users is handled by agent. Here agent works as a broker. The management system shows live parking availability information to users (also drivers). Upon receiving parking information, the user selects desired parking slot and reserves a space. User can have their username, login id, phone number, email and address. User can make payment online. Admin can collect the whole data from database system.

Figure 4 Searching Screen

IV. RESULT AND DISCUSSION

The proposed system of online vehicle parking reservation has been discussed in this paper. The result expected from successful implementation of

the system is an efficient online vehicle parking system. The successful implementation of this system incorporates of assigning the free parking slot to the vehicle. Also all the information about the parking area, slots, allotment and de-allotment is provided on web portal. If the parking space is full, no vehicle is allowed to enter the parking space until any of the parking slots, is made available.

Figure 5 Expected Result

V. CONCLUSION

The benefit of using this system are:

1. Straightforward to use and requires no special training to access.
2. Reduced traffic congestion.
3. Enhanced user experience.
4. Help to find the empty space without any collision or minor accident and damaging of vehicles.
5. Increased safety. Prevent parking violations and suspicious activity.

The E-Parking system mainly focuses on prior reservation to overcome problems like congestion and waiting in the queue. It is also reliable and easy system to use.

VI. FUTURE WORK

- We can make use of sensors in the parking slots which will provide the information about the empty or occupied place to user.
- We can put additional biometric like iris scanner for more security, we can also do a mobile secure entry in which as soon as someone tries to bypass the lock or try to sneak to your platform you get an alert message

VII. ACKNOWLEDGEMENT

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