

AUTOMATIC ADVANCE PARKING SYSTEM BASED ON IOT

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Abstract

Internet of Things (IOT) plays a vital role in connecting the surrounding environmental things to the network and makes it easy to access those un-internet things from any remote location. Updating with rising technology is unavoidable for people. And people normally face problems with parking vehicles in parking spaces in a town. Developed a Smart Parking System (SPS) in this study that allows the user to locate the nearest parking area and provides access to parking slots in that respective parking area. And it focuses primarily on reducing the time required to locate parking spaces and also eliminates excessive movement through filled parking spaces in a parking area. It therefore decreases the consumption of gasoline, which in turn reduces the atmospheric carbon footprint.

Keywords: *Automobiles, display, IOT, Parking, RFID, Sensor.*

I. INTRODUCTION

Nowadays, the main problem in malls, function halls etc., is parking. That is because of the lack of proper space for parking. The vehicles in a family are now more than the headcount of the family members for a few days, and because of this, the vehicles in the country are also increased, leading to the parking scenario which unfortunately falls short of the current requirements in the country[1]. It is difficult to park because of this and it also increases the time required to park the car, with an increase in the vehicle's fuel consumption. And businesses and offices are facing the issue of parking in urban centers during their working days. Vehicles are now the most affordable for low-income community families for a few days, and vehicles, especially cars, take up a lot of space. In these congested areas, parking space is also not adequate due to the rise in cars[2].

Parking issues are a major problem, whether at shopping centers, stations or airports. People spend much of their time looking for parking and parking their cars. Therefore, there is a lot of congestion in the traffic, which results in a boring job of finding the parking space to park your car. The bulk of traffic exists only due to automobile congestion in urban areas, so people spend time abnormally looking for parking in the parking area. one more issue also added to this is pollution, which affects the entire environment due to this increase in vehicles[3]. If the customer has a super mall to go to. First of all, users must log in to the website and check for a specific mall to display the status of that mall's parking areas. If parking space is open, users

will happily book the parking space. Alternatively, the user can see the two-wheeler parking area. In cases where there is also a two-wheeler parking area, the user has the option to use public transport. After looking at the parking status, the user can really determine the type of vehicle to be chosen for his comfort[4].

Benefits of Implementing Online Parking system

1. No need to waste time on looking for parking.
2. Reduction in time and fuel spent by road users searching for parking.
3. Less queues as motorists will be guided to parking areas.
4. Proper selection of vehicle according to the availability of parking space.
5. Online parking results in higher revenues and profitability for parking facilities.

The concept of the Internet of Things (IoT) started with things and identity communication devices. The devices could be tracked, controlled or monitored using remote computers connected through the Internet. There are distinct meanings of the Internet of Things. In short, it is defined as the things present in the physical world or in an environment are connected through wired or wireless connections with sensors or any embedded systems and connected to the network. These devices that are related are called smart devices or smart artifacts[5]. And it consists of intelligent machines that interact, communicate with other computers, environment, objects, etc. And these can be processed using such processors, such as network processors, MCU/MPU hybrid processors, etc. And by using some technologies called GPS, Wi-Fi, BT/BTLE, RFID etc. the devices are connected. At the auto-ID center, the Internet of Things was first launched in 1999 and first used by Kevin Ashton. This new technology promises to link all our surrounding stuff to a network and to communicate with each other with less human participation. The Internet of Things is only at the beginning and there is still no standard architecture today.

The process for booking an area for parking, parking vehicles in that parking slot and leaving the parking slot is discussed with the help of the proposed system flow chart.

