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SMART AND COOL CAR PARKING SYSTEM

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Abstract: Now a day's vehicle parking is an important issue and day by day its necessity is adding. In some countries we're still using the homemade vehicle parking system and that's why we're facing problems like destruction of time and energy, chancing free space around the parking ground when we need to situate our car which requires a good quantum of lighting. Another issue is chaos that happens while parking because there's no particular system anyone can situate anywhere that eventually causes damage to the vehicles while moving out or in the parking place. Security is also an issue there. To break these problems, we're introducing new car parking system. Control along the transmission path.

INTRODUCTION

Over the decades our country has been developed drastically, now we are in this state that we have a lot of well contacted roads, commercial building and increasing number of automobiles. While parking these automobiles in parking space we use the manual procedure of parking. Which most of thecases is unplanned and lack of discipline due to this,people can park their cars anywhere they want to, which creates a mess as people do not follow the particular cue most of the time. As a result of this, a huge traffic jam takes place in that place. While parking in and retrieving car due mismanagement cars can get dent by bumping with each other as there is lack of sufficient space. This leads to arguments, fights among people which sometimes makes huge traffic jam. This is also an economical loss as we need to repair our damaged car and also cars consume extra fuel while parking in or out. Traffic jam is an issue here as it kills our precious time. Due to this chaos in parking our valuable timegets wasted. It harms the students, office going staffs and emergency patients to a great extent. It also causes economical loss to commercial places like shopping malls, amusement parks as people aremore likely not to visit these places due to thisparking hazard. As we are advancing with time, the manual car parking system in commercial spaces is creating hurdle which is causing wastage of time and some economic losses as well. Therefore, we need a solution which can overcome these problems. Here we are introducing Automated Parking Systems as a solution of these problems as well as car parking system in commercial spaces is creating hurdle which is causing wastage of time and some economical losses as well. Therefore we need a solution which can overcome these problems. Here we are introducing Automated Car
Parking Systems as a solution of these problems as well as a replacement to the manual car parking systems at commercial spaces. This system not onlysaves time and money, it can also earn money by charging for parking spaces

PROBLEM STATEMENT

There's a huge business jam Infront of shopping promenades and hospitals. Because of indecorous selection of parking space and the guards are needed for allowing the space to the vehicle in parking system. Some guards need to be appointed for the whole job, it's expensive enough.

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RELATED WORK

Hanita Daud (1) has concentrated on smart parking reservation system using short communication services (SMS). Our model proposes enhanced security due to word demand. System can be used and applied anywhere due to ease of operation. **Ramesh (2)** has proposed a ZigBee and GSM grounded secure vehicle parking operation and reservation system. This model uses ZigBee along with snap for the security purpose. The exit word must be entered differently the stoner isn't allowed to get out of parking area until the correct word is entered.

Jorge Portilla (3) has proposed a smart parking service grounded on wireless detector networks. This model uses android operation which provides ease of operation and better interface. GPS helps in maximum content of available area.

VasantN.Bhonge(4) has proposed a wireless detector network and RFID for smart parking system. Which provides the information as well as attendants the motorists to the particular niche which displayed on TV and there's no need to change the being parking and it's compatible with the being wired networks. **Farahana (5)** has proposed the automatic parking operation system and parking figure collection grounded on number plate recognition. In this model the bus parking system will have lower commerce of humans and use glamorous cards and its bias. License plate recognition applies image processing and character recognition technology to identify vehicles by automatically reading the license.

PROPOSED SYSTEM

1. Web portal is provided for the advanced booking of empty slot.
2. Image processing for number plate recognition to allow the vehicle into the parking area.
3. Radio frequency identification technology that transmits and receive radio waves in order to communicate with RFID tags.
4. When car arrives at the gate number plate willbe recognized.

