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Smart Parking System

Ankita kotkar¹, Mrs.Sujata Patil², Yash Raut³, Rutuja Jadhav⁴

Department of E&TC, SKNCOE, SPPU, Pune

Abstract— Nowadays, the Internet of things (IoT) plays an important role in our life by connecting things with humans via the internet. This study proposes a smart system based on Arduino components, website and mobile application. The system helps drivers to find an empty park space depending on the number of unoccupied slots in the park. The parking slots are impossible to be reserved with the ordinary parking system. This study provides a mobile app that can be utilized to find a free lot in a nearest park. Smart parking can increase the economy by reducing fuel consumption and pollution in urban cities. Moreover, it helps to reduce the time of finding a car lot. Also, it helps the driver to find his car when he forgets the car location easily. However; the system adopts new tables' structure, yellow booking light in the parking lot, books and buys through app and gate monitor. Reserved system shows the status of booked and empty slots in the park for staff and drivers.

Keyword: Smart car park, IR sensors, Parking slot, Reservation

I. INTRODUCTION

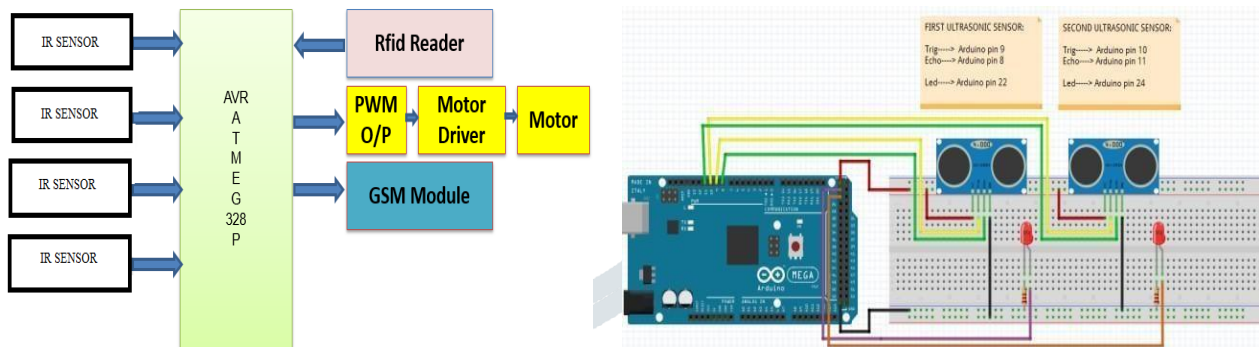
In the early times the concept of smart cities gained great popularity. The proposed Smart Parking system consists of an on-site deployment of an IOT module that is used to monitor and signalize the state of availability of single parking space. This paper introduces an IOT based coordinated framework for efficient and easy ways of parking the vehicles by checking the availability of slots. The proposed Smart Parking framework comprises an IOT module that is utilized to screen and signalize the condition of accessibility of a single parking spot. The paper additionally depicts an abnormal state perspective of the framework engineering. Towards the end, the paper examines the working of the framework in the type of a utilization case that demonstrates the rightness of the proposed show. The IR Range Detection Sensor is utilized with Arduino to indicate the empty slot. By measuring the distance using IR sensor drivers are able to find the empty slot in parking to park the car and help the driver to find the slot easily and reduce the searching time. As the parking place is found to be empty it is detected using IR sensors which report it further. We achieved this by programming the sensors and Arduino.

