

CONTACTLESS VEHICLE MANAGEMENT SYSTEM

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Abstract - The domain of vehicle management system has been in consideration in recent times. The vehicle management System have shown importance in areas like vehicle maintenance, vehicle management, fuel management, parking management, driver management, etc. We have decided to create a system based on needs which is mainly focused on parking management system. Parking management system needs a lot of improvements to avoid unnecessary traffics and tension.

We created this system in response to the rise in parking and security needs in public locations. The provided method keeps the car secure while guiding the user to locate a vacant parking space with ease. The toll gate's movement is controlled by systems built on Arduino, allowing vehicles to enter and exit parking places. The number plate text of a passing car, along with other crucial details like the time and parking space, are automatically stored by a camera in front of the toll gate and saved in a database for security reasons. A display in the system directs a user to an open parking space. The devices also include a feature to send alerts to registered users.

Key Words: Vehicle management, RFID, IOT technology, Arduino uno.

1.INTRODUCTION

Since A smart parking system is now necessary due to the growth in population and the resulting rise in traffic. Based on land uses, the ongoing parking management noted in is regarded as a valuable resource that generates income for communities. For major cities, even more than 31% of the total land area is needed for parking. Urban development is hampered by the need for huge parking lots, which lowers car transportation. Because of information and communication technology, several cities have implemented smart parking systems that make it easier for drivers to locate available spaces and quickly park their cars.

Systems that save a lot of land include floor management techniques and the giant wheel, both of which are already in development. However, these systems are more expensive to implement than simpler ones because they require heavy machinery and hydraulics. Using a notice framework, a smart and secure parking system was developed in , allowing drivers to see available free parking on demand.

2. PROBLEM STATEMENT

Parking systems based on Arduino enable automatic vehicle parking. Since everything in the modern world is becoming more automated, so must the parking system. Parking lot entry and exit points are major time wasters. We see drawn-out car lines at the entrance and exit points. Therefore, it is necessary to create a system that can carry out this function automatically. By handling check-ins and check-outs quickly without having to stop the cars, a traffic jam issue will be avoided. Check-ins and check-outs won't involve any waiting, so there won't be any gas emissions as a result of that waiting.

Because of information and communication technology, several cities have implemented smart parking systems that make it easier for drivers to locate available spaces and quickly park their cars. The following factors receive the most attention:

- i. economic
- ii. shorter parking search times
- iii. low pollution
- iv. environmentally friendly

Reduces on-street parking when the motorist finds a spot quickly. It contributes to the regulation of public transportation and provides funding for the creation of smart cities. The advantages of the smart parking model used in Los Angeles are demonstrated by the lean smart parking model in.

3. OBJECTIVES AND SCOPE

The Parking space use optimization, accessible online. A real-time procedure and details on the parking spaces Makes the parking process easier. Easily controls the flow of vehicles through parking lots. An accessible open space for the next parking vehicle. The parking system is set up to provide the most parking space possible. Smart Parking enables real-time monitoring and management of available parking spaces. Real-time spot/vehicle occupancy sensing and prediction accuracy. Offers instruments to lessen workforce management. Safe and Secure informs the user when a vehicle exits a slot.

4.HARDWARE DESCRIPTION

The Raspberry Pi is the Hardware device that connects camera, sensor, power supply and LCD screen and works with Raspberry Pi OS installed. The Passive Infrared Sensor works by detecting the change in infrared lights and works with temperature difference. High quality Raspberry Pi camera is connected through Raspberry Pi cable. Power supply of 12.5W USB for all Raspberry Pi computer. To display the recognized number plate which proceeds to the database.

5. EXISTING METHODOLOGY

The manual system that we currently use for vehicle registration is exceedingly time-consuming and laborious, as well as other shortcomings in the manual system that was used in the past.

The most frequent issue is having the correct knowledge of the documents, procedure, and pricing. It takes a lot of time to go there in offices and stand in lines.

So, this is the entire process of getting vehicle insurance by our system we can make it a little bit simpler and the fast process of automating it. Here comes the problem of agents in that where they make huge money, of no way of the hard-earned money of poor people.

6.PROPOSED METHODOLOGY

Radio Frequency Identification (RFID) technology, a smart parking can be set up in order to alleviate the parking problems. Vehicles cannot access parking area without RFID tag as identification and the check-in/ check-out can be done very quickly.

Users will not have to wait for the identification of their vehicles as it will be done automatically by the tags that are attached to them. This will also ensure security as only the registered vehicles are allowed to access into parking lot. In this paper, we present an

automated parking access control system which is developed using RFID technology and combined with IOT technology. The availability of slot will be shown on the liquid crystal display.

