Design and Fabrication of Automatic Speed Controller for Automobile

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ABSTRACT

This project demonstrates idea of accident prevent in hill area and other danger area. In this system we use a transmitter antenna that placed on critical region and it send it particular frequency of speed in certain region. If any vehicle receive this frequency of speed and speed of vehicle automatically set on particular speed of that place. This is very efficient and power full idea. This idea comes in my mind for saving of Fuel energy and provide perfect controlling of vehicle driver. This system provides automatic speed control in hazard region.

In this project we demonstrate the idea of advance accident avoiding vehicle system. In this project we make a vehicle that control by advance technology. And we interface the RF with the help of encoder and decoder IC that sense hazard field & distance. According to distance it take an appropriate decision and according to condition it automatically control the speed of vehicle and it sense the critical condition of distance and it stop. My idea is very special idea for accident prevention because it sense the condition of obstacle and it weep the buzzer and intimation.

Keywords: automatic speed control

INTRODUCTION

In today's world, the rate of accidents are increasing on a daily basis, vehicle's speed should be controlled up to a larger possible level. Many accidents occurring in India are results of lack of control of speed and violation of the road rules and regulations. For the same reason, various speed limits are imposed to decrease the number of accidents. Unfortunately, drivers are not taking these speed limits imposed on the roads seriously and they always ignore them. The accidents can be prevented by the adoption of measures such as Traffic management, improving quality of road infrastructure and safer vehicles. To ensure that there is no or decrease in the number of accidents and to improvise the road safety, various techniques to control the speeds such control of speed in school and zones nearby hospitals by using RF receiver. In such a dynamic world, most of the accidents occurs due to breaking of the rules of the road and over speeding. As it can be seen that the rate of accidents are increasing year by year due to more vehicles in ground and heavy traffic which cause congestion. The government has already taken many steps to prevent these kinds of things, but they are not enough. Most of the manufactures has already developed a laser based control system but it involves higher cost associated with it. Also there is problem associated using this system is that whenever human crosses the road it is not able to detect properly so we have to develop a new system to control these things in a simple way by the use of IR module which has some drawbacks which is it can works under line of sight only. So we can choose RF module. The transmitter(RF) is placed at the speed limiting associated areas and RF receiver is attached in the system that is placed inside the vehicle. RF transmitter is used to transfer the involved information about the speed of the zone to the receiver which is interfaced with microcontroller. The current speed will be sensed by the proximity sensor using dc motor that also sends attached information to the controller. The attached controller compares both the speed, if speed of vehicle is greater than speed limit of the area then message is given to the driver through LCD Display to reduce the speed. And if driver does not perform the action to lower the vehicle's speed, the control is transferd automatically. But the driver again operates it manually as before and exceeds the limited speed the message is given to the nearest RTO Office through GSM. The message includes the details such as current speed of the vehicle and number of the vehicle.

Literature Review:-

Ankita Mishra et al. [1] worked on speed control system by the use of RF design. The main purpose is to design the controller for smart display which is meant for the vehicle's speed control and to monitor the speed zones which have speed limits, and which can operate on an associated embedded system. Smart Display & Control (SDC) can be custom designed so that they can fit into dashboard of the vehicle, and display the information available on the vehicle.

Vinod Rao et al. [2] has worked on vehicle's speed control using RF, detection of obstacle and prevention of accidents. Whenever the vehicle enters within the speed limit zone, the speed of the vehicle is controlled by the receiving of signal, i.e.., each and every time the speed of the vehicle is decreased to some cutoff value and is kept constant to that speed until the vehicle moves outside of the speed limiting zone, and then the vehicle's speed is accelerated automatically. It detects the Obstacles in between and prevents the Accidents by Stopping of the Vehicle.

Gummarekula Sattibabu et al. [3] worked on control of vehicle's speed using with wireless attached in the vehicle road speed limit sign. The objective is to design an Electronic Display controller that is meant for the control of the speed of the vehicle and to monitor the speed zones, which operates on an embedded system and that can be custom designed to fit into a vehicle's dashboard to display information on the vehicle. This system if adopted by some state can effectively reduce the number of road accidents caused by speeding vehicles losing control of the vehicle at speed breakers or by driver's negligence towards traffic signals.

Deepa B Chavan et al. [4] has worked on automatic speed controller through RF. The main objective of the system is to control the speed of the vehicle automatically whenever it comes in the range of the speed zone of some limit or at some particular speed zone.

Fatema Tahsen et al. [5] worked on automatic speed control of the vehicle by the use of RF and prevent accidents.

