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Accident Alert and Avoidance Smart Vehicle

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ABSTRACT: As from many sources we can see that the performance and utilization of the any kind of automobiles is increasing. The safety consideration. Here we tend to accident avoidance, automatic warning systems and control tasks according to the driver's flexibility. Here we are using ultrasonic sensor that detect any obstacle and IR sensor that detects pot poles and gives confirmation to the person driving. The person gets alerted by seeing it through LED's. The main aim of this project is to develop a system to provide the prior information that is required preventing from accidents as it gives it to the control unit. This intends to give big alerting sounds when any object comes in contact with the vehicle and if any potholes are detected which makes it much easier. When in case of any accident, using GSM module we can take the activity and send a message to their personal emergency contacts about the information of the vehicle. The focus of this project is to avoid any kind of mishaps and indicates it as well. This helps the driver to slow-down or change the position of the vehicle so that it can avoid any sort of accidents.

KEYWORDS: Sensors, Accident Avoidance, Alarms, Warning systems, emergency.

I. INTRODUCTION

In present days the rate of accidents can be increased rapidly. Due to employment the usage of vehicles like cars, bikes can be increased, because of this reason the accidents can be happened due to over speed, negligence, and alcohol consumption. People are under risk because of their over speed, due to unavailability of advanced techniques, the rate of accidents can't be decreased. The main objective is to control the accidents by sending a message to the registered mobile using wireless communications techniques and also alerting the person inside the vehicle before any of the accidents occurring. When an accident occurs at a city, the message is sent to the registered mobile through GSM module in less time. Arduino is the heart of the system which helps in transferring the message to different devices in the system. Here we are using many new evolved technologies like sensors, buzzers, LED's, GPS systems and GSM modules. The proposed system will check whether an accident has occurred and notifies to nearest medical centers and registered mobile numbers about the place of accident using GSM and GPS modules, and tells the person whether there are any potholes ahead and any obstacle is going to come in contact. Ultrasonic sensor is able to measure the distance from the ground of selected points of a motor vehicle. A constrained optimization technique is employed to obtain reflected pulses that are easily detectable by means of a threshold comparator. If the distance is less than threshold value then danger is shown with a red light, blinks at that time.

II. ALERTING THE PERSON INSIDE THE VEHICLE THROUGH LED

This work projected an automated Pothole identification and detection system which helps the motive force in fending off route- holes on the roads, with the aid of giving earlier warnings. Warnings given by like LED, if the driving vehicle is coming near a pothole or driving vehicle are getting warning about superior to what street has how many potholes. It may additionally cause road accident. While driving in the night times simply the headlights may not be enough helping for driver.

This system uses ultrasonic sensor to sensing the potholes and humps and which quantity the height and deepness of the potholes based on the acknowledged signals. The system tells how the potholes are detected, the distance between the vehicle points and the ground. It checks for the potholes or any hazardous speed breakers that effects the vehicle and that almost intends to accidents. If the values that we give from the ground to the vehicle is called as the threshold value, that helps us to know that the value is more or less and tells the driver about it.

ALERTING THE PERSON INSIDE THE VEHICLE THROUGH BUZZER.

With the higher density of cars on the roads and city streets, it is sometimes difficult for the human drivers to distinguish immediately and clearly identify static and moving objects and obstacles. Consequently, reliable obstacle detection systems are needed to operate in real-time to detect any potential risk of collision.

The ultrasonic sensors are only used here that is kept upon a device that is called as servo motor, which helps the objects that are kept upon move in 360 degrees. this process helps us to check for any moving or stable vehicle that is there around. After detecting it gives the sound that helps the driver to identify the vehicles and avoid accidents.

GPS AND GSM MODULE.

As discussed earlier the threshold values says about the potholes or the speed breakers, if the values are so high or the vehicle experiences any unusual activities the system understands that the vehicle encountered accident. So that it declares the system has experienced with accident and a message is sent to the personal contact   nearby hospitals, that helps in avoding the risk of life.

III. LITERATURE SURVEY

Jonas Fredrikison [1] proposed a review analysis of threat assessments methods such as MPC (model predictive control). This paper talks about detecting accidents from around and sending the regarded information to the nearby hospitals. MPC is a method once we give the future predictive values and if any obstacle is there in those values, then only it alerts the driver. As many papers used this paper also used the IR sensors with model predictive control that predicts the values. Using this method only pre decided values are given so if the values come in another direction, then that cannot help in the detection.

Sunitha Sharma, U. Sujitha [2] proposed about finding and localizing the potholes using iot. This paper tells about the smart sensing of potholes. In this the camera is kept under the vehicle and the display is kept inside. For LCD they have used 16x2. Using the display one can easily detect potholes by the vision. But the far away potholes are not able to be seen, also in the darker places the correct values are not detected. Using camera is a sensible idea but the output we get cannot be precise.

F.Basma[3] proposed about if any accident occurs, message will be sent to nearby hospitals and 90% of mortality has been decreased . As the mortality rate is increasing day by day the measures are needed to be taken in order to reduced the accidents If incase accident occurs immediately message is sent to the nearby hospitals so that the person's life is saved . The message is sent through the GSM module. The message is sent only to the hospitals. Sending messages to hospitals makes sure that the each and every life can be saved very easily, not only to the ambulances but also to the people closest

/personal contacts.

