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Advanced Embedded Automatic Car Parking Monitoring System

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Abstract: Our paper presents about the automatic car parking monitoring system which incorporates speed control and vehicle detection.This framework acquire data about accessible parking spot, process it and afterward put the car at certain position.To diminish the rate of street mischances this framework controls the speed of vehicle naturally in any basic zone,without real burden to driver. This proposed work is an endeavour to outline and create vehicle recognition that utilization GPS and GSM framework to avert robbery and to decide the correct area of vehicle.
Keywords: Car Parking, Speed Control, Vehicle Detection.

I. INTRODUCTION

Programmed Car Parking utilizing offerings are changing urban areas by enhancing foundation, making more proficient and cost efficient, improving open transportation, decreasing movement clog and keeping residents sheltered and more drew in .Its principle design is to deliver an answer for the car parking issue which the entire world is confronting as often as possible. This venture additionally incorporates a framework programmed speed control of vehicle and mischance shirking utilizing ultrasonic sensor. At whatever point any impediment is identified in running vehicle relies upon separate then it consequently control the speed of vehicle. The Ultrasonic sensor sends signals to an embedded board which sends it to motor to control the speed when any obstacle is detected . The separation up to which ultrasonic sensor can work might be up to 4 meter. At the point when any snag or vehicle identified by ultrasonic sensor framework, it will send flag to the embedded board. In the wake of getting this flag embedded board sends a signal to the motor to diminish the vehicle speed consequently which can control vehicle speed promptly. This present investigation work is to diagram and make a smart and solid security structure for vehicles that can turn away theft and give information on incidents. The system being delivered through the present work uses GPS and GSM advancement and can be made direct so it can be used as a piece of simplicity vehicles even in bikes.

II. PROBLEM STATEMENT

There is absence of appropriate free spaces for stopping because of expanded impromptu lodgings in numerous spots of the capital. There has been increment in the quantity of vehicles; however without adequate parking spots such developing quantities of vehicles have made wreckage in the city incorporating the expansion in congested driving conditions. It additionally require the costly prerequisites in the vehicles to give better security and it has billboards for controlling the speed of the vehicles, once in a while which can't see those billboards.

III.LITERATURE REVIEW

In this paper we are discussing about the automatic car parking monitoring system uses and its applications. By using these the different applications are:

A. Shopping malls
B. Railway stations
C. Multiplexes
D. Apartments

The overview of this project is by using this parking monitoring system we have lot of benefits compared to the existing technologies. Those are:
1) Time efficient and cost efficient
2) Less Pollution
3) To prevent accidents

4) Human interference is not required
5) It provides more security to vehicles

IV. COMPONENTS USED

The description of each component is as follows

A. Arduino Uno
It is the basic controller used in wireless colour indication system.

Fig: Arduino Uno

The features of this controller are:
1) Operating voltage   : 5v
2) Digital I/O pins   : 14
3) Analog input pins   : 6
4) Input voltage   : 6-20v
5) Clock speed   : 16MHz
6) Flash memory   : 32 KB

B. Ultrasonic Sensor
The Ultrasonic sensor is utilized with Arduino so as to compute separations from objects.So, in the event that we begin with the ultrasonic sensor it's an IC that works by sending a ultrasonic heartbeat at around 40 KHz.It at that point sits tight and tunes in for the beat to resound back,calculating the time taken in microseconds.It needs a 5v control supply to run.

Fig:Ultrasonic Sensor

C. LCD Display
A Liquid Crystal Display (LCD) is a level board show or other electronically tweaked optical gadget that uses the light regulating properties of fluid precious stone. Fluid gems does not emanates light specifically, pictures in shading or monochrome. Here we are utilizing the 16*2 LCD show.
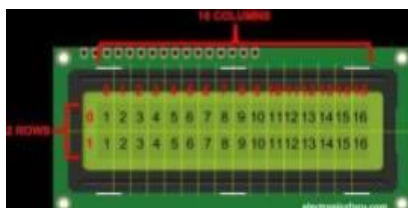

Fig: 16*2 LCD Display

D. GSM

The Arduino GSM empowers an Arduino board to do the vast majority of the tasks we can do with a GSM telephone: Place and get voice calls, send and get sms and interface with the web over a GPRS organize. The GSM has a modem that exchanges information from a serial port to the GSM arrange. It is likewise used to send the message through our cell phones.

Fig: Arduino-GSM

E. GPS

Arduino GPS is a GPS module bread board intended for Global Positioning System beneficiary with SD interface. It is simple to use for recording the position information into SD card. By utilizing GPS Arduino we discover the area of the vehicle.

Fig: Arduino-GPS

V. METHODOLOGY

Here we are utilizing two IR TX-RX sets are utilized as a part of this undertaking to recognize the passage or exit of the vehicles into or out of park. These two IR TX-RX sets are masterminded either side of the door. The TX-RX are organized eye to eye over the street so that the RX ought to get IR flag continuously.LED is put at passage and exit of entryway to demonstrate to open the door or not .Whenever the mains are exchanged ON, the LCD shows the message "Parking spot for 10 vehicles". The number demonstrates the most extreme limit of stop in this task. At whatever point an auto comes before the entryway, the IR flag gets disturbed and the microcontroller will open the door by turning the DC engine. The entryway will be shut simply after the vehicle leaves the second IR combine since the microcontroller should know whether the vehicle left the door or not. At the point when any deterrent or vehicle distinguished by ultrasonic sensor framework it will send signal to the embedded board. In the wake of getting the signal implanted board send signal to the engine to diminish the speed of the vehicle consequently which can control the vehicle speed instantly. Vehicle is controlled naturally with no manual task when the vehicle is at the four meter remove far from the front vehicle. GSM framework is additionally introduced in the vehicle for sending the data to the proprietor of the vehicle since GPS framework can get the vehicle area data from satellites. This total framework is planned taking in thought the low range vehicles to give them extraordinary security.

VI. CONCLUSION

Car Parking System that is discussed here is automated without human being that means if the driver leaves it at the starting of the system the elevator takes the car to the parking slot. Speed control of the vehicles using ultrasonic sensor automatically without manual operation is an emerging field and there is a huge scope for research and development. This project can provide better security and can be expected that it can be easily implemented in the vehicle systems using GSM and GPS in the mere future.

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