Zone Parking System Using IOT

Dr.M.Selvapriya[1], Mr R.ChrisNevin[2], Mr P.Boopathi[3]
[1]*Assistant Professor, Department of Computer Science, Hindusthan College of Arts & Science, Coimbatore*
[2]*II PG Student, Department of Computer Science, Hindusthan College of Arts & Science, Coimbatore*
[3]*II PG Student, Department of Computer Science, Hindusthan College of Art s& Science, Coimbatore*

Abstract: Since the number of cars has grown so much over the years, many car owners are having trouble finding a suitable parking spot when they go out in public. The proposed solution created a smart parking spot with parking lots in public areas for customers searching for parking spots online. The Hub MUC is applied to control the equipment utilized in this recommended framework, like IR sensors, engines, and LCDs, as well as the Hub MCU. In other nations, the majority of public parking spaces feature parking alert system-based payment options. You will be informed if a space is filled incorrectly. The entire area finds a parking lot space that is free and much less expensive so that the vehicle can be parked correctly, saving time and making it easier to pay parking fees. Six infrared sensors are included in the supplied system to identify and avoid potential parking-related obstacles. The Web of Things (IoT) is an organization of interconnected figuring gadgets, the organization of actual gadgets, items, and individuals with remarkable identifiers and the capacity to move information without expecting human-to-human or human-to-PC communication. By using this method, people will be able to cut down on the amount of time spent looking for a parking spot and the stress of driving.

Keywords: Internet of Things, vehicle parking, sensor, LED, Motor.

I.INTRODUCTION

An IOT module will be installed on-site as part of the suggested Smart Parking system to monitor and indicate the availability of a single parking space. Data is sent to devices in this system, which extract relevant data and send it to the Node MCU device, which simultaneously sends command instructions for the data to many devices. The IOT module and the motor receive the signal from the Node MCU, which provides the user with instructions and notifications, when the vehicle arrives at the parking lot. The user is able to get information about available parking spaces and SMS notifications to their registered mobile number as a result of this. There are three sections to it. The initial section includes an IR sensor and Node MCU devices in the parking area. The user can interact with the parking area with these devices.

The first section consists of a parking area with microcontrollers and an IR sensor. The user can interact with the parking lot using these devices. The cloud web administrations act as a connection between the client and the parking area. Data can be transferred over a network without the need for human interaction thanks to the Internet of Things (IoT). The Internet of Things (IoT) makes it possible for customers to use low-cost wireless technologies and helps them move data to the cloud. The user is assisted in maintaining transparency by the Internet of Things (IoT).

The identification of things as a means of connecting numerous devices laid the groundwork for the concept of the Internet of Objects. PCs associated with the Web can work and screen these gadgets. There are two main words that makeup an Internet of Things (IoT): Things and the Internet, which functions as a vast network for connecting servers and devices. The Internet makes it possible for devices to send, receive, and even communicate with information. Air pollution is exacerbated by the parking issue.

The technology provides real-time information about the number of available parking spaces in a particular parking area. Using this mobile platform, users can reserve a parking space from a distance. The objectives of this strategy are to enhance the quality of life and the parking facilities of a metropolis.

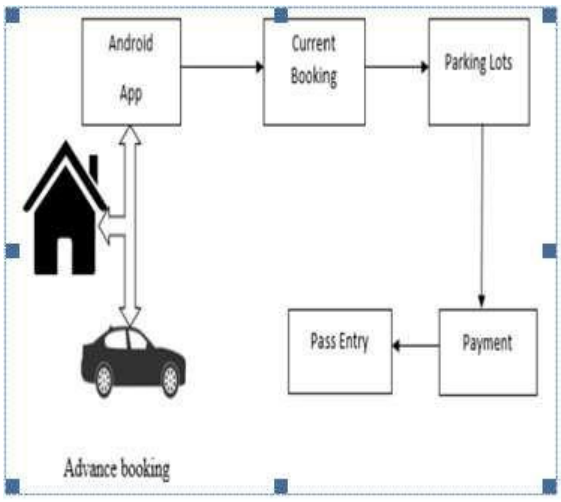
II. LITRATURESURVEY

2.1 M.S. MOHAMMED AND S. USTUNERCAN,"SAFETY BASED SMART PARKING GUIDANCE SYSTEM USING GSM

AND ZIG-BEE,"2019 Using mobile communications and zig bee technology, a smart automotive parking guidance system based on safety was built and put in place. It helps motorists overcome common parking difficulties in urban areas, such as circling until they locate an empty lot and wasting time looking for one. There are three modules in this system: The monitor module is the first part. It lets drivers quickly check for available parking spots on their smart phones without having to use Short Messaging Service (SMS)online. An infrared sensor is installed in each parking slot of this system, and its purpose is to continuously feel the parking field. The infrared sensor will send a signal to the Arduino platform that is connected to the sensor if it detects a car in the parking area. After that, the parking lot's current state is added to the system. As long as the system is in use, updates will be made on a regular basis. The LCD panel that displays the total number of occupied parking spaces is at the entrance of the parking lot.