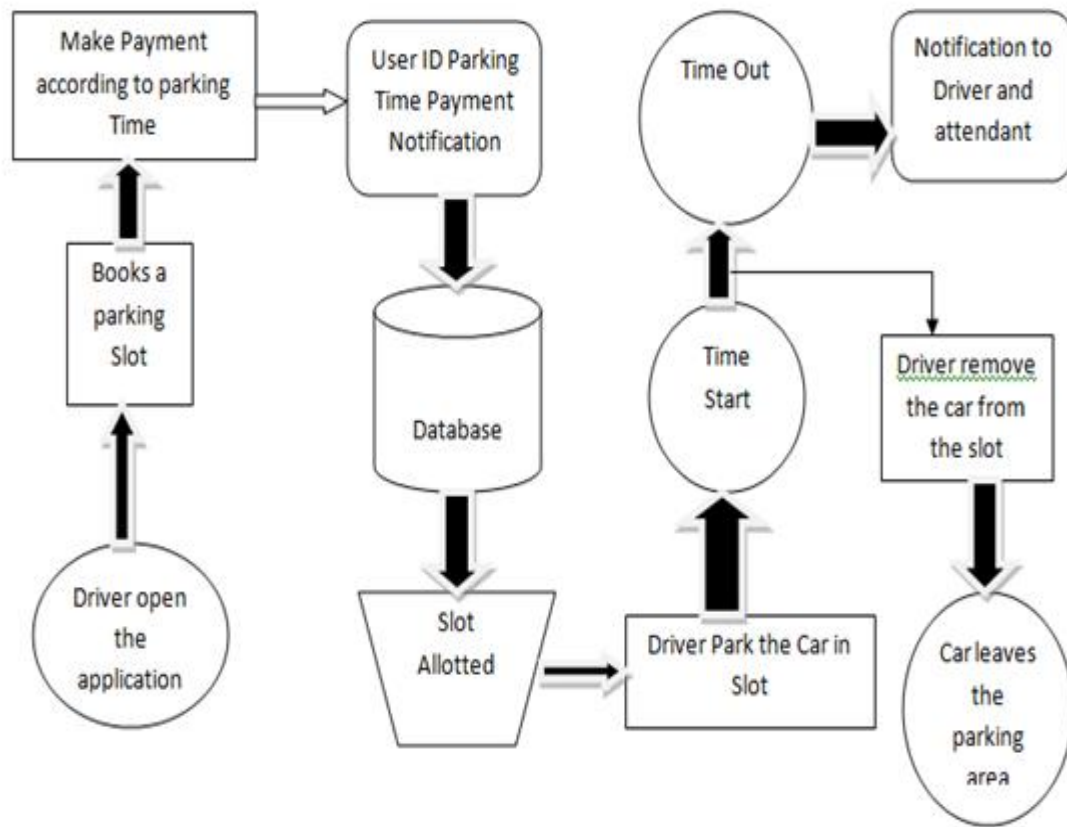


Fig 1: Block diagram of the parking system

Fig 1 shows the working block diagram of the parking system. Block diagram of the parking system shows every stage from availability checking of parking places to finally parking a vehicle in a parking slot which is vacant.

The parking system is done by implementing the advance parking system in the parking place of a shopping mall. The following steps that a car driver needs to follow the process to park their car by using an advanced parking system.

Step 1: First user has to install the advanced parking application on their mobile device.

Step 2: With the help of the mobile app search for a parking area on and around your destination.

Step 3: Particular parking areas should be selected by the user.

Step 4: Every parking slot should be searched in that particular parking area.

Step 5: Parking slots should be selected if a slot is vacant in that particular parking area.

Step 6: Period of time is selected for which Vehicle owner would like to park their car.

Step 7: Parking charges should be paid through e wallet or by making online payment through application by using their credit or debit card.

Step 8: Once the vehicle owner successfully parked their car in the slot which they are provided by application, Owner has to confirm their occupancy with the help of the mobile application[6].

Advantages of advance parking

1. There are many main advantages regarding the gate management model such as it is low cost and simple.
2. Management of gate service: RFID tag is also used for gate management. For example, a gate can be automatically opened using an RFID tag reader and tag of vehicle at gate.

Disadvantages of advance parking

1. No guidance system is available for drivers to guide towards vacant parking lots.
2. Advance Parking System access with Bluetooth[7].

II. CONCLUSION & DISCUSSION

The system can be used at all places starting from domestic to the industrial sectors. The simplicity in the usage of circuits helps it to be used by a large number of people, because people with less knowledge of hardware can also use it without facing any problem. This Automated car parking system enables the parking of vehicles and thus reduces the time taken to check the space to be used by displaying the spot where the space for parking is available on an LCD display by using IR sensors at the entrance. By using Infra-Red (IR) sensors, vacant parking slots are checked. The IR sensor is used in each parking slot. The infra-red sensor senses the car reflected in infra-red waves, covering a short distance. The IR sensor produces an IR light signal which, with the aid of an emitter, is emitted. To pass the data to the microcontroller, the collected data will be transmitted through the GSM module and the results will be displayed on the LED screen.. The output from the microprocessor depends on the light intensity calculation and that is dependent on when the slot is allocated.

III. REFERENCES

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