II. LITERATURE SURVEY

Mr. Basavaraju S R-2015 has proposed An Carmatic Smart Parking System using Internet of Things (IOT) [1] Internet of Things (IOT) plays a vital role in connecting the surrounding environmental things to the network and made easy to access those un-internet things from any remote location. It's inevitable for the people to update with the growing technology. And generally, people are facing problems parking vehicles in parking slots in a city. In this study we design a Smart Parking System (SPS) which enables the user to find the nearest parking area and gives availability of parking slots in that respective parking area. And it mainly focuses on reducing the time in finding the parking lots and also it avoids the unnecessary traveling through filled parking lots in a parking area. Thus, it reduces the fuel consumption which in turn reduces carbon footprints in an atmosphere. **Deepthi. S, Anil A R** has proposed A Survey on Smart Parking System Based on Internet of Things [2] In today's life people don't depend on public vehicles. They use their own vehicles to travel. So, traffic increases. When people travel through a city the most difficult problem is to park the vehicle. It causes not only a waste of time and fuel for drivers looking for parking but it also leads to additional waste of time and fuel for other drivers as a result of traffic congestion. First, we use PGI (Parking Guidance Information) for better parking management. Parking information may be displayed on VMS (Variable Message Sign) at major roads or streets or it may be disseminated through the internet. In PGI systems e-parking is an innovative platform which allows drivers to obtain parking information before or during a trip and reserve a parking spot. To overcome the limitations of the PGI system **Yanfeng Geng** proposes [3] a new concept "Optimal parking based on resource allocation and reservation". It uses the concept of mixed integer linear problem. When people go through a downtown area, there much rush and traffic. In this case to find the available location for parking is very difficult. So, implementing optimal parking people can easily park vehicle in the reserved locations. When a person with disability trying to park a vehicle in a city having heavy traffic, so he faces several problems in such a situation to search and park the vehicle difficult. The disabled person can park the vehicle in a specially designed location. The intelligent parking finds the best available parking, minimizing the cost. The parking and unparking can be done with the help of an android application. User has to install the android application on his/her smartphone devices, which would have the facility to pre-book the parking slot. **D. J. Bonde Jan-2012** has proposed "Carmate car parking system commanded by android

application” [4] The aim of this project is to carmate the car and car parking as well. A miniature model of a cremated car parking system that can regulate and manage number of cars that can be parked in given space at any given time based on the availability of parking slot. Carmated parking is a method of parking and existing cars using sensing device **A Cloud-Based Smart-Parking System Based on Internet-of-Things Technologies** [5] This paper provides a unique algorithm which increases the capability of the current cloud based smart parking system [5] and it also develops a network architecture based on the Internet of Things technology. This system helps the users to find a free parking space with minimal cost based on new performance metrics which is carmatic. This metrics will calculate the user spaces in each car park. To enhance the parking management, an intelligent parking system was developed which reduced the purpose of hiring people to maintain the parking system

III. METHODOLOGY



Car Parking System Using Arduino mega Designing, creating and delivering a main edge stopping innovation is called Smart stopping. It is a vehicle stopping framework that helps drivers locate an empty spot. Utilizing the IR sensors in each stopping space, it identifies the nearness or nonattendance of a vehicle. Brilliant Parking framework is demonstrated as a correct, strong and cost-effective approach to guarantee that street clients know precisely where empty car parking spots are.

As the populace expanded in the metropolitan urban areas, the utilization of the vehicles has also expanded. It causes issues for stopping which prompts movement clog, driver disappointment, and air contamination. When we visit the different open spots like shopping centers, multiplex film lobbies and lodgings amid the celebration time or end of the week it makes all the more stopping issues. The current research found that a driver takes almost 8 minutes to stop his vehicle since he invests more energy in looking at the parking area. This seeking prompt 30 to 40% of activity blockage. This project perceives how to diminish the stopping issue and to do secured stopping utilizing the shrewd stopping under Slot Allocation strategy with the assistance of Arduino. The primary commitment of our proposed frameworks is to discover the status of the stopping territory and give secured stopping. In the course of recent years, movement experts in numerous urban areas have built up a model called Parking Guidance and Information (PGI) framework for good stopping administration. PGI framework talks about the dynamic data of stopping in the controlled region and aids the clients to the empty stopping spaces.

IV. ALGORITHM

When a user tries to find a parking slot, he should register to find a free parking lot by using the system, then he sends a request through the application. The system will get the request and check the table of available parking to receive the message and to check the park using a table and LCD display based on an IR sensor. When a car reaches a parking lot, the drivers should be verified by staff. This verification process is achieved via checking the parking website. If the information is correct, the driver received a receipt and entered the park. Later, the driver checks if the lot is empty. If so, then he will park and the change the state from reserved to park. If the current car parking space is full, the system will send a new message that includes-Try another Park! Unavailable Space.

V. CONCLUSION

The proposed system improves the performance by decreasing the empty space in a parking, and missing numbers of drivers who fail to find a parking space, reducing the cost of fuel to find a parking space, reducing air pollution when the user tries to find parking lots, adapted in environmentally friendly cities, our system can be in public and private sectors. The update of the state or website can be sent as the message for users which can make the driver more satisfied, put less effort on the user, the system benefits both the users and the owner of the park to go. The system minimized the waiting time of the user to find a parking lot. Managing smart parking becomes a strategic issue to process, for economic interest beside the research interest.

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