

Vehicle Parking System Using IoT

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Abstract— In recent years most important problem in day to day life is parking of vehicles especially the car parking at a proper place resulting in traffic congestion. This paper presents the trustworthy system that takes over the task of identifying free slots in a parking area and keeping the record of vehicles parked very accurately using Internet of Things(IoT).This system will be accessible through the webpage or a mobile app provided and can be used to supervise or find the empty slot in that area.

Key words: RFID, IoT, Web Server

I. INTRODUCTION

The urban areas have seen a mammoth growth in human population as well as in transportation and movement of vehicles.

In cities, numbers of motor vehicle are increasing and issue regarding parking is one of major concerns in term of space occupation.

With RFID technology, vehicle tracking system can have accuracy without human intervention as well as easy in-and-out access for drivers. RFID's also offers a solution for parking peoples as they require the facility to monitor and record not only access and exit to parking facilities but also log and bill back parking charges by customer. In this study we design a Parking System which enables the user to find the parking area and gives availability of parking slots in that respective parking area reducing the fuel consumption, which will reduces carbon footprints in an atmosphere. A Smart parking knowledge that will help optimize parking space usage, improve the efficiency of the parking operations and help smoother traffic flow.

II. PROPOSED METHODOLOGY

The proposed methodology interfaces RFID technology beside with the IoT and with a website and focuses on reducing the time in finding the parking lots as well as avoids traffic at a particular area. The user has to register through the web application which stores information onto the server, which is useful to track the user later if he tries to breach the policies. Once registering through web application user has privilege to check out for a free parking slot. Vehicle detection is done with the help of RFID tags which are present on each vehicle which also help in calculating the amount paid by each user. RFID readers are present in parking area, capture the RFID information of each user. For parking bill, IR sensors and RFID tags works together to know about particular vehicle being parked and depending on the time bill is calculated .The free slots will be displayed by green colour and occupied slot by red colour.

III. IMPLEMENTATION OF THE PROPOSED SYSTEM

The process is implemented in four stages:

Step 1: The user can check the status of parking availability in the web page through the web page access.

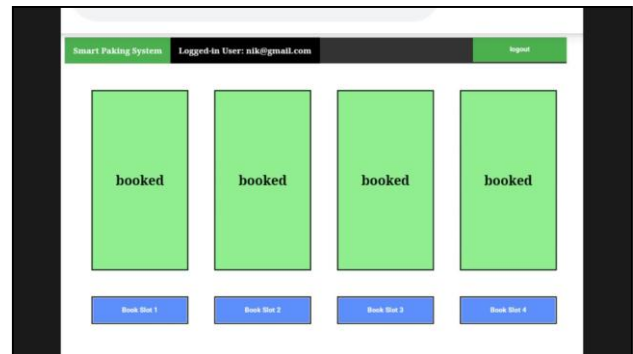


Figure 1: Login

Step 2: After login process is done the user has to book particular slot.

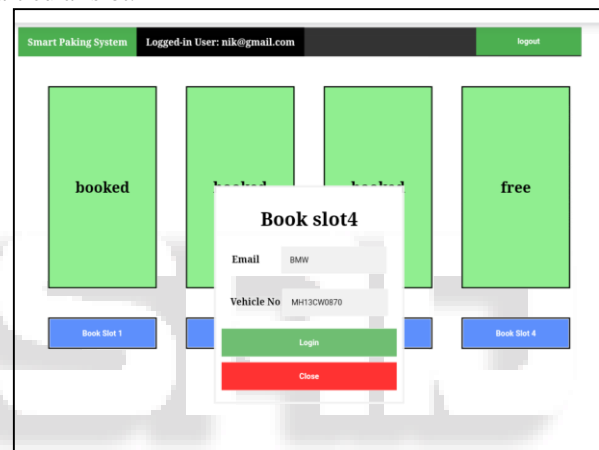


Figure 2: Slot details

Step 3: Display is shown to the user that this slot is successfully booked for him/her and a slip is generated with the above mentioned details.

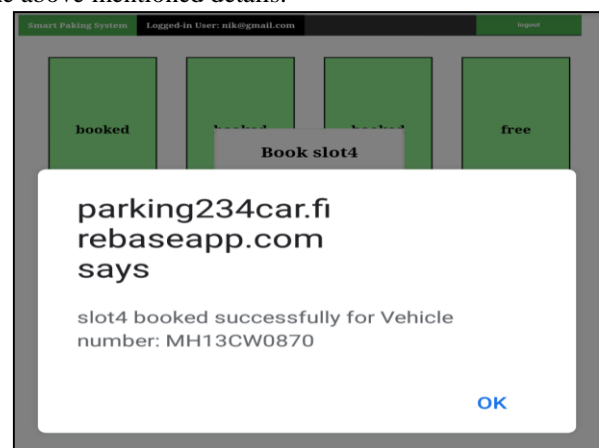
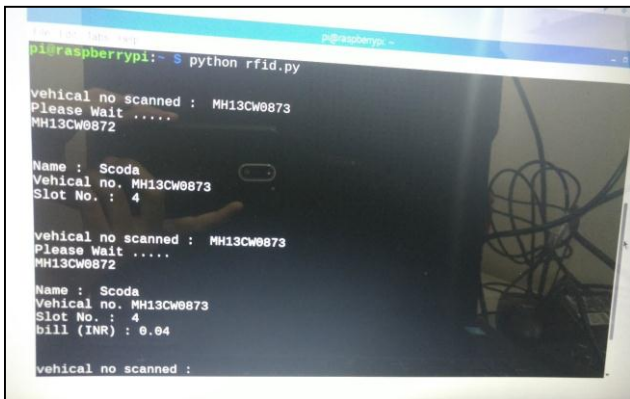


Figure 3: Display of slot booked

Step 4: After providing the specific slot for the car parking then the user is given with the activated RFID tag. When the RFID tag is activated then the timer is activated. The timer runs till the activated RFID tag is deactivated.



```
pi@raspberrypi:~$ python rfid.py
vehical no scanned : MH13CW0873
Please Wait .....
MH13CW0872

Name : Scoda
vehical no. MH13CW0873
Slot No. : 4

vehical no scanned : MH13CW0873
Please Wait .....
MH13CW0872

Name : Scoda
vehical no. MH13CW0873
Slot No. : 4
bill (INR) : 8.64

vehical no scanned :
```

Figure 4:

IV. CONCLUSION

This project design recommended is cost effective and time saving as parking becomes easy because user haven't to move in non parking availability area in the city and thus reducing carbon footprint in the atmosphere. Using RFID with IoT avoids need for the presence of human operator at the gate. Booking for parking slots by web page server prove to be an answer for challenging traffic.

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