Cost Effective Smart Car Parking System

Y. Padma
Asst. Professor, Information Technology, Department, Prasad V Potluri Siddhartha Institute of Technology,
A. Sai Koushik
Information Technology Department, Prasad V Potluri Siddhartha Institute of Technology
G. Pavan Sri Sai
Information Technology Department, Prasad V Potluri Siddhartha Institute of Technology
CH. Kiran Santosh
Information Technology Department, Prasad V Potluri Siddhartha Institute of Technology
AB. Naseema Begum
Information Technology Department, Prasad V Potluri Siddhartha Institute of Technology

***Abstract*— In the current era, we are facing a new problem of parking of vehicles. It is a major problem in urban cities. The problem is more tough because of a continues growing number of vehicle and also size of vehicles. Car parking is not just a major problem in India but also in all over the world. We know a that one million vehicles burn oil every day. In this paper, we propose an automatic and real-time system for automated car parking. Smart parking system helps people to search for a parking space accessible with the ease of iot automation by supplying information of available parking slot. User can easily use this system with minimum efforts from his side by giving size of car as input and he can see the allocated slot in the lcd display. IOT provides solutions for various problems and it allows things to be sensed or controlled remotely in network infrastructure.**

***Index Terms*—Smart Parking, Cost Effective Parking**

I. INTRODUCTION

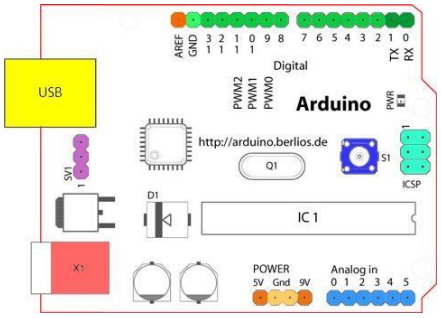
With the rapid proliferation of vehicles availability and usage in recent years, finding a vacant parking space is becoming more and more difficult, resulting in a number of practical conflicts. The problem is more tough because of a continues growing number of vehicle and also size of vehicles. Car parking is not just a major problem in India but also in all over the world. In this system we propose an automatic and real-time system for automated car parking by taking car size when it enters parking area and displaying allocated parking slot which suits best for that car based on size this also makes effective utilization of parking space. This project reduces human effort at the parking area to great extent such as in case of searching of free slots and also in the areas where parking space is limited.

II. HARDWARE CAPABILITIES

The System is designed in such a way to fulfill all the requirements for effective utilization of parking slots. Sensors used is good enough it can withstand on great weather conditions and they can be easily replaced are of highly effective enough to detect the presence of car Power supply is also required for functioning of the system the entry and exit gates are built so that they are automated it doesn't require person to operate.

III. SYSTEM SPECIFICATIONS

Arduino (uno r3) is used as main board(controller) of the project it is a 8-bit processing system based on Microcontroller it can handle tasks like operating in extreme weather conditions and also it is very flexible and we can add other sensors anytime to system to define more parking slots. Arduino IDE is the software which is used to upload the program for system configuration using this software all sensors, servos and display which are used is setup and initialized. The sensors which are used to detect the presence of the car are attached to the system and everything is quite modular and easy to replace without disturbing the system working.



- **Arduino IDE:** The Arduino Integrated Development Environment - or Arduino Software (IDE) - contains a text editor for writing code, a message area, a text console, a toolbar with buttons for common functions and a series of menus. It connects to the Arduino and Genuino hardware to upload programs and communicate with them. Programs written using Arduino Software (IDE) are called sketches. These sketches are written in the text editor and are saved with

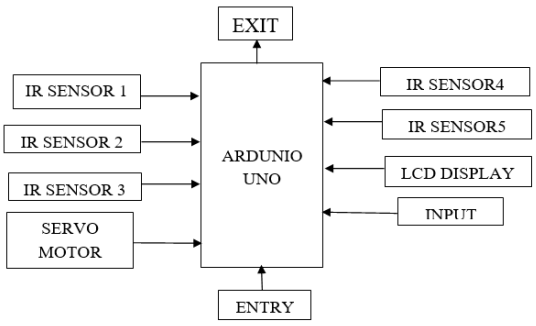
the file extension .ino. The editor has features for cutting/pasting and for searching/replacing text. The message area gives feedback while saving and exporting and also displays errors. The console displays text output by the Arduino Software (IDE), including complete error messages and other information. The bottom righthand corner of the window displays the configured board and serial port. The toolbar buttons allow you to verify and upload programs, create, open, and save sketches, and open the serial monitor.

EXISTING SYSTEM

The conventional parking system has nothing to do in particular with management of parking slots, a person who is appointed will manually identify the availability of parking spaces in the whole parking area and should allow people to park their cars but there is no solution for discovery of available slots within less time and also there is no methods or procedures for effective management & utilization of the available parking spaces based upon the size of vehicle. This conventional system increases stress for searching a parking slot and wasting valuable time this has led to the need for efficient parking management systems.