Increasing vehicles day by day create a huge problem in traffic. IoT is a broad area in which different sensors are connected through internet by some medium of data sharing protocols. The main motive of this parking system is to find, allocate the nearer parking. Billions of devices are able to connect through internet of things (IoT) at any time, in any place with various applications. Searching for the free parking lot is one of the daily tasks for peoples of any country.

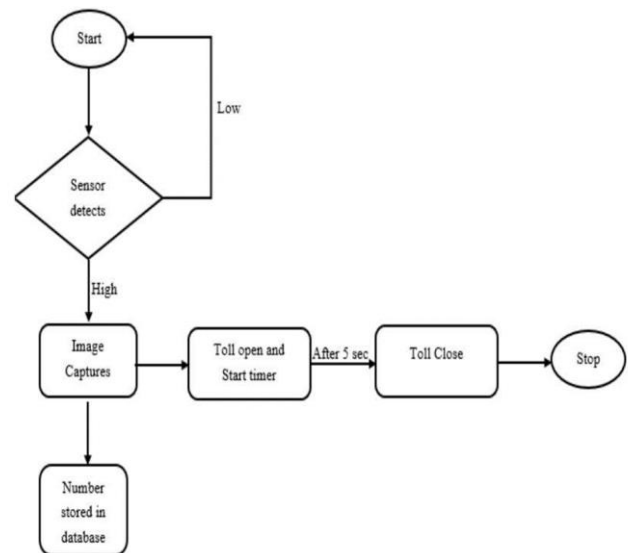


Fig.6.1. Flowchart of Proposed system

When any of the lot is available and a vehicle entering to the parking area then each vehicle will get an rfid card to enter into the slot. The RFID reader will check if the vehicles have permission to enter to the restricted and the required slot gate will be open with the help of servo motors. The slot availability details will be sent to the required user with the help of Internet of Things technology using Blynk app. The availability of lot will be shown with the help of light indication in the blink app.

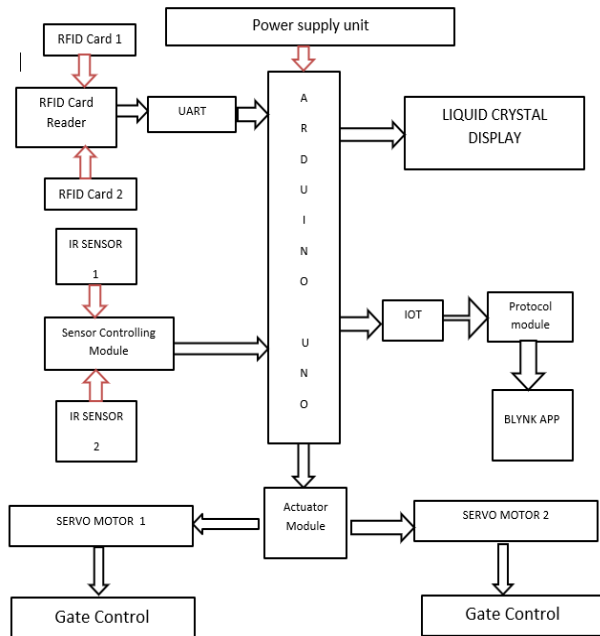


Fig.6.1. Block Diagram of Proposed system

7.RESULTS AND DISCUSSION

The parking system made extensive use of sensors, including infrared ones. These sensors are used to determine if parking spaces are open or not. This method is chaotic and inefficient in terms of energy use since ultrasonic sensors are wirelessly coupled to the processor via a Wi-Fi module.

In contrast to other automated parking systems, where many sensors are used, we reduced the number of sensors required to a minimum, resulting in effective and efficient systems. The system is also more affordable, making it suitable for all kinds of users. Our system makes this whole hectic work into a simple process.

Software, or arrays, were employed by our system to count the slots and show which ones are open.

8.CONCLUSION

This project's only goal was to elevate the conventional parking system by including automated parking and vehicle security. The entire manual process of recording the vehicle numbers and indicating the available parking space was replaced by automation with a device that takes pictures and extracts data.

It extracts the vehicle identification number and transmits it to the database. A free parking space assigned to the

particular user is shown on the screen at the turnstile gate based on the database. By notifying the appropriate user, we also added security for registered users.

9.FUTURE SCOPE

To evaluate all created or suggested algorithms in real time rather than working with small inputs. This project can thus be enhanced by applying this idea in real time such as Malls, Parking lots, public spaces.

This project can further be improved by enhancing sensors, and using Raspberry Pi and cameras for better image recognition and better display of numbers in the LCD screen.

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