CLOUD BASED PARKING SYSTEM USING RFID

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Abstract: This project gives an idea about algorithm that maximizes the efficiency of smart parking system using RFID and the cloud technologies. Here we have used Google map to check the geographical location of user. This project allows users automatically find available parking slot at the low cost depend on latitude and longitude of user. This project calculates users parking cost by assuming the total number of available places in each car parking. Here user will search a free parking slot. After receiving a request from user and if the current car parking slot is full then this system suggests a new car parking slot. It is possible to implement the proposed project in the real world.

Keywords: - RFID, cloud technology, parking area

I. INTRODUCTION

In the traffic management systems, a parking system was created to minimize the cost of people. Nowadays, the normal method of searching a parking slot is manual where the driver normally searches a slot on the road by luck and experience. This method takes too much time and efforts and cause of worst case that failing to find any park slot. The alternative is to search specific car park with maximum capacity. This is not a normal solution because the car park will be far away from the user destination.

In recent years, research has used vehicle-to-infrastructure interaction with the support of various wireless network technologies such as radio frequency identification (RFID), wireless mess network, and the Internet [2]. This project provides information about nearest parking area for the user and making reservation using smart phones or tablet. To solve the manual car park problems and take benefit of the technology, the Internet used for many reasons as well as used in smart parking system. This project develops an effective smart parking system using RFID and cloud technologies. So this project builds each car park as a network, and the data include the GPS location. This project also implements system in an open-source platform by using RFID and cloud.

II. EXISTING SYSTEM

The common method of finding a parking space is manual space where the driver usually find a space in the streets through luck and experience .this process takes time and effort, and may lead to worst case of failing to find any parking space, if the driver is driving in city with high vehicle density.

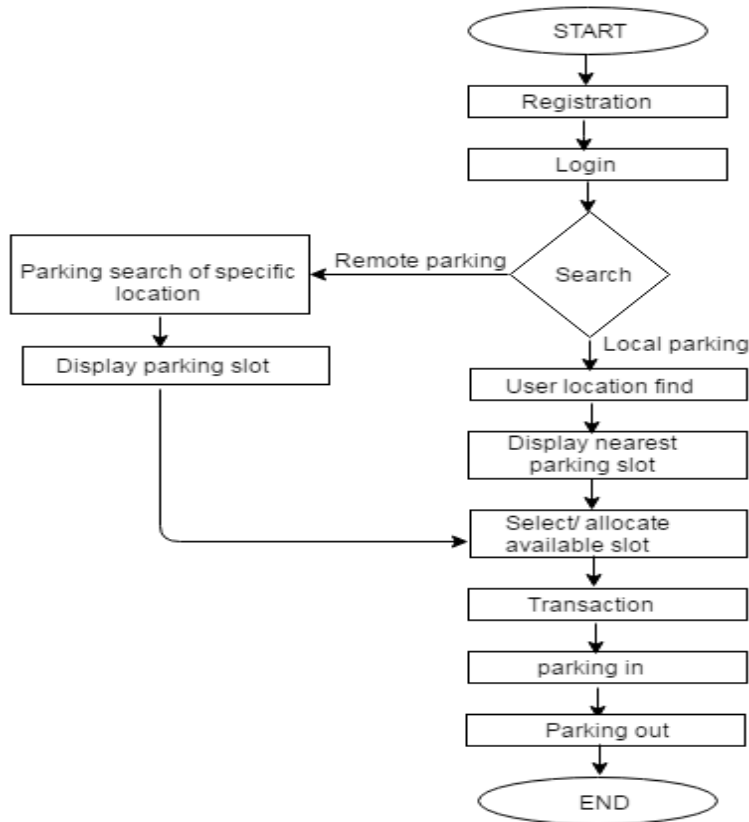### III. ROPOSED SYSTEM

A] Flow Chart

Fig3: System operation.

If user wants to park a car in suitable parking area, then he must registered and login to our smart parking system. After completion login two possibilities are arises, if user want to park car in another parking area then user can use pre-parking system else user can find nearest location. Then user can get number of parking area and selects suitable parking area within that parking area. Transaction is done through swap card using RFID sensor at that time user entered in available slot. User also exit by using swap card that is parking out.

