

Online Booking System For Car Parking

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Abstract : The main approach of this system is to overcome the traffic congestion during car parking. With the development of technological growth, the production and usage of car increases. The main aim of this paper is to provide convenient parking system for customers in the areas such as super markets, star hotels, Malls etc... Here the online ticket booking system helps the customer to find the correct place for car parking. This helps to reduce their time. In this system, raspberry pi3 is used to control the system. Pi camera is used to continuously monitor the parking area. This helps us to identify the available space in the parking zone. The availability of space is also displayed in the LED display board.

Keywords: Carparking, Congestion, LED display, online booking, RaspberryPi3, Traffic, Pi camera.

1. INTRODUCTION:

Car parking is one of a major problem in cities. It causes traffic congestion in parking areas. This project helps to find the availability of parking areas and also an online booking. The availability of parking areas are also displayed in LED boards present in the parking areas. Online booking system helps us to save time. LED board present outside the parking will help the roadside users to find the availability of parking area. Pi camera is placed inside the car parking area. Camera continuously monitors the status of the parking Zones. From the pi camera the information is sent to the raspberrypi3. This information helps raspberry pi to update the details in online. This information is also updated in the LED board present outside the parking area. Thus the availability of parking zone in a particular parking area details could be obtained easily. The online booking system can be programmed using MySQL or C++.

2. LITERATURE SURVEY:

Chinmay Pawar worked on Online parking slot booking and here used the android application to analyse where the parking is available. Also, the user can pre-book the parking area using the android application. And this application is helpful for the new user who is from other state[1]. Hina Kousar proposed a Reservation based parking system with dynamic slot allocation in this they used dynamic allocation for circle parking system and also its saves time for the users and also used to search the nearest parking areas. It will stores the booking details dynamically in arrays[2]. Aswathy James in their work on Smart car parking with reservation system with QR generator with the android application we can book the parking area. It helps to identify the current parking places available near the user. By using the android app we can identify the booked space and also free space

and also it will inform the nearest space for the drivers[3]. Suraj Darne worked on online vehicle reservation system same as the android application for booking and the one in this is the parking can booked based on the reservation type. Once you logged in with the application we can get notifications based on parking[4]. Sandhya Devi in their work on Smart car parking slot reservation system using mobile application the purpose of this is used in parking places in college campus the user can book the places using SMS system the SMS is received using GPS device[5]. Ajay Thakur worked on Intelligent Android based Online Parking System based on android reservation that effectively allows drivers to find the car parking in that particular area and the vacant spaces is reserved for parking. The drivers can find and book the nearest parking area [6].

3. PROPOSED SYSTEM:

3.1. BLOCK DIAGRAM:

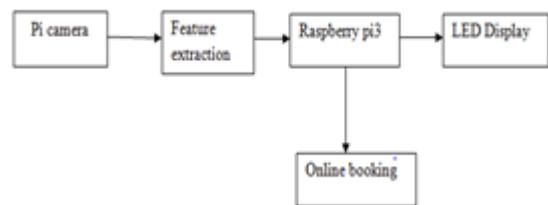


Fig.3.1.1. Car parking system

Major problem arising in developed countries is the parking system. Due to the development of technologies the production of cars where increased. Due to the increment in production of cars, the usage of cars becomes increasing day by day. To reduce the traffic during car parking, we proposed this system. Pi camera is used to continuously monitor the status of the car parking Zone. It updates the presence and absence of cars in a parking Zone. Python-image processing techniques have been used to extract the features of presence and absence of car. Haar like features are used for extracting the features of car to identify the presence and absence of car. Raspberry pi3 microcontroller is used for controlling this system. Pi camera continuously updates the status of the parking zone i.e. the availability of places in the parking area. From the information given by the pi camera , microcontroller updates the information to the LED display that are present outside the car parking area and

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also the status is continuously updated to the web server. This system helps to reduce the traffic in the parking area. This system also saves the time for the customers.