Whenever the vehicle enters within the speed zone, the speed of the vehicle is controlled by receiving of the signal i.e. every time the speed of the vehicle is decreased to some cutoff value and them again kept constant until the vehicle exit's the speed zone, and then the vehicle can get accelerated by itself. The ultrasonic sensor system continuously keep sending the signals and monitors that of any vehicle or other obstacles that are in front of the car. The distance of the working of ultrasonic sensor is limited to 4 meter. As soon as any obstacle or vehicle is detected by the ultrasonic sensor system it will send signal to the arduino. After receiving of this signal arduino sends a revert signal to the motor of the driver to stop the vehicle immediately.

Jyothi Kameswari et al. [6] has worked on speed control and for the vehicle. The vehicle can be controlled at the required places when we deploy the transmitters that are attached to the system and send data frames which contains fields with maximum speed and time for which the limitation of the speed is to be imposed.

Vengadesh et al. [7] has worked on automatic speed control of automobile using the technologies such as RF and GSM. The controller is used to compare the speed. If it exceeds the limited speed value of the zone the controller send alert to the driver and controls are taken automatically. If they do not respond the message then an information along with the vehicle number is transmitted to the nearest police station of that area by the use of GSM and penalty amount is collected in the nearest toll gate.

Soni Kumari et al. [8] worked on review of automatic speed control using RFID. One RFID reader is inside the vehicle which reads the RFID tag which is placed either at speed limit sign zone or at traffic light. A controlling module in vehicle then takes the decision and control the speed accordingly.

S Nagakishore Bhavanam et al. [9] has worked on automatic speed control using multi sensors. The main objective is to develop a system which controls the speed using RF technology. Various types of sensors are attached to the units and accordingly the work is performed.

NEED FOR SYSTEM:
MODE OF PROJECT:
There are three mode of this project
➤ **To design RF region**: In this mode we use the RF module and transmitter that send a frequency signal of speed that receive by vehicle.

➤ **Vehicle checker mode**: In this mode we use the switch for setting the critical condition and it can be change.

➤ **Speed control**:-In this mode we sense the distance and according to distance we generate the pwm pulse that control the speed of vehicle and display in lcd.