P.Kaliuga lakshmi [4] proposed about the accident alerting using MEMS sensors. MEMS sensors are used for detecting obstacles around the vehicle. Mechanical to Electrical sensors convert the mechanical to electrical energy. MEMS sensors are very hard to fabricate and also very expensive. It gives a light form.

P.Kalavani,R. pretheep Kumar, J. Thrshan[5] proposed microcontrollers with considerate sensors and available components, tells about how the accidents are avoided and gives alerts the person inside the vehicle. This smart vehicle is a very necessary device for this generation. People always choose easier and simpler ways to adapt.

Md Saeef Abdul Hadi, Abhijit Saha [6] proposed the capability of testing and detecting the vehicle accidents automatically

, takes the required steps that helps in helping the driver. And gives the warning messages to the important contacts and also to the nearby hospitals. Vehicular networks don't only talk about the road traffic but also helps in saving many other lives as a part of such useful device.

Vikas Nyamati, Tridha chadhuri [7] told about a diverse , detailed information about the research of this topic. They provide a detailed development of a system to provide the information to the vehicle control unit, so that helps in preventing the accidents in advance.

Sayanee Nanda [8] proposed about the mechanism that identifiers whether the driver has the license or no, where the data is already stored before only by using RFID. Also indicates the person inside the vehicle about the obstacles around the vehicle. It also helps in the detecting any thefts and avoid those things.

III. ACCIDENT ALERT AND AVOIDANCE SMART VEHICLE

The main aim of the project is to avoid accidents and alert the person driving the vehicle. This project has Ultrasonic sensors, which is more efficient and can get precise values. Ultrasonic sensors are a great fit for many applications. Can be used in dark environments Here GSM module is used and information is sent to personal contacts as well as nearest hospitals so that information is sent and easily, we can take required actions.
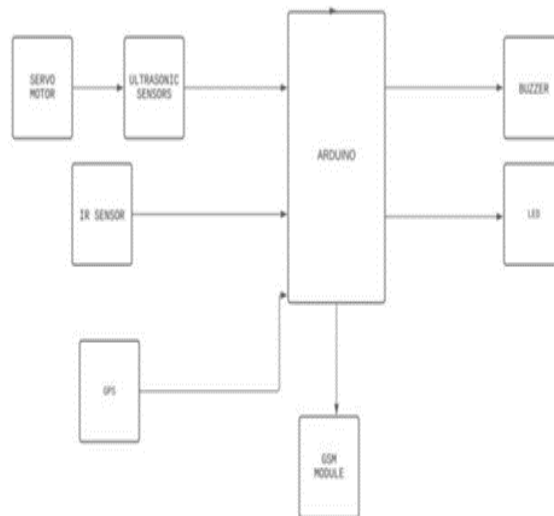
BLOCK DIAGRAM:

Figure no.1: Block diagram of Accident alert and avoidance smart vehicle

The block diagram consists of:

1. Arduino
2. Servo motor
3. Ultrasonic sensor
4. IR sensor
5. GPS
6. GSM Module
7. LED
8. Buzzer
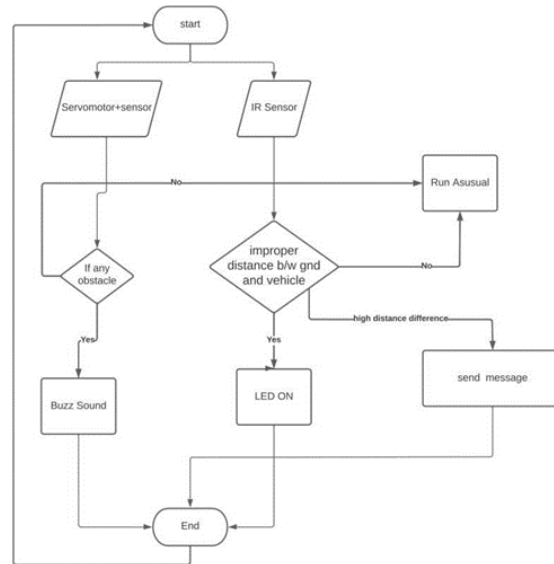9. Power supply

FLOW CHART:

Figure no.1: Flow Chart of Accident alert and avoidance smart vehicle

This flowchart depicts about the working of smart vehicle, this talks about how the alert system can be shown inside the vehicle and that tells the person about the any obstacle or any pothole that is coming in front. When we on the vehicle we can see that the ultrasonic sensors are activated and the program get started. The first ultrasonic sensors that is upon the servo motor that checks for the obstacle and as soon as it finds the it gives a buzzer sound through a buzzer. The other ultrasonic sensor that is in front of the vehicle that gives about the information about the potholes in front that is 10m and again gives an alert in the form of a light that comes from LED. And if the vehicle finds any abnormal activity like the value of threshold is literally more than that means the vehicle is crashed so then a special message is sent to the emergency contact of the person driving the car. When any of the above 3 are not happening then the program comes end and again the loop continues.

IV. RESULT

Here one can easily get alert by seeing any of the indications that are given. When there is an obstacle in the way then we get an alert sound so the person inside can easily be alerted and take required measures. In the same way, the LED glows indicating about potholes. And if by chance any accident occurs the location is sent through gps and a small emergency message is sent through GSM module to the personal contacts.
