A Survey on Smart Car Parking System Locator

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Abstract **- The Proposed application will run in any smart phone and let customer to know about parking availability and booking via this app. The present project is a smart parking booking system that supply customers an untroubled plan of book a parking area by android application. It gets the better problem of discovering a parking space in trade spaces that worthless absorbs time. Hence this paper defines the android based reservation system where users can view various parking areas and select the slot to view whether area is available or not. If the reservation volume is accessible, then user can book it for certain time groove. The booked capacity will be noticeable and will not be obtainable for anyone else for the identify time. This structure furnishes additional characteristics of abandon the bookings. User can cancel their booked space anytime. Users can even know charges for parking via this application. Once they know, they can make the payment with parking admin.**

Index Terms **- Android, Capacity, Parking, Application, Charges**

I.INTRODUCTION

Searching for parking in congest space creates many problems and exasperation for drivers. It has been shown that over 40% of the total traffic volume in urban areas is composed of vehicles cruising for parking. An extensive chain of journey vehicles can cause serious crowd with the blocking of only a few streets. With the rapid increase of vehicle possibility and utilization in recent years, finding an unoccupied parking area is becoming more and more hard and time consuming. This results in a number of practical conflicts. Parking issues are becoming ever present and ever developing at a scare rate in every major city. The utilize of android technology merge with the new proceed in wireless applications could be the key to solve emerging parking issues. The main plan behind the Automated Car Parking System is to assist the user look over space where parking is accessible and number of slots free in that space. The user can pre-book a slot in the space user wishes if it is accessible some hours earlier to user await arrival. This will be helping to decrease the load on the administrator as user physical effort reduces extremely. The user can seek the parking aperture through Android Application and pre-book the slot. Payment services are made available using online portal. Thus, the application proposed in this paper construct the user comfort free as it reduces the time needed for manually searching and waiting for empty slots to park the vehicle. The android application will be developed using the android studio and MySQL or the data storage. The Android operating system is a mobile operating system that was evolved by Google to be primarily used for touchscreen devices, mobile phones, and tablets, watches, smart television etc., Its design lets users conduct the mobile devices inherent, with finger movements that mirror common motions, such as compressing, swiping, and tapping. Google also utilize Android software in smart television, automobiles, and wristwatches—each of which is fitted with a unique user interface. Android was established by the Open Handset Alliance, guided by Google, and other companies. Android proffer a unified approach to application development for mobile devices which means developers need only develop for Android, and their applications should be able to run on dissimilar devices powered by Android. The first beta version of the Android Software Development Kit (SDK) was liberated by Google in 2007 whereas the first marketable version, Android 1.0, was liberated in September 2008. On June 27, 2012, at the Google I/O conference, Google declared the next Android version, 4.1 Jellybean. Jellybean is an incremental renovate, with the primary aim of improving the user interface, both in terms of service and performance. The source code for Android is obtainable under free and open-source software licenses. Google bring out most of the code under the Apache License version 2.0 and the rest, Linux kernel changes, under the GNU General Public License

version 2. In Android operating system, the Emulator is a new application. The emulator is a new prototype that is used to evolve and test android applications without using any physical device. The android emulator has both of the hardware and software quality like mobile devices except phone calls. It furnishes a variety of navigation and control keys. It also imparts a screen to display your application. The emulators make use of the android virtual device configurations. Once the application is running on it, it can use services of the android platform to help other applications, access the network, play audio, video, store, and retrieve the data. Android Operating System permit a third-party developer to innovate and make Applications and software for mobile devices. Android is an open, pliable, and stable enough to relate itself with newer and newer evolving Technologies. Android's vast scope of easy-to-use tools and wide extent of libraries furnish Mobile Application developers with the means of an amazing mobile operating software to arise with the most systematic and rich Mobile Applications changing the world of millions of mobile users.

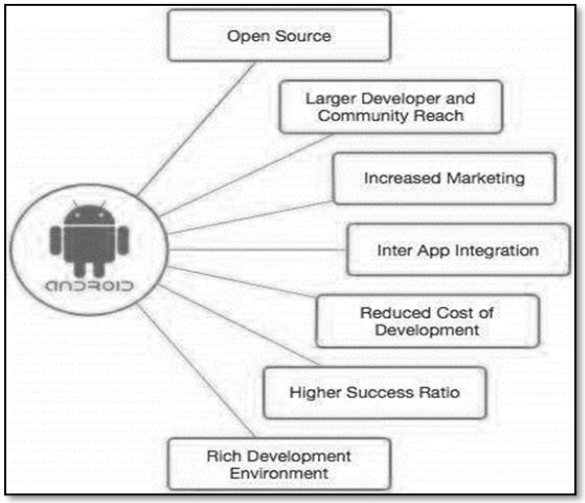

Fig 1: Features of Android

Java has played a major role in development of Android applications because business logic is written in Java. That understanding of core Java is must for the growth of android application. Grasp of advance Java is a plus point for the development. With the understanding of advance Java, you can add new features to the application. Java is the foremost and the first language for native software development. That is really the only alternative for native applications. The native applications are the heart of android. Java has a substantial set of libraries. It is easy to take benefit of these libraries. Android SDK has several standard Java libraries included. These provide functionalities for data structure, math functions, graphics implantation, and networking functions and a lot more. These java libraries help us to do all else we could want. This way java helps evolve Android applications quick and inefficient manner.

