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→ ABSTRACT

- The main aim of the project to develop a system automatic speed control of vehicle and accident avoidance using ultrasonic sensor.
- Whenever any obstacle is detected in running vehicle depends on distance automatically control the speed of vehicle.
- The ultrasonic sensor system continuously sends signals and monitors any car or other obstacles are in front of car.
- The distance up to which ultrasonic sensor can work may be up to 8 meter.
- When any obstacle or vehicle detected by ultrasonic sensor system it will send signal to the embedded board.
- After receiving this signal embedded board sends a signal to the motor to reduce the car speed automatically which can control car speed immediately.

→ ABSTRACT

- Vehicle is controlled automatically without any manual operation when the vehicle is at 8 meter distance away from the front vehicle.
- Also give alarm to alert to the driver.
- Many accidents at High-ways are taking place due to the close running of vehicles, all of sudden, if the in front vehicle driver reduces the speed or applied breaks, then it is quite difficult to the following vehicle driver to control his vehicle, resulting accident.
- To avoid this kind of accident, the warning system, which contains alarm and display system can arrange at rear side of each and every vehicle.

INTRODUCTION

- Tracking in India is mainly used by transport systems, taxi companies, traffic operators. Taxi operators use this to estimate how far the vehicle is from a particular area and send this information to call centres and they can inform general public about the distance of the taxi location and time it takes come to them. Another use is for traffic police if this system is located in every vehicle they can estimate the traffic by looking on the map and if any accident is detected then they can route the traffic in to another way.
- This new technology, popularly called vehicle Tracking Systems which created many wonders in the security of the vehicle. This hardware is fitted on to the vehicle in such a manner that it is not visible to anyone who is inside or outside of the vehicle. Thus it is used as a covert unit which continuously or by any interrupt to the system, sends the location data to the monitoring unit.
- Many accidents at High-ways are taking place due to the close running of vehicles, all of sudden, if the in front vehicle driver reduces the speed or applied breaks, then it is quite difficult to the following vehicle driver to control his vehicle, resulting accident. To avoid this kind of accident, the warning system, which contains alarm and display system can arrange at rear side of each and every vehicle.



PROBLEM IDENTIFICATION

- It is a self-seeking state of affairs that Indian roads witness 415 deaths per day in road accidents which is highest in the world and 3.5 lacks crippled annually.
- Unfortunately we stand at position 1 in the road accidents in the world. India is one of busiest traffic countries and this system can control many of the traffic problems.



Project Objectives

- Tracking in India is mainly used by transport systems, taxi companies, and traffic operators.
- Taxi operators use this to estimate how far the vehicle is from a particular area and send this information to call centres and they can inform general public about the distance of the taxi location and time it takes come to them.
- Another use is for traffic police if this system is located in every vehicle they can estimate the traffic by looking on the map and if any accident is detected then they can route the traffic in to another way.
- The ultrasonic sensor system continuously sends signals and monitors any car or other obstacles are in front of car.



→ LITERATURE REVIEW

- This information provides overview on the researcher's problem: "Is it possible to create a simple, effective and efficient ultrasonic distance measuring device." This introduces the main problem and significance of the researcher's study, or the main focus of this study. It presents the literature and studies which are related the present investigation, and serves as the basis for conceptualizing this study and give direction to the investigation. In regards to the way of measuring distance without contact, Md. ShamsulArefin& TajrianMollick's "Design of an Ultrasonic Distance Meter" stated that One way is to use ultrasonic waves at 40 kHz for distance measurement.
- Ultrasonic measure the amount of time taken for a pulse of sound to travel to a particular surface and return as the reflected echo. By using it, they can measure distance up to 8 meters.
- Furthermore, M. J Rueger, his study aimed at improving short-range distance meters using 2 or more instruments. His study also discussed in detail how to reduce systematic errors in short range equipment, and also included suggestions on the accuracy specification of the instruments.