OBJECTIVES

Main objectives in an Intelligent Car Parking System are:

1. To provide easy parking that can save timeand traffic
2. Use of GPRS, the data of vacant parkingslot will send to servers
3. To book parking slot from home throughonline
4. To send alert messages in SMS

HARDWARE AND SOFTWAREREQUIREMENTS

Hardware Requirements:

a. Arduino
b. LCD Display
c. IR Sensors
d. Power supply
e. RFID
f. Nodemcu
g. Pc with OpenCV

Software Requirements:

1. Arduino IDE
2. Embedded C
3. Open CV
4. Python

TECHNICAL ASCEPTS

Web Development:

1. Front end:

➢ **HTML**

In frontal end we use HTML to lay out a document's structure and contents. It specifies what kind of information each item on a webpage contains- for case, the "P" HTML element indicates a paragraph.

➢ **CSS**

In frontal end CSS is used for formatting structured content. CSS foremost influences the sources, colors, perimeters, lines, height, range, background images, advanced positions and so numerous other aspects of the runner layout.

➢ **JavaScript**

JavaScript is generally used for creating web runners. It adds dynamic gets to the webpage and it implements special goods to the webpage. JavaScript help us to perform complex conduct and also empower the commerce of

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websites with callers.

2. Backend:

➢ **Python**

Python is used in backend web development. It has many powerful libraries with a large amount of pre-written code. Python offers many frameworks from which to choose from including bottle.py.

IMPLEMEMNTATION

Modules:

1. Website:

For the advance booking of parking space we are creating the website by using html, CSS JavaScript and python. In front end we are using html for layout, CSS for design and JavaScript for actions. In back end we are using python, flaskframework is used for both backend and frontend and backend to transfer and receive data. From this website it is easy to book the parking slots from anywhere.

2. Number Plate Recognition:

Number plate recognition is the technology thatuses a optimal character recognition to create a vehicle's data. It will capture the image from camera. from OCR algorithm (optical character recognition) recognize the number plate by openalpr library (open-source automatic license plate recognition) written in C++ with buildings in java, python etc. it analyzes the images and videosto identify license plates.

3. Payment operation:

Here we are using RFID cards for payment operation by scanning those cards it will fetch the details of the authorized users and deduct the amount-based parking time and minimum balance will be maintained in every cards.

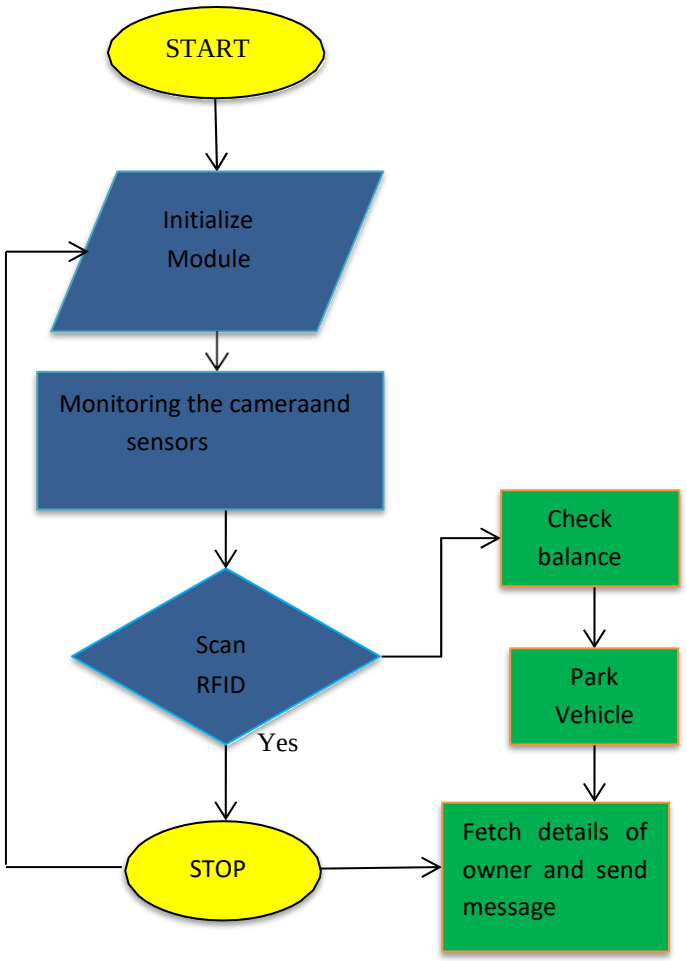
4. Slot detection using IR sensors:

IR sensors are used to check the status of the slot whether the slot is empty or full. Here we are detecting the vehicle using sensors. IR sensors gives zero if the slot is empty or it gives high if the slot is full.

5. User updation:

Here we get the alert message through SMS (short message service) about the availability of freeslots and the parking timings.

FLOW CHART



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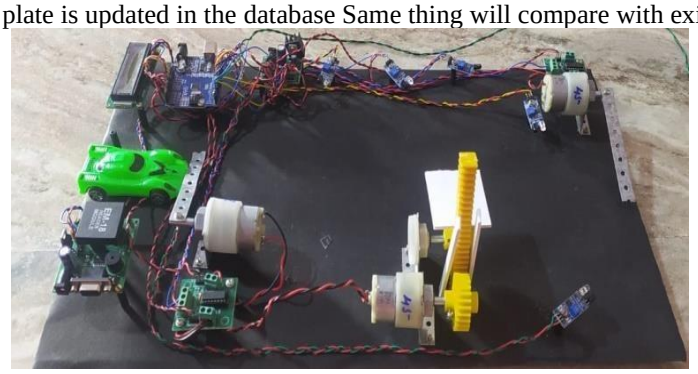
WORKING

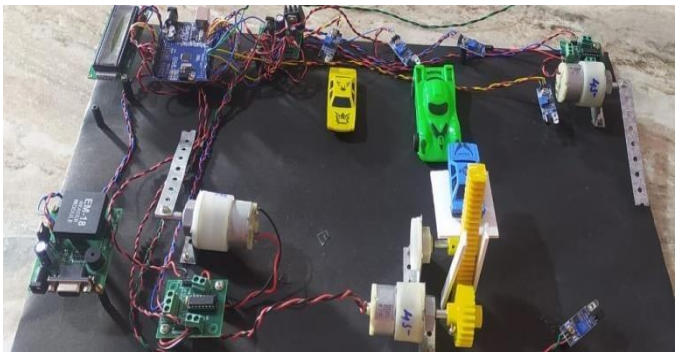
The detector used in this design is an infrared detector which determines whether the slot is enthralled or unoccupied. These detectors are connected to the Arduino. The affair of these detectors is transferred to the database through the Arduino. Once the database is streamlined the result is displayed on the videotape examiner at the entrances of the parking position. This result is displayed using the website URL which is streamlined every 5 seconds. The other module of CPMS is the payment gateway using RFID. There will be an RFID Label attached to every vehicle. As soon as the vehicle passes through the entry gate the RFID Reader reads the label and gets the Unique ID and also logs an entry into the database and capture the number plate of the vehicle and upon exit another RFID Reader reads the label and deducts money from the customer's regard grounded on the time spent in the parking lot and hence completes the sale. The tackle comprises of IR Detectors, Arduino and RFID Detectors which communicates with the Google App Engine and is rendered on colorful operations similar as the Website, Twitter bot and the Mobile Application. In this section, we will describe the stages of design perpetration.

The way follows on the design perpetration describe.