3.2. HAAR CASCADE ALGORITHM:

Haar cascade algorithm is used mainly for object detection. Haar cascade is based on a machine learning object detection method. It is mainly used to identify the objects that are captured by the camera such as image or video. The cars are captured in a frame by frame manner. For each frame potential region of interest is detected, based on the vertical and horizontal similarities, filters detect the region of interest, if a new region is detected the information is added to the collection of the classifier region. It clears after every 30 frames. Numerous positive and negative images are used to train the object detection algorithm. If a new car enters the frame, then the information about that car is added to the collection. Here the cascade function is trained with number of positive and negative images as it is a machine learning based algorithm. Algorithm consists of four stages: they are Haar feature selection, creating integral images, Adaboost Training, cascading classifiers. Thus this algorithm is used to extract the features from the car parking area.

3.3. RASPBERRY PI3:

Raspberry pi3 is a small credit card sized computer. It does all the functions of a typical computer. It requires keyboard, mouse, and monitor. Here raspberry pi3 is used to control the system. It gathers the information from the pi camera and provides the information to the LED display and to the web server. The specifications of raspberry pi3 are given below.

Table3.3.1.BOARD SPECIFICATIONS

NAME	DESCRIPTION
Ethernet	Base T Ethernet Socket
USB	2.0(Four sockets)
Audio output	3.5mm audio jack and HDMI
Video output	HDMI
Camera connector	15-pin MIPI Camera serial interface(CSI-2)
Display connector	Display Serial interface(DSI) 15 way flat flex cable connector with two data lanes and a clock lanes
Memory card slot	Push/pull Micro SDIO

Table3.3.2.TECHNICAL SPECIFICATIONS

Microprocessor	Broadcom BCM2837 64 bit Quad core Processor
Processor operating voltage	3.3v
Raw output voltage	5v, 2A power source
Maximum current through each I/O pin	16mA
Maximum total current drawn from all I/O pins	54 mA
Flash memory (operating system)	16 Gb SSD memory card
Internal RAM	1 GIGabytes DDR2
Clock frequency	1.2 GHz
Wireless connectivity	BCM43143 (802.11 b/g/n wireless LAN and Bluetooth 4.1)
Ethernet	10/100 Ethernet
Operating Temperature	-40 to +80 degree Celsius

3.4. LED DISPLAY:

LED display is made up of number of LED diodes. It acts as a video display by using LED diodes. LED display is similar to that of LCD display, but LED display uses LED diodes instead of CCFL backlight. Now a day's most of the electronic devices use LED display. In this paper, LED display is used to display the number of car parking zones available in car parking area.



Fig3.4.1.LED DISPLAY

This LED display is very much helpful for the road side users to know the number of car parking zones available in the car parking area. This could save the time.

5. RESULT:

The result of the system is shown below: The customers can book car parking areas as shown in the below figure.

Fig5.1. TICKET BOOKING

After booking the tickets, the respective car parking zone will be reserved for the particular time period.

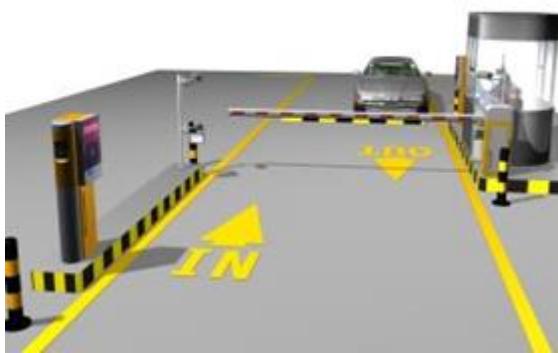


Fig.5.2. CAR PARKING AREA

The fig5.2 shows the parking area being monitored by the pi camera. The pi camera usually monitors and updates the information to the raspberry pi whenever the new car enters and leaves the parking area.

6. CONCLUSION:

This system helps to save time as it allows us to know the number of car parking zones available in the particular car parking area. It also allows us to book the tickets for parking through online from wherever we are. It also provides LED display placed which is placed outside the car parking area. And also the user can pre-book the parking space. This helps the roadside users to know the available parking zones in the car parking area. This saves the searching time for people in their busy schedule.

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