II. Motivation

Use of automobiles has increased extremely in today's world. A searching for a free parking space during peak hours is not only time consuming but also results in wastage of fuel. The user keeps searching for suitable parking lot which leads to increase in traffic. The available parking slots are not utilized properly. Increasing the number of parking area is a answer to this problem but it is not a easily feasible solution because it requires huge investments. Moreover, most of the parking management systems which are presently available are constant and serve only on a small scale. There needs to be a system to solve all these discouraging affair of parking vehicles. Use of internet would make the system more pliable as anyone can access and use such a system from anywhere. With the advent of technology android application will be help in getting information about the parking areas. Almost today every people has an internet enabled smart phone, so making such a application available to the user on his smart phone is very comfort. Without wasting so much of user's time such application assists him to search the parking space. The drivers keep piercing for suitable parking lot which leads to swell in traffic. Enlarging volume of vehicular exhaust creates a gloomy impact on the environment. Hence reservation-based smart parking has become the require of the day.

B. Challenges

There are vital challenges facing today's transportation systems and drivers on a daily basis concerning smart parking systems for which smart city and designers have to be prepared. Many recent studies have led to the conclusion that new smart parking systems are needed in almost every city in the world. It reduces the some of the problems, such as petrol consumption and pollution emission, and to improve time-saving and reduce frustration when looking for a parking space. Therefore, for some suggest system to be think about smart in relation to

the parking process, it should have as a minimum, the following factors and descriptions:

- Be able to accurately sense vehicle tenancy in real-time.
- Provide guidance for users about available parking.
- Be able to furnish the user with all the necessary information about the status of any changes in the parking space that might happen in real time of smart parking.

C. Objectives

- The main objective of this system is to furnish smart parking that can save time, fuel, and traffic.
- Smart Parking require the make use of less amount of sensors, real-time data and applications that permit the users to monitor available and unavailable parking spots.
- The aim is to automate and decrease time spent manually perceptive for the optimal parking floor, spot and even lot.
- By using android application user will find the vacant parking slot in particular area.
- User can easily park his car without facing any problem.
- If parking slot is available, then user can reserve the particular space through Application.
- If the user will not arrive at a time, it may cancel the booking.
- Payment will be done through the online for the smart parking.

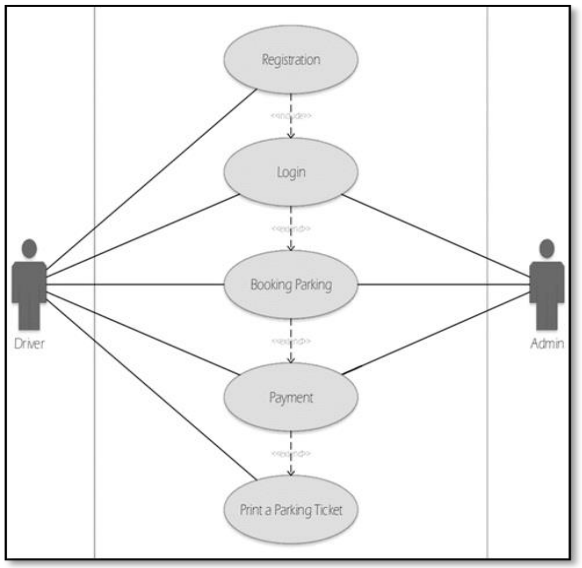

Figure 2: Use case diagram for Smart Parking

II. LITERATURE SURVEY

The aim of this paper [1] is to automate the car and car parking as well. A smart car parking system that can calibrate and manage number of cars that can be parked in given space at any given time based on the accessibility of parking area. Smart car parking is a method of parking easily without any manual work and existing cars using sensing device. The entering and existing to the slot is commanded by an android application.

The author proposed [2] the Parking lots have become inessential and requires lot of manual work to handle and maintain it. These types of parking lot do not provide data regarding accessibility of free area. Many researchers have contributed to this affair and gave shape with various methods to better develop the parking lot to fulfill the need. The project proposed smart parking reservation system using mobile application.

The system implemented [3] direction towards the allocated slots, thus making it simple to use. This system is used to designate parking space. The system checks the distinctive registration number stored in the database to check if the new vehicle needs to be parked. This system is a perpendicular parking positioning for the vehicles. The user can find various parking areas accessibility at sole spot, find the suitable according to them and book a slot.