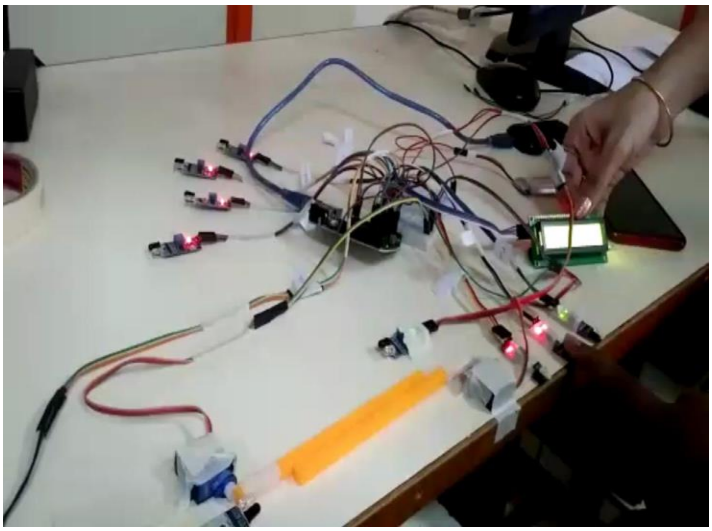
PROPOSED SYSTEM

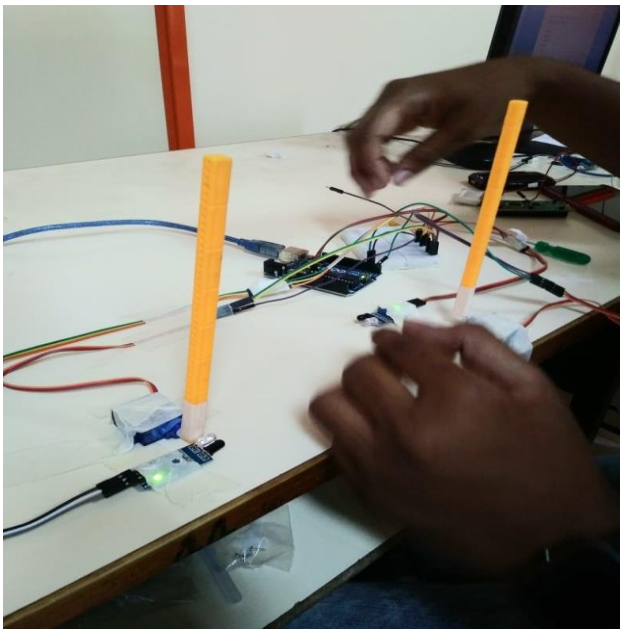
Existing one is quite ineffective, as it takes lot of time to The proposed system can effectively manage and allocate parking slots in intelligent way it can detects the presence of the vehicle while it enters the parking area and it allows the user to enter the car size as input to the system and system processes the information and displays the allocated parking slot in the display present at the entrance and then then entry gate opens automatically. The system has the information about size of the slot based on slot number predefined and each slot is equipped with ir sensor to detect the presence of vehicle if vehicle is leaving the parking place the sensors placed at exit point detects the car and will open exit gate and the system will automatically update the parking slot information thus, the system solves the parking issue for cities and get users an efficient IOT based parking management system.



Block Diagram

PICTURES :





Slot Allocation samples

Car size	Slots available	Slot allocated
Micro	Yes	Micro slot 1
micro	Yes	Micro slot 2
Suv	Yes	Suv slot 1
micro	No(next available: micro)	Sedan slot 1

IV. SCOPE FOR FUTURE DEVELOPMENT

Based on the results from this project and its benefits to the users in saving their time, we have created a user-friendly system. It also reduces overall fuel energy of the vehicle which is consumed in the search of the car.This project

provides a real time process and information of the parking slots. In future works, this framework can be enhanced by including different applications, For Example, internet booking by utilizing GSM. The driver or client can book their parking area at home or while in transit to the shopping centre. This can diminish the season of the client to seeking the empty parking area. As a further review, distinctive sensor frameworks can be added to enhance this framework to distinguish the question and guide the driver or clients speediest. We will attempt to decrease the mechanical structure and attempt to make it eco-friendly.

V. CONCLUSION

Our project detects the empty slots and helps the drivers to find parking space in unfamiliar city. The average waiting time of users for parking their vehicles is effectively reduced in this system. The optimal solution is provided by the proposed system, where most of the vehicles find a free parking space successfully. Our preliminary test results show that the performance of the Arduino UNO based system can effectively satisfy the needs and requirements of existing car parking hassles thereby minimizing the time consumed to find vacant parking lot and real time information rendering. This smart parking system provides better performance, low cost and efficient large-scale parking system. It also eliminates unnecessary travelling of vehicles across the filled parking slots in a city.

REFERENCES

[1] https://www.softwebsolutions.com/resources/smart-parking-iot-solution.html
[2] https://www.instructables.com/id/Arduino-Servo-Motors/
[3] https://create.arduino.cc/projecthub/techmirtz/using-16x2-lcd-with-arduino-d89028
[4] https://www.makerguides.com/character-i2c-lcd-arduino-tutorial/
[5] https://www.hackerearth.com/blog/developers/a-tour-of-the-arduino-uno-board/
[6] https://www.programmingelectronics.com/tutorial-17-using-a-button-old-version/
[7] http://www.infiniteinformationtechnology.com/iot-smart-city-what-is-smart-parking
[8] https://create.arduino.cc/projecthub/Manikantsavadatti/how-to-make-an-ir-sensor-66786b