➤ **Obstacle sensing**:-In this case we use the obstacle sensor that sense the condition of obstacle and provide intimation
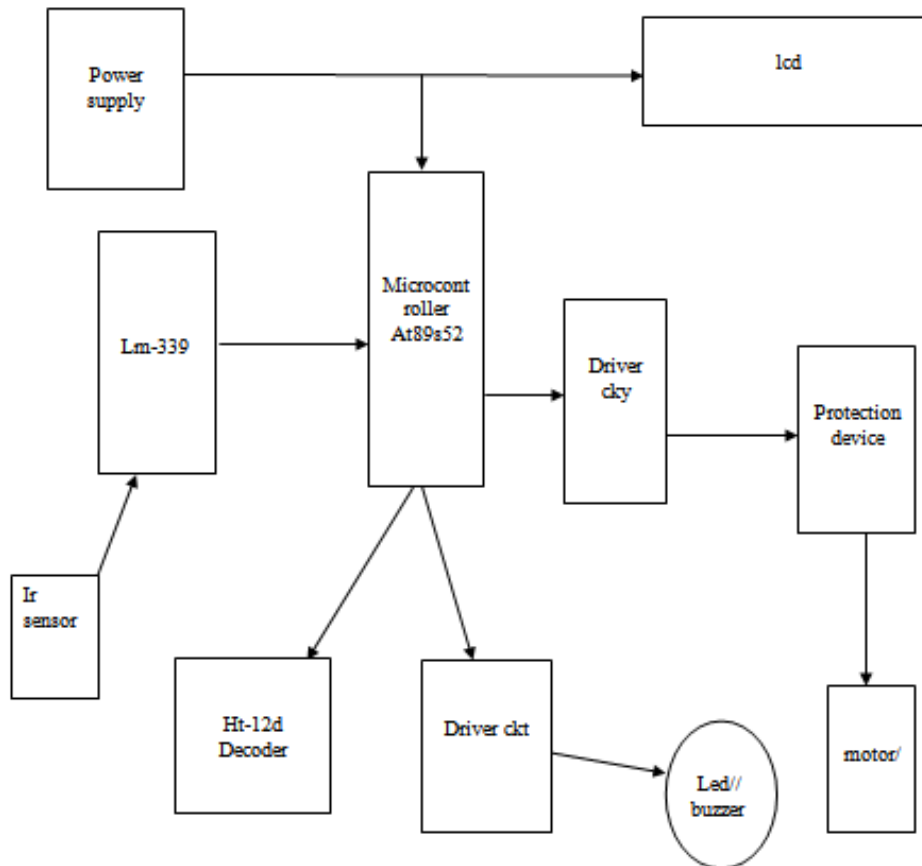
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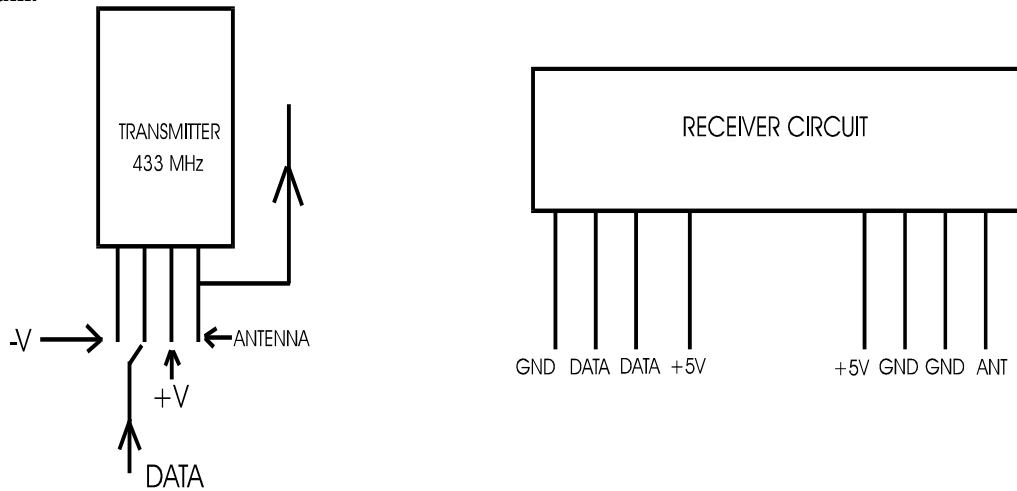
HARDWARE REQUIREMENT
1. Ultrasonic sensor
2. Microcontroller
3. Eye Blink Sensor
4. Power Supply
5. LCD Display
6. DC Motor
7. Rectifier
8. Capacitor

ADVANCE FEATURE:-
1. **Speed control automatically according to distance.**
2. **If distance is shorter to shorter then speed automatically decrease and in vehicle stop.**

PERFORMANCE & EVOLUTION CRITERIA:-
In the project done we have tried best efforts of technical skill. Our project is prediction of new technology that is useful in future. This project demonstrate the proper working of system and provide complete character.

REFERENCE:-

[1] Ankita Mishra, Jyoti Solanki "Design of RF based speed control system for vehicles," International Journal of Advanced Research in Computer and Communication Engineering, Vol. 1, No 8, 2012.

[2] Vinod Rao, Saketh Kuma, "Smart Zone Based Vehicle Speed Control Using RF and Obstacle Detection and Accident Prevention," International Journal of Emerging Technology and Advanced Engineering, Vol.4, No.3, 2014.

[3] Gummarekula Sattibabu, Satyanarayan , "Automatic Vehicle Speed Control With Wireless In-Vehicle Road Sign Delivery System Using ARM 7," International Journal Of Technology Enhancements And Emerging Engineering Research, Vol 2, No. 8, 2014.

[4] Deepa B Chavan, Abdul Rahim Makandar , "Automatic Vehicle Speed Reduction System Using Rf Technology," International Journal of Engineering Research and Applications, Vol.4, No.4, 2014.

[5] Fatema Tahsen Huda Munira, "Automatic speed controller for automobile, 'Journal of Engineering Research and Applications, 2015 Journal of Engineering Research and Applications, 2015

[6] Jyothi Kameswari, Satwik, "A Design Model for Automatic Vehicle Speed Controller," International Journal of Computer Applications, Vol.35, No.9, 2011.

[7] A. Vengadesh, K. Sekar," AUTOMATIC SPEED CONTROL OF VEHICLE IN RESTRICTED AREAS USING RF AND GSM," International Research Journal of Engineering and Technology (IRJET), Vol. 02, Issue 9, 2015.

[8] Soni Kumari, Jamal Ahmed," Review of automatic speed control using RFID,"

[9] S Nagakishore Bhavanam, Vasuja Devi M," International Conference on Innovations in Electronics and Communication Engineering, 2014