III. INTERNETOFTHINGS

The current method was used to design the anti-theft system so that parking lot vehicles would be safe. This system consists of two parts: vehicle registration and vehicle authentication. At the main gate, vehicles need to be identified. In order to obtain permission to park in a specific area, a vehicle entering the parking lot must be registered. Car authentication is performed at the time of departure to ensure that payment has been made and that the vehicle has not been stolen. The parking system monitors vehicles parked on roads and ensures that vehicles are parked in the correct spots. Each automobile has its own block- sized parking area. An intelligent parking system has been developed that automates door administration, checks for empty slots, ensures the safety of parking cars, automates accounting and billing, and ensures the successful completion of projects. In addition to RFID technology for security checkpoints, image acquisition systems, optical character recognition for number plate harvesting, stepper motors for gate opening and closing, Liquid crystal display cameras for slot availability display, and embedded applications, the system also makes use of infrared and ultrasonic sensors for car identification and parking attempt.



IV. DATAANALYSISANDMODELLING

A microcontroller-based system known as Smart Parking can inform motorists of available parking spots in public areas and direct them there. The parking lot that is used to find unoccupied areas in the public sector has many parking spaces that can hold several cars. An LCD panel will display the slots' availability. You can save time searching through multiple slots for a free parking spot by automating the parking process. Automating car parking requires the use of six infrared sensors, two of which are used for gate opening and the remaining sensor for input and output areas. An infrared sensor can distinguish between colors or detect obstacles in front of the vehicle, depending on how the sensor is set up. Additionally, infrared sensors are able to distinguish between white and black surfaces. Black surfaces absorb all kinds of light, whereas white surfaces reflect all kinds of light. An electrical device that emits light and can detect objects in the environment is called an infrared sensor. An infrared sensor can both measure an object's temperature and detect movement. A type of heat radiation is infrared radiation. An infrared sensor can detect these kinds of radiations, which are invisible to the naked eye. The emitter is a standard IR LED, or infrared light emitting diode, and the detector is a straightforward IR photodiode. Similar to the IR LED, the photodiode is sensitive to the same frequency of infrared light. The impedances and output waveform of a sensor change in proportion to the levels of infrared light that reach it.

V. RESULTANDANALYSIS

It focuses on the percentage of users who are informed about parking availability and rates through parking applications. These informed users can access real-time information about available parking spaces and associated fares, which they take into consideration when choosing a parking spot, Various indicators, including delay time, vehicle density, distance travelled, fuel consumption, and emissions of CO2 and PM, have been obtained and analysed for conducting the sensitivity analysis. These indicators have been estimated for all types of vehicles, including transit vehicles (passing vehicles with no intention to park) and vehicles searching for parking in the designated analysis area. However, some metrics, such as delay and density, are presented regarding the total number of vehicles.

VI. CONCLUSION

Parking management has been made easier by the introduction of IOT (Internet of Things) parking systems. Anyone with access to the technology can check to see if a slot is available. The parking system managers are able to quickly ascertain whether the parking lot requires improvement or expansion. Visitors can quickly get to a parking area where they can be sure their car is safe from theft and can be managed if they get lost on the way to their destination. People would be able to travel without having to pay for parking, which is the scope. It improves the parking system's efficiency and benefits drivers by reducing wait times, long lines, anxiety, and stress. The smart parking management system might be beneficial to all transportation parking management in the future. By sensing whether the user is entering or exiting the parking spot, the device can be interfaced with an automation system to operate various appliances for residential and domestic parking systems.

REFERENCE

[1] "Internet of Things (IoT) Based Fire Alert Monitoring System for Car Parking," F. M. Raffei, N. S. Awang, N. S. A. Rahman, and N. S. A. Zulkifli, in 2020 7th International Conference on Electrical and Electronics Engineering (ICEEE), pp. 290-293, doi: 10.1109/ICEEE49618.2020.9102613.

[2] "Safety Based Smart Parking Guidance System Using GSM and Zig-bee," presented at the 2019 3rd International Symposium on Multidisciplinary Studies and Innovative Technologies (ISMS), by M. S. MOHAMMED and S. USTUN ERCAN, pp. 1-5, doi: 10.1109/ISMSIT.2019.8932730.

[3] "IoT Based Economic Smart Vehicle Parking System, "in M.Patil, V.Chakole, and K. Chetep awad's 2020 3rd International Conference on Intelligent Sustainable Systems(ICISS), pp.1337-1340, doi: 10.1109/ICISS49785.2020.9315919.