The design follows the following steps

1. The stoner registers an account in the central garçon and install the RFID label in the stoner auto. also, the stoner binds the RFID label with the stoner account.
2. When the auto is situated in a parking place, the mongrel RFID anthology at the parking lot will read the information from the RFID label installed in the car.
3. also, the anthology will shoot the RFID label information and anthology's information to wireless access point.
4. The wireless access point will transfer the information read from RFID label and the anthology's information to the central server using wired or wireless medium. also, that information is stored and streamlined in the database.
5. The database at central server has information which about which car is situated at which parking place. In addition, we can also use the database to estimate the vacant parking niche available in the parking space.
6. When the user wants to find their car, the user opens the mobile phone operation and signs in with their account. also, the user gets the position of their auto from central server. also, the database can also be used to find the vacant position for parking adjunct.
7. Once the parking place is identified in entry pointit will capture the number plate of the vehicle.
8. Rfid along with Number plate is updated in the database Same thing will compare with exit gate also.





ADVANTAGES

1. There's a lesser sense of security due to the fact that patrons don't actually walk to and from their own space.
2. It's largely doable for extremely small spots that are unfit to accommodate a conventional ramped parking structure.
3. There's no need for driving while looking for an available space.
4. Emigrations are greatly brought down and reduced.

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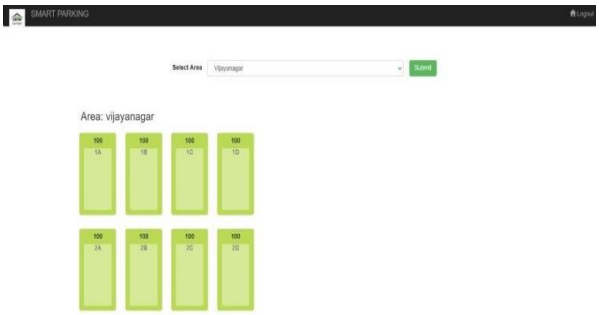
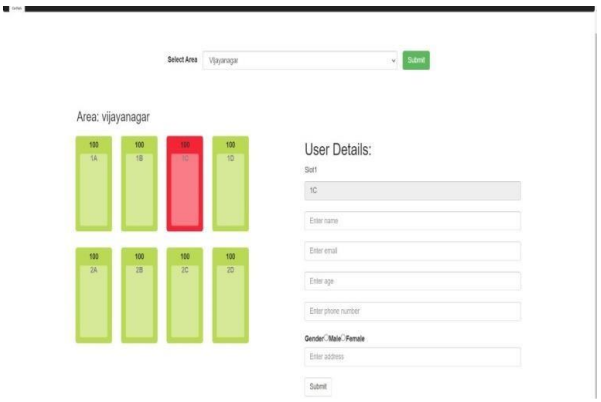
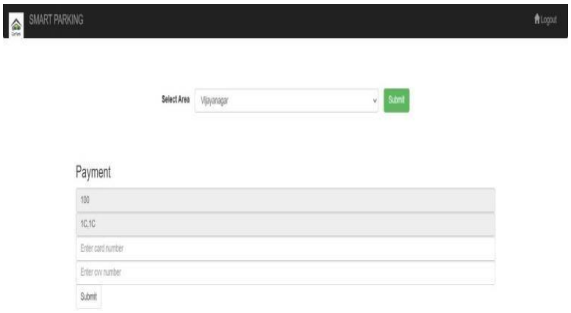
DISADVANTGES

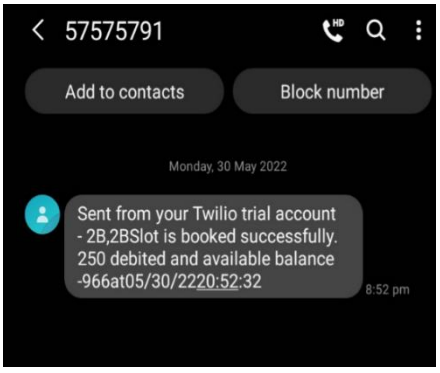
1. Use of spare systems will affect in a lesser cost.
2. It may be a bit confusing for strange druggies.
3. There may be a fear of breakdown.
4. It requires a conservation contract with the supplier.

RESULTS









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CONCLUSION

In this paper we enforced smart car parking system which helps the motorists to book the parking spaces in advance through online. Developing a smart car parking system within a megacity reduce the crowd and business jam.

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