The author contribution [4] in this paper is, a lot of vehicles is also increasing every day adding to the parking vows at public places. Find a parking area is not easy especially during peak hours. Even it makes happen to theft the car because of the safety while the car was parking in roadside. In a small number of parking spaces, the many cars were parked which in turn leads to traffic congestion while exiting the cars. This paper describes about the concept of smart parking system and its functionalities.

This paper discussed on [5] automatic parking system and electronic parking collection charge build upon vehicle number plate recognition. It is to enlarge and implement an automatic parking system that will expand convenience and security of the public parking lot as well as collecting parking fee without bother of using magnetic card. The smart parking system will be able to have slighter interaction of peoples and use no magnetic card and its devices. In additions to that, it has parking guidance system that can appear and guide

user towards a parking area. The system used image processing of scanning number plates for operation of parking and billing system. Overall, the systems run with pre-programmed controller to make small work for human action in parking system and ensure access control in particular areas.

Hirakata et. Al. [6] developed a smart parking system. It furnishes a way for users to find parking using their mobile phones. The structure is collected of three main parts: the mobile application, the database, and the admin website. The user interface is adapted based on the user type, of which are two: user and admin.

The author enhanced [7] in today's world parking lots have become difficult and needs more manpower to handle and maintain it. These parking lots are not user friendly and do not provide data regarding availability of free areas. Many people have contributed to this problem and formalized with different methods to get a better optimize the parking lot to serve the needs of people. In this paper, the author is introduced about the short message service.

The aim of this paper [8] smart parking system makes use of latest technologies to combine the reservation of parking slots and the payment systems. A user can utilize this system to get information about the availability of parking spaces, to book a parking space at particular location and also to make the payment when leaving.

The author proposed [9] is for car parking reservation application and security, maintenance in a parking field. The system assigns the parking area to the user by notice the distance between the user and the parking area and calculates the average time for the user entering the parking area.

The system implemented [10] proposed Smart Parking system be made up of an on-site classification of a module that is used to monitor and signalize the state of accessibility of each single parking space. A mobile application is also provided that permit an end user to check the accessibility of parking space and book a parking slot accordingly.

III. METHODOLOGY

Every parking slot will be given in the application and it is identified with a unique Parking id. The User registers using application which prompts to enter the Username and Password. Once user was registered, it will be given a unique user id. This id will be used every time when user wants to book a parking slot. To book a parking slot the user may search in the application and saw the information about the parking availability. The user may choose the particular area and check the available number of parking space in that particular area will be displayed. Once user can reserve the slot, the reserved slot will not show to another user.

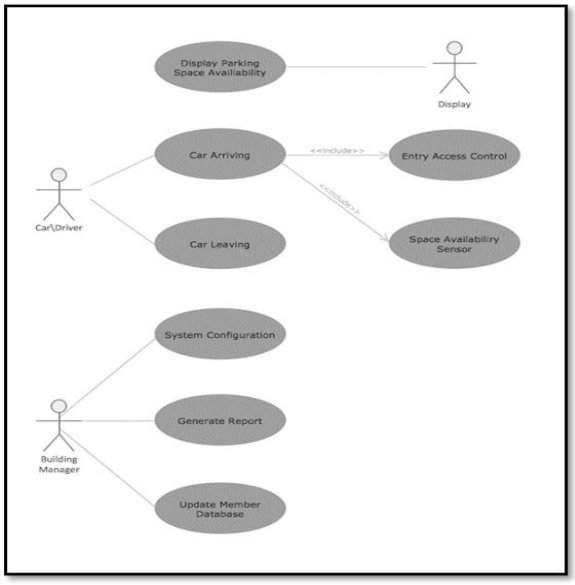

Fig 3: Process of smart parking system

For parking in common areas

Parking spaces in common areas are examined registered to this system. Even other people who are having unused parking area, land or garage are also register in this application. This will be beneficial during peak hours. If the parking spaces are available for the user search areas at the specified time at the desired location, the user can allocate a slot. It will allocate to the particular user no one can park in that place.

For parking inside malls

This application can also be implemented in the malls. If the parking area are available at the particular time the user can allocated a particular space. It has a particular space to park only in that place.

Cancelled before the time slot opens

For time being, the user can cancel their parking booking before the allocated time it will not get any extra charge for the parking space which is booked already.

Cancelled after the time slot opens.

If the user cannot arrival at a time and also the user cannot cancel the bookings will get the charges for the particular time.

IV. CONCLUSION

This paper describes about the motivation and challenges about smart parking. As smart parking system increases the service quantity working, there is a more of scope for innovations and implementation through data standardization and management, mobile phone integration, hardware and software integration. Basically, smart car parking system save time, money, space and assist to simplify the often-unexciting task of parking. It reduces work of manual parking process by converting the entire parking process to smart. It makes it easy for the user to book or reserve a space on the smartphone. This will be automatically reduces the time that every user spends for searching a parking are which then reduces the fuel, traffic congestion, and environmental pollution by expand the organization of transportation.

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