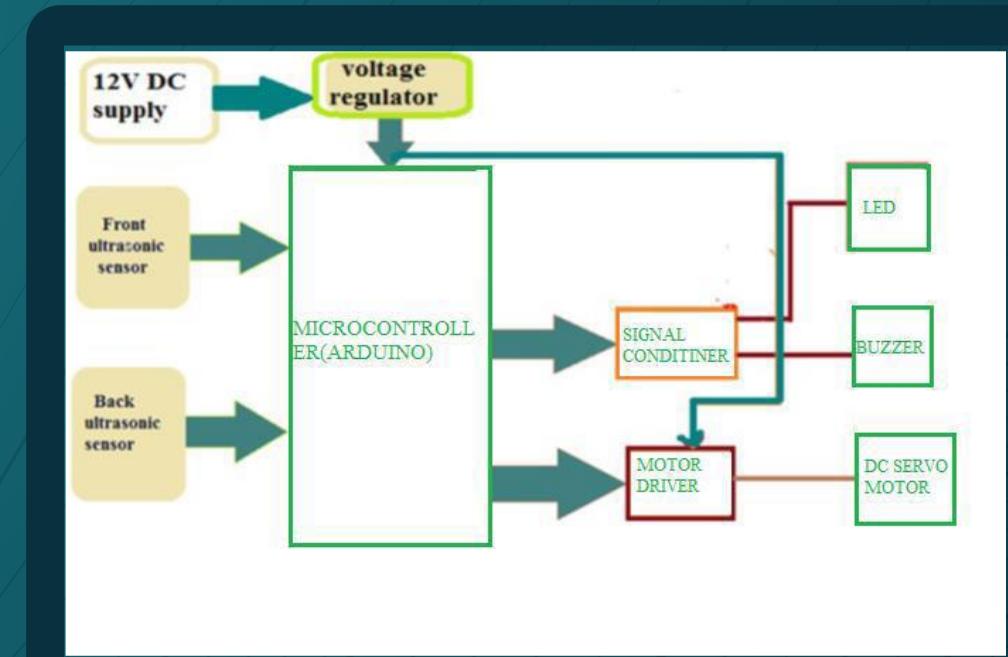


→ LITERATURE REVIEW

- Czajkowski, S. B., mentioned in his "Sonar distance sensing apparatus" study, determined that reflected signals are received back and are received by a transducer then converted into electric measurement signals, while also using a time measurement device to determine the time lapse between radiation of a pulse and receipt of a reflected signal so as to provide a distance signal which will represent the distance between apparatus and the surface which will trigger the display to give out the distance reading.
- Besides, the study "Distance measuring device for control" by Hils. T., studied and adapted sonar systems specially for anti-collision, which is relevant to the researcher's problem in a way that the EDM can only determine the correct distance measured when there is an obstacle that reflects the sound waves.