B] System Architecture

We designed a software client that runs on Smart phone base on the android platform, which was build from the ground up to enable developers to create compelling mobile applications that can take full advantage of all that a handset can offer.
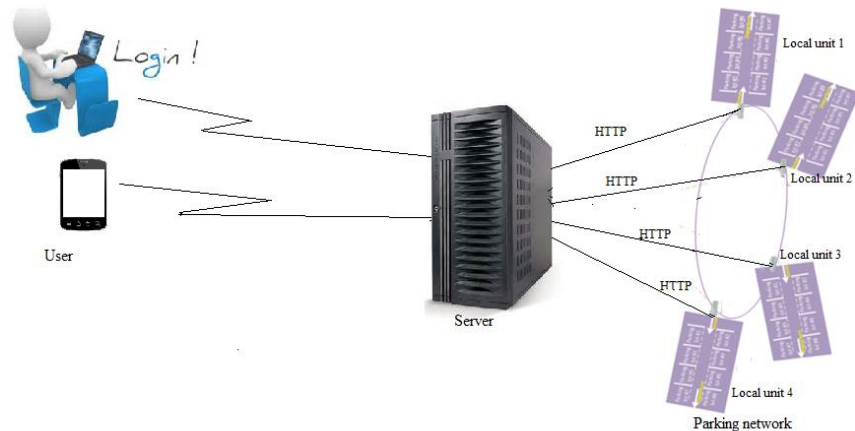
Fig 1: System Architecture

The smart parking system is derived by using internet and RFID for searching car parks, the RFID reader used for counting available parking slots in each car park. This system provides an idea to control drawback in the car park and helps to minimize wasted time in looking for a parking space. After login the user can select a nearest or convenient parking slot. After allocated time the system decide that not allow car in particular slot.

C] Algorithm

Input: User U, RFID card rf_id, User_Location[lat,log], parking P, parking[lat][log], parking Pcount, location between user and parking U to P, radius difference rd

Output: Indatetime, outdatetime, Parking History

1: User Register with system and get uid

2: Set rf_id to register user

3: Add Amount In Wallet card

4: Go to online Transaction

5: Check amount in Wallet

       If (Wallet amount < minimum parking amount)
       go to step 4
       else
       go to step 6

6: Get User_Location[lat,log]

7: Search Nearest Parking location within user radius

    for(i=0;P>=P[total];i++)

       { if(rd<=parking[i][lat] and rd<=parking[i][log])

           { P_In_rd[i]=P;

```
        }

    }
```

8: sort parking area by distance which is available within Radius

9: Show Point on map

10: Select Parking Area

11: swap RFID card on RFID Sensor At Parking Area

12: Read rf_id value and verify user and Increase decrease Parking count of Parking Area

```
        for(i=0;U>=U[total];i++)

    { if(U[rf_id]=rf_id)

            { true;

                if(U[rf_id]==In)

                    { Pcount--;

                            outdatetime=datetime;

                    } else

                        {   Pcount++;Indatetime=datetime;}

        }

    }
```

13: Parking History

Fig2: Algorithm of smart parking system.

Above algorithm shows the operation of smart parking system. First, user registered with system and get user id. If user interested in online transaction then the user must add amount in wallet card. If wallet amount is not enough for paying parking amount then user can check their amount in wallet, and if wallet amount is sufficient for paying parking amount then get user location. Then user searches nearest parking location within user radius and this location displays or pointing on the map. Finally, user can select suitable parking location and when user entered in that particular parking area then swaps the card using RFID sensor, at that time counter incremented by one. Similarly, user exit (out) by card swap, then counter decremented by one.

V. CONCLUSION

Now-a-days, current system takes time, effort and may lead to the worst case of failing to find any park space if the driver is driving in a city with high vehicle density.

In the traffic management systems, a parking system was created to minimize the cost of people. This method has used vehicle-to-infrastructure interaction with the radio frequency identification (RFID) and the Internet.

This project develops an effective smart parking system using RFID and cloud technologies. So this project builds each car park as a network, and the data include the GPS location. This project also implements system in an open-source platform by using RFID and cloud.

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