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Distance based Accident Avoidance System using Arduino

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Abstract: ***In this paper, we introduce a new technique in automobile technology about how to keep 10 meter distance between one vehicle and another vehicle, so that the vehicle don't crash or cause any traffic problem. The aim of the system is to prevent accidents mainly due to not knowing the following distance (i.e., 10m) between one vehicle and another vehicle. The proposed system comprises an idea of having safety while reversing a vehicle, detects any object within the following distance, and displays the distance between one vehicle and another vehicle to the driver using LCD. We have used ultrasonic sensors to detect any vehicle on both front and back side of our vehicle. This system is also used in large crane which is mainly operated in harbor area. If the car reaches 10 meter, green color light will glow. At 8 meter distance yellow color light will glow. When it reaches 5 meter distance red color light will glow. The distance is also indicated to the vehicle driver. By this proposed system, the safety is maintained on crowded areas and in vehicle reversing process.***

Index terms-*Ultrasonic sensors, Arduino, Breadboard, LCD.*

1 Introduction:

1.1 Facts and Stats:

According to the world accident report, India has the very highest number of road accidents within the world. Road accidents have earned India a dubious distinction. With over 130,000 deaths annually, the country has overtaken China and now has the worst road traffic accident rate worldwide. As many as 1, 39, 091 people lost their lives in 4, 40,042 road accidents in the country last year. The statistics released by the National Crime Records Bureau (NCRB) 1, 18, 533 of the victims were male. They include 11,571 pedestrians. The 28 States together accounted for 1, 36, 771 deaths and the seven Union Territories for the remaining. Tamil Nadu tops the list of with 16,175 deaths in 67,757 accidents, followed by Uttar Pradesh with 15,109 deaths in 24,478 accidents. Andhra Pradesh is third with 14,966 deaths in 39,344 accidents and Maharashtra fourth with 13,936 deaths in 45,247 accidents. The Capital city of Delhi accounts for about 1,866 deaths in 6,937 accidents. The states in India like Tamil Nadu, Uttar Pradesh and Andhra Pradesh accounted annually for 15.4%, 10.3% and 10.1% of the road accidents in the country.

Reason:

There is no way to determine the exact distance of automobiles travelling behind as that will be responsible for accident

- We are not sure that we will have a safe travel to reach our destination-even a small distraction may bad to an accident
- Drowsiness have larger role in accidents. Most of the accidents occurs due to driven inattention since they doesn't have a way to get alert
- According to the national crime record, India bears nearly 30% of the world's total accident rates

Man at Risk:

- Being specific, people in ages between 18-29 is easily distracted and was responsible for many accidents in recent days
- Men are responsible for major accident rates then women because their ratio varies gradually as 10:1
- Adults are easily distracted since they can measure the exact distance of the vehicle of moving from and coming behind them. They

feel that they are safe. But it was no so bad that it was man's attitude and when the speed increases at bit reads to major accidents.

System Introduction:

The accident avoidance system helps to avoid the regular accidents that will normally occurring on highways and in city traffic.

These accidents are mainly happened by distraction, unconsciousness, distance unknown between our vehicles. So let us consider the Indian roads and we will have 2 ultrasonic sensors where one is placed in the front and another one behind the car. Due to this sensor, we can calculate the distance of other automobiles nearing us. Thus we can locate other cars and we can protect ourselves from accidents. The diagrammatic representation of the scenario is explained as

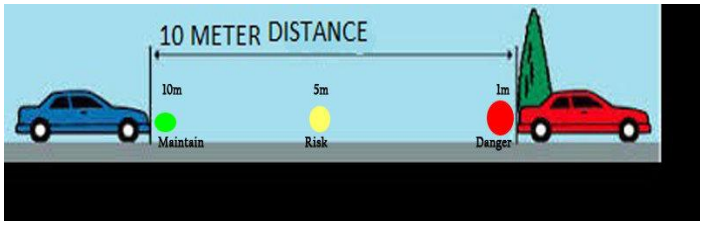

Fig:1 Proposed Model

Hardware description:

Arduino is a prototyping platform for controlling many devices. Through Arduino, we can built many prototypes that we imagine. A basic Arduino kit which forms the connection between the LCD and Ultrasonic sensor. Here the LCD is the source to display the output. Through this LCD display we can be able to see the distance of the vehicles that comes. Ultrasonic sensor is to sense the vehicles that nears about to 10 meters Bread boards which allows to implement all the connections accompained by the three LEDs.

