

## Automated Parking System Using Web Application

Sejal D'mello<sup>1</sup>, Prof. Ashmita Shetty<sup>2</sup>, Bhavesh Yadav<sup>3</sup>, Shraddha Shahane<sup>4</sup> and Vidya Ugale<sup>5</sup>

(Information Technology, Atharva College of Engineering, India)

Corresponding Author: Sejal D'mello

**Abstract:** As we know, now-a-days population has increased, it also caused to increase vehicle population. So, more spaces are required to park our Vehicle. In this project we are introducing a new parking system called Automated parking system using Web Application. This System gives us efficiency to find vacant slots to park a vehicle in parking area. A user can book a slot using mobile to park his vehicle. In short, this system helps us to save our time to find vacant place to park our vehicle. The application contains the data of all existing vehicles in parking area, the reserved park area, a vacant place to park vehicle etc.

The proposed system is made up of a less human dependent interaction. It helps user to find a parking slot using a short distance algorithm. In our project we use EM 18 module to sense RFID reader, RFID reader to know the status of our parking system. i.e. which car is on which place in parking slot. This system also proposed e-wallet method. This system also includes multilevel parking. We will get to know all these features in brief in our paper.

**Keywords** -Automated Parking, Web Application, Multi-level parking, e-wallet System

### I. Introduction

In today's developed world man is living a comfortable life. As this development is a boon for humans at the same time, sometime it can create problems. The number of vehicles that has been used in daily life have increased drastically as it provides a great comfort to individuals but at the same time the common problem faced by everyone is the parking issues. Parking is a major problem faced which in turn results in the wastage of a big amount of time. Even after all the development and progress achieved still manual parking management is seen.

The method followed in parking system is that the parking premises simply have sign board which provides the drivers with the basic information like the directions and if there is different parking slot for two wheelers and four wheelers with the increase in the number of vehicles being used nowadays the number of vehicles that enters the parking area have also increased. Due to everything being manual the drivers do not have much idea about the parking availability, like is there any parking space available The vehicle driver needs to drive through the whole parking area in order to get a place for his vehicle to park and the availability of place is also not sure, there may be time when the driver go through all of the parking area and then come to know that there is no place available to park his/her vehicle. After everything is done while leaving the driver needs to pay the parking fee which is collected manually. This when done during peak hours results in long queue. Such kind of problem is being faced in the existing parking system.

The development of this project can be a problem solver to almost everything mentioned above. The aim of this project is to create a web application using which drivers can get information about the parking place from anywhere. The web application will show all details regarding the parking place such as which all slots are already occupied, which slots are available, which slots are for two wheelers and which slots are for four-wheeler. With the help of this project the old manual parking system would be converted to a completely automated parking system. As all details would be available all the time, drivers would not have to travel the whole parking area to find a vacant parking space which would eventually save the time. Also, e-payment method is being implemented using this project so there won't be any long queue as the driver would be able to pay from his e-wallet.

For getting everything automated we will be using RFID reader, which would be installed at the entry gate. With the help of RFID reader all data shall be maintained for existing users and the vehicles which are not registered shall go under visitor's category. The use of RFID is done as it would be economical for any and every parking area. The cost of it would not be extravagant. As this project is a web application it is completely platform independent and all it would need is any device which is having active internet connection. It would provide efficient parking slot as the parking place which is available at that particular time and which is closest to the driver shall be allotted to them with the help of the shortest path algorithm.

Sections II, III below describes the Two methods used for Automated Parking System namely Microcontroller Based method and Wi-Fi Based method respectively.

## **II. Microcontroller Based Method**

The proposed system [1] includes the use of LCD to display the available and allotted parking slots on the LCD Screen. It has various Modules for the implementation of the system that includes Interfacing of Microcontroller with LCD, Interfacing of Microcontroller with GSM, Interfacing of Microcontroller with RF Module.

### **A. Interfacing of Microcontroller with LCD:**

This is mainly used for displaying the status data to the system user for the parking slot. It represents data in alpha-numeric form along with some pre-defined characters. It displays the number of free slots to the user by communicating with the micro-controller.

### **B. Interfacing of Microcontroller with GSM:**

The use of GSM Module is for sending and receiving encoded messages to or from the microcontroller. The Data obtained from the mobile phone or the microcontroller is stored into the buffer of the GSM module and then transmitted in a serially synchronized form.

### **C. Interfacing of Microcontroller with RF Module:**

In this system, the use of RF module is for inter-microcontroller communication. The purpose of data communication in between the microcontroller of the parking area and that of the car is served in this system. GSM, Microcontroller will give an efficient parking system but it is an expensive parking system is the limitation of this method.

## **III. Wi-Fi Based System**

The proposed system [2] includes the concept of Real Time Viewing Automated Parking System. It has different features like providing a screen of parking slots displayed outside the parking area, checking online (Wi-Fi based) for the list of parking slots and you can decide where you are going to park your car. This system gives priority to PWD (Persons with Disability). Car owners with PWD passengers will be more prioritize to park near the entrance mall. So, there will be no problem to PWD people to search for a place to park his/her vehicle.

## **IV. Proposed System**

As we know parking a vehicle is one of the very crucial problem now-a-days people faced. To park a vehicle people, have to search for a parking area. It takes lot of time to search a place to park a vehicle. Our proposed system helps people to find a parking area to park his/her vehicle. It is a time consuming and efficient process.

In our system we can reserve or book parking area for vehicle using any web application. So, after reaching to that place we can directly go towards our booked parking slot. If any customer doesn't book a place to park his vehicle then also he can get a chance to park his vehicle using short distance algorithm at the entrance of the parking area only. In our proposed system we use RFID reader too. The RFID reader will get sense while vehicle is entering in the parking area and it will load all information of the vehicle i.e. his parking slot number, car number etc. and while leaving too with RFID we will get to know which parking slot is filled, which vehicle has leaved etc. Multilevel parking is also get used. So, there will be no inefficiency of space. A customer can pay using e-wallet too. As the customer leaves parking area, a money will automatically get deducted from his e-wallet. This is also time-consuming process i.e. customer don't have to wait in a queue to pay money. Our system takes into consideration a less human intervention. So, it is more convenient than other systems.