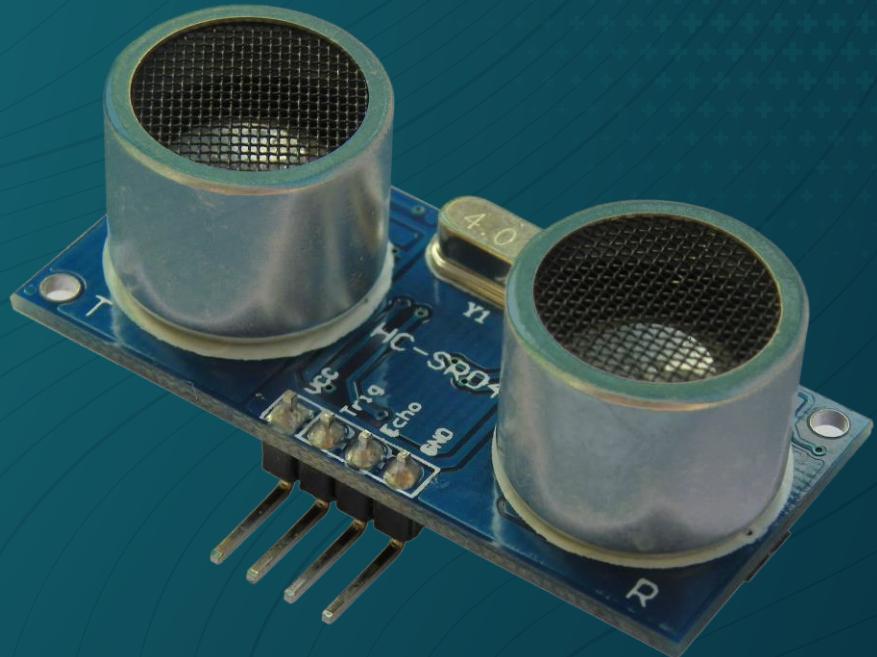
BLOCK DIAGRAM :-

Automatic Speed Control & Accident Avoidance of Vehicle



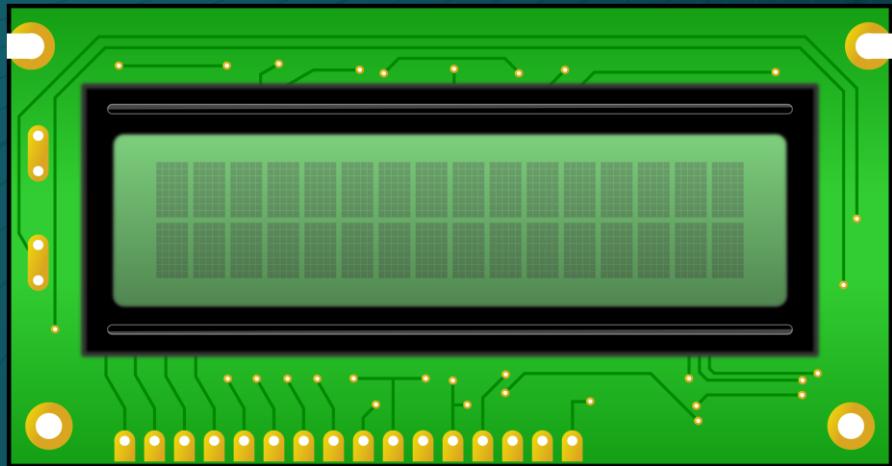
A picture is worth a thousand words

Ultrasonic sensors emit short, high-frequency sound pulses at regular intervals. These propagate in the air at the velocity of sound. If they strike an object, then they are reflected back as echo signals to the sensor, which itself computes the distance to the target based on the time-span between emitting the signal and receiving the echo. As the distance to an object is determined by measuring the time of flight and not by the intensity of the sound, ultrasonic sensors are excellent at suppressing background interference.



→ LCD Display:-

A 16x2 LCD means it can display 16 characters per line and there are 2 such lines. In this LCD each character is displayed in 5x7 pixel matrix. The 16 x 2 intelligent alphanumeric dot matrix display is capable of displaying 224 different characters and symbols. This LCD has two registers, namely, Command and Data..

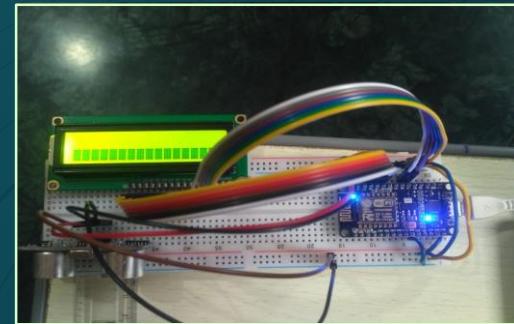
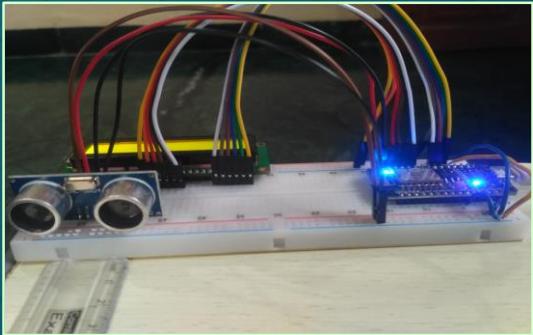
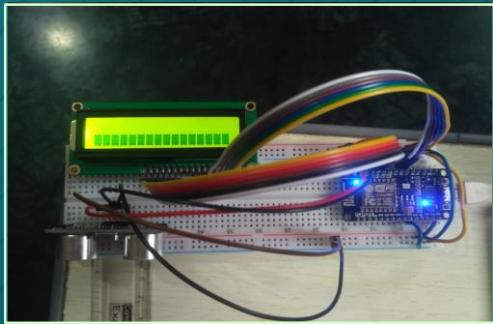




→ WORKING

- When the vehicle enters in the normal area it speed does not decrease and it goes normally no action is performed, when the vehicle enters into the restricted areas that means it enters into the speed limiting, when ever it enters the transmitter module just send an information that contains how much speed a vehicle can go inside the speed limited region
- Then the signal or information is received by the receiver and the signal acquired from the speed meter is also given to the controller, the signal is basically analog in nature that will be converted into digital so only the micro controller able to process the signal.
- The signal from the transmitter and the speed meter is compared by the controller.in this there are two case : first, the current speed is less than the transmitted speed the vehicle goes normally no action is required, second, the information from the speed meter is greater than the transmitted speed by the transmitter module the controller waits for few second whether the driver reduce the speed to the below value if the driver does not reduce the speed means it automatically takes the control and reduce the speed according to it.at the same time the information is transmitted.

→ LCD display with pin out



→ APPLICATIONS

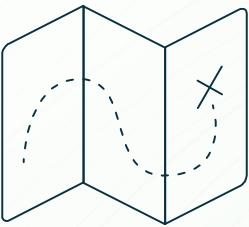
The device has its application in many fields.

- It can be used in car backing system,
- It can be used in automation and robotics,
- It can be used in transport systems, taxi companies, traffic operators.

→ Advantages

This system has a large number of advantages:

- Smooth traffic flow due to lane driving.
- Speed is maintained at a constant 30 km/h This speed is fast enough for travelling and slow enough for the driver to escape unhurt in a highly unlikely accident.
- Tireless driving devoid of the stress involved in long distance driving.
- Driving for the physically challenged.
- Accident prevention due to automatic collision control.
- Easily implementable as the parts required are available in any garage.



Thanks!

Any questions?