Ultrasonic sensor:

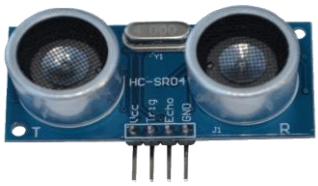

Fig:2 Ultrasonic Sensor

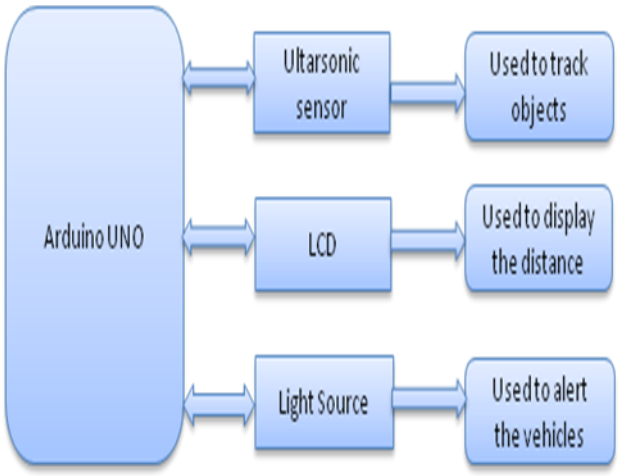

Fig: 4 Block diagram

Algorithm:

- Connections are made to the Arduino, LCD, ultrasonic sensor, LED.
- Ultrasonic sensor fixed in our car and it normally senses the car which is nearest to us on both front and back side
- At the distance of 10 meter the green color light will show the notification
- When the car reaches 8meter the yellow color light alerts us
- When the car reaches 5meter the red color light alerts us we are in danger zone
- The distance between one vehicle and another vehicle was displayed in LCD

- There is no notification takes thus it denotes we are in safer side
- END

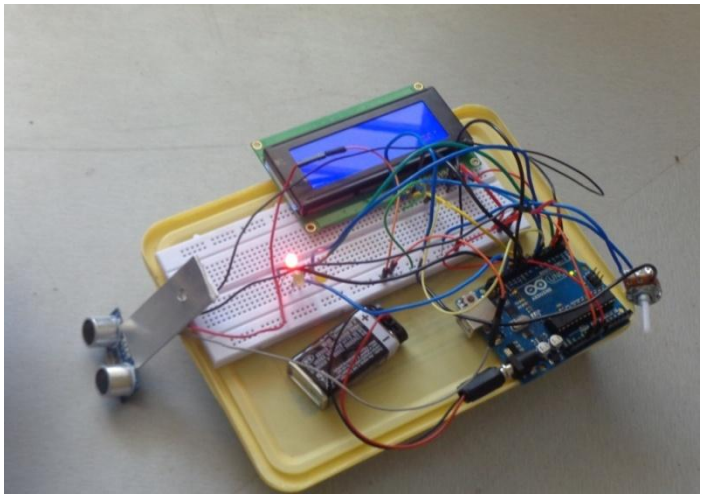

Fig: 5 Prototype built

Working:

The basic idea behind this project is to avoid acciendents. It is a precautionary measure that alerts the driver .the initial stage begins from the ultrasonic sensor that identifies the vehicle in the front and back side. If the car reaches 10 meter, green color light will glow that will show the notification. At 8 meter distance yellow color light will alerts us. When it reaches 5 meter distance red color light will alerts us we are in danger zone.At the same time the distance between one vehicle and another vehicle was displayed in LCD. Wire connections are made from the bread board to the LCD.aurdino kit to the ultrasonic sensors and finally bread board to the aurdino kit. This project will make easy calculation of an distance between one vehicle and another vehicle for the driver.

Conclusion and Future Work:

In this paper we proposed and implement the accident avoidence system.Using this system we may avoid many accidents happened due to the following system .The system comprises,very low cost components such as ultrasonic sensor,LCD and LEDs. This system might have many advantage such as,

- Use the knows the distance about following vehicle
- In future, we are going to reduce the speed of one vehicle according to the following distance of other vehicle.

By this system, we may prevent many accidents and INDIA will become a accident less country

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BIOGRAPHIES

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