International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 06 Issue: 03 | Mar 2019 www.irjet.net p-ISSN: 2395-0072

Do Not Park

Balgovind Yadav[1], Harsh Singh[2], Omkar Shinde[3], Hakam Singh[4], Yatharth Tiwari[5]

[1]Lecturer, Dept. of Computer Engineering, Thakur Polytechnic, Maharashtra, India
[2,3,4,5]Student, Dept. of Computer Engineering, Thakur Polytechnic, Maharashtra, India

---

Abstract – *In today's life time act as every important role everyone is running behind the time because everyone has to do more tasks in less time and everyone knows the value of time but also its bitter truth. The average Indian span their 90 to 120 min of time in traffic jam and one of the main reason of traffic jam is parking of vehicles on non-prohibited areas because day by day vehicles are increasing on rapid speed and our country is ranked on 6th position in world on using cars but areas are less and everyone is not capable to pay reserved parking so most of people move towards road to park their vehicles, but it effect on other peoples because when a person parks their vehicles on the road.it become congested and get less space for driving vehicles. Sometime vehicles are parked on one lane road and if some vehicles come behind the parked car, he has to wait for the driver to remove his vehicle. other thing is to tow the parked vehicles from illegal area the traffic police has to search each lane of roads to find the vehicles. So, to solve these problems we are developing a system that facilitates the traffic police to easily search the illegal parked vehicles and avoid congestion on road and can make E-Chalan to make discipline. The problem of illegal parking is not simulated for traffic police only, many organizations, Apartments, Schools, Courts and many private Companies too. The system also helps the organizations to avoid the illegal parking in front of their gate. The hardware is based on Raspberry pi 3, some ultrasonic sensors, camera, servo motor etc. Since the entire process of sensing the vehicles is automated it reduces the possibility of human error substantially. Also, the system has a feature to take real time image as well as address of vehicles which well be sent to traffic police so he can the command to the subordinates to capture the vehicles.*

Keywords: Raspberry pi 3; Ultrasonic sensor; servo motor; camera; Buzzer.

1. INTRODUCTION

The illegal parking events decrease the transportation efficiency in a city, and incurs traffic jams, which lead to air pollution and potential accidents. Effective detection of illegal vehicle parking events can improve the effectiveness of city management (e.g., planning more effective police patrol routes) and urban planning (e.g., building more parking spaces in the illegal parking hotspots) for the government. Traditional approaches to detect illegal vehicle parking events rely mainly on human effort, e.g., police patrols, where the illegal parking events are detected only if they are in the sight.
To end this, we have made a system which sense the vehicles parked in illegal area and give control to the camera to click a real time image of the car parked with the address of the lane and send it to the police patrol.

2. EXISTING SYSTEM

The current available method to prevent illegal parking is normal Police patrol which search for the vehicles in front of School, Courts, Company etc and drag them to their main office. Since they don't know where the vehicles are parked, they simply search vehicles in every lane of roads. It takes a lot of time to search the vehicles. Camera also help patrols to search the illegal parked car but in small range.

3. PROPOSED SYSTEM

The System that we propose is an automated system that will be picking up signals if a vehicle is parked in the areas that any person isn't supposed to have been parked in, it is a much better system for reducing the traffic and faster response time from the police for people who are very much careless in where they are parking and care less for any consequences that follow after them having had not followed the rules and regulations. It will also provide indications to help the general public understand that they have parked their vehicles and need to move their vehicle to a much better area where their vehicles are supposed to be parked in.

4. HARDWARE

As our idea is on the physical components of the traffic system, so our model also required the hardware components which are physical rather than the software part of our model and below are those following.

4.1 Ultrasonic sensor

Ultrasonic sensors consist of two component receiver and transmitter. In our project we have used the ultrasonic sensor H-SR04 which operates on 3.3V Voltage and has four pins namely +VCC, Trigger, Echo, Ground. Ultrasonic sensors are usually used to detect the object and to calculate the distance of the object. In this project the ultrasonic sensors are used to detect the vehicles which are parked in no-parking zone.

Fig -1: Ultra sonic sensor

4.2 LCD Display

LCD (Liquid Crystal Display) screen is an electronic display module and use in wide variety of applications. A 16x2 display is extremely basic module and is extremely ordinarily used in various devices and circuits. These modules are most liked over seven phases and different multiple segment LED. The reasons being: LCD are economical, simply programmable, haven't any limitation of displaying special & even custom characters (unlike in seven segments), animations and then on. A 16x2 LCD means it can display 16 char per line and there are 2 such lines.

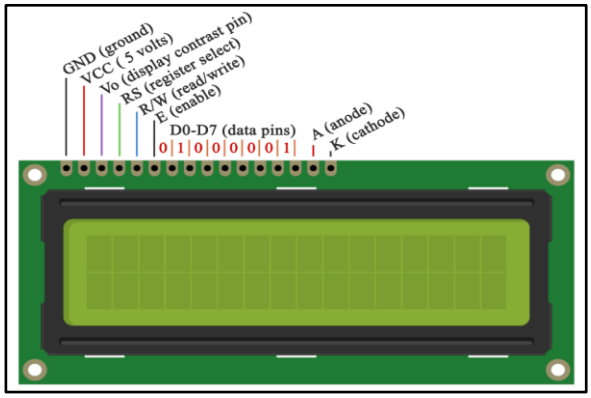

Fig -2: LCD Display

4.3 Raspberry pi 3:-

Model 3B**+** was launched with a fast 1.4 GHz processor and three times faster gigabit Ethernet (throughput limited to ca. 300 Mb by the internal USB 2.0 connection) or 2.4 / 5 GHz dual-band Wi-Fi (100 Mb / s). Other options are: Power over Ethernet (Po E), USB boot and network boot (an SD card is no longer required)The Raspberry Pi 3+ uses a Broad com BCM2837B0 So C with a 1.4 GHz 64-bit quad-core ARM Cortex-A53 processor, with 512 KB shared L2 cache. This was suggestedd to be highly dependent upon task threading and instruction set use. Benchmarks showed the Raspberry Pi 3 to be approximately 80% faster than the Raspberry Pi 2 in parallelized tasks.Overclocking for 3b+ model is Pi 3; has advanced features which includes it has inbuilt wi-fi module which reduce the need of additional wi-fi module . In system information the CPU speed will appear as 1200 MHz When idling, speed lowers to 600 MHz Raspberry pi 3b+ has 1gb RAM. The Raspberry Pi 3B+ includes dual-band Wi-Fi, Bluetooth 4.2, and Gigabit Ethernet ,USB 2.0 compatibility. Raspberry pi 3 can be connected to or used with USB mouse and Keyboard and any monitor or display which has HDMI input port.SD card can be used for storage in raspberry pi. It has 40 I/O pins and divided into two modes. First is the board mode and other is SMP mode. We have used SMP because this mode provides more of numbers input output pi.

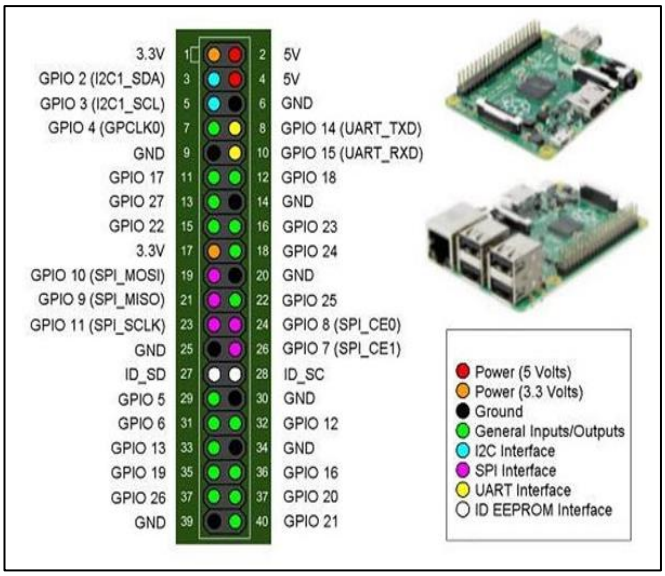

Fig -4: Raspberry pi 3 B+ Pin Diagram

4.4 Camera

We have used INTEX IT-306 WC camera which have frame rates up to 30fps. It is 30Mega Pixels camera with 1/7 CMOS sensor. It has night vision so we can take image of vehicles at night to. It has features such as video recording, motion detection, plug and play, adjustable brightness and sharpness. Resolution of this camera is 3280 x 2460. This camera will be stuck at the top of hollow tube which will rotate 360 degree with the help of motor.

Fig -5: Camera INTEX IT-306 WC.

4.5 Servo motor SG90

Size of this motor is 12*23*23 with speed of 0.14sec/60degree at (4.2V)0.12sec/60degree at(5V). The Torque of the motor is 06. kg.cm. at (4.2V) 0.8kg.cm.at(5V) and voltage up to 4.2V-5V. we have used 2 motor to make it 360 degree. One motor will be mounted on another motor to make 360 spin.

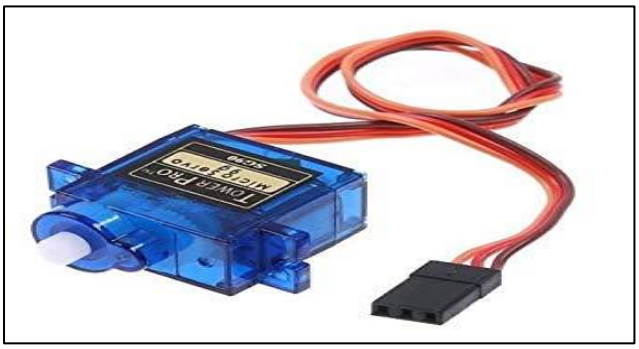

Fig -6: Servo Motor SG90

4.6 Piezo Buzzer Alarm

A Piezo buzzer is a sound producing device. Piezo buzzer generates a loud & sharp sound. So, they are typically used as alarm circuits. Piezo alarm required 5V input but it can also operate on 3.3V input in low intensity. In our project the role of the buzzer is to give message to the car driver that he/she has parked vehicle in no parking zone and to generate some irritating sound or tone which will force the driver to take their vehicle away from no-parking zone.

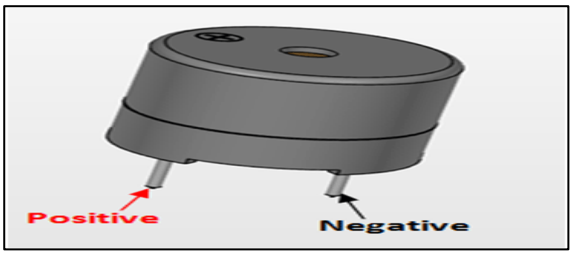

Fig -7: Buzzer alarm with pin description.

5. WORKING

The way as our Model works with the components used can understood much better with a scenario that we would like to share as follows:

Taking the scenario that a vehicle is parked in the no parking area and the driver doesn't know that they have been parked in such an area, so what our system will do is that first it will send and receive signals with the help of ultrasonic sensor to confirm that the vehicle is parked in the no parking area and it will also be configured to differentiate between a human standing in front and a vehicle near by so that it does not alarm unnecessarily to reduce noise and chaos for general public walking. After the sensor sends signals to the raspberry pi which is our processor for there being a vehicle in a no park area the raspberry pi will be taking 10 readings every second to interpret the distance from the sensor to the vehicle giving 10 seconds for the vehicle to move from the no parking area, as the sensor starts to sense any vehicle the processor will send the signals to the led to light up and the buzzer alarm and the LCD to display a warning and notice for the driver to see that he is parked in the wrong area and if after having seen the warnings the vehicle is moved the loop will be terminated and there will be no action taken otherwise if the vehicle is still in the area after all the warnings the processor will send signal to the servo motor below the camera to move towards the angle to which the sensor that has sensed the vehicle in the no parking area and then the camera will click the photo of the vehicle and its number plate and after that the camera will send the photo to the system where it will be stored and after which further actions with consequences for rule breaking will be taken. The photo will be stored at in the database (as it is a prototype model we have used Google Firebase which is cost

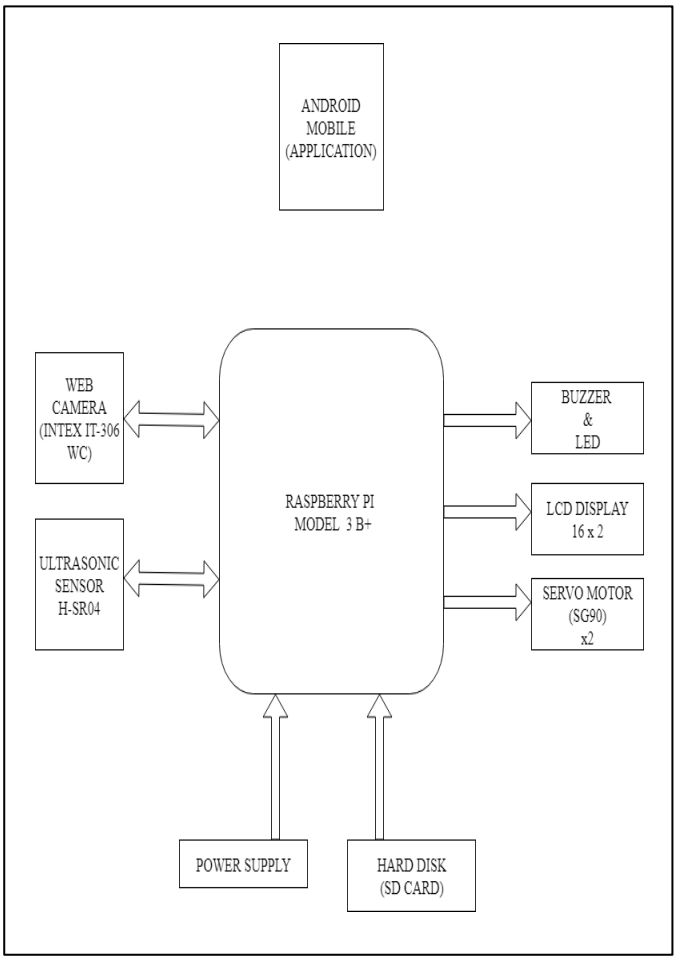

Fig -8: Block Diagram for Do Not Park

effective) and from where it can accessed by the android application. Android application is consist where consist of three phases which include Registration, Home, Google map navigator and image storage. In Registration phase the higher authority or traffic police officer can register itself and can set their password for security purpose. After the registration phase the next phase is Home page where user can maintain his/her profile. And can also check the notification and etc. The Image captured by central camera is uploaded on the database and also send to the nearby android application as a notification and along with real time image it also attach the address of the sensor and on the android app there is an option which is visible only when an notification is triggered and the user can also get the route instruction by triggering this direction button. And Application also include an interface from where user can check history also search image.

6. ACKNOWLEDGEMENT

If Implemented on the real time traffic conditions with larger, much faster and more accurate components this idea and approach can not only reduce traffic but make life and work better for law abiding citizens such as the common man of this country, law protecting citizens such as the police department of this state and country, law preserving citizens such as the lawyers, judges, jury members of the high court or any other law governing department

7. FUTURE SCOPE

We intend to add some more features which will help the car owner or driver to get location of nearby parking slot which is available for parking and also route guidance which will help to reduce the illegal parking cases to some extend and we will also add the features which will help the traffic police officers to get the location of the illegal parked cars much faster by providing them tracking and route guidance.

8. CONCLUSION

By publishing this paper, we would like to present our idea to the government and traffic police department in hopes of reducing the traffic and improving the system for any traffic caused by the wrong parking scenarios and also making such conditions more automated and technology convenient for both the common man and the higher authorities. We do believe that this idea and equipment as used in the way that we presented it can be more upgraded with better and advanced devices that can further be used in the same idealistic manner as if we need to make a change in our traffic conditions for the betterment of our societies and most importantly our country

9. REFERENCES

[1] "Raspberry Pi 3 Model B+ on Sale at $35". *Raspberry Pi Blog*. Raspberry Pi Foundation. Retrieved 2018-05-04.

[2] https://www.raspberrypi.org/documentation

[3] https://components101.com/servo-motor-basics-pinout-datasheet.

[4] https://randomnerdtutorials.com/complete-guide-for-ultrasonic-sensor-hc-sr04.

[5] https://docs.python.org/release/2.7.9/tutorial/index.html.

[6] https://developer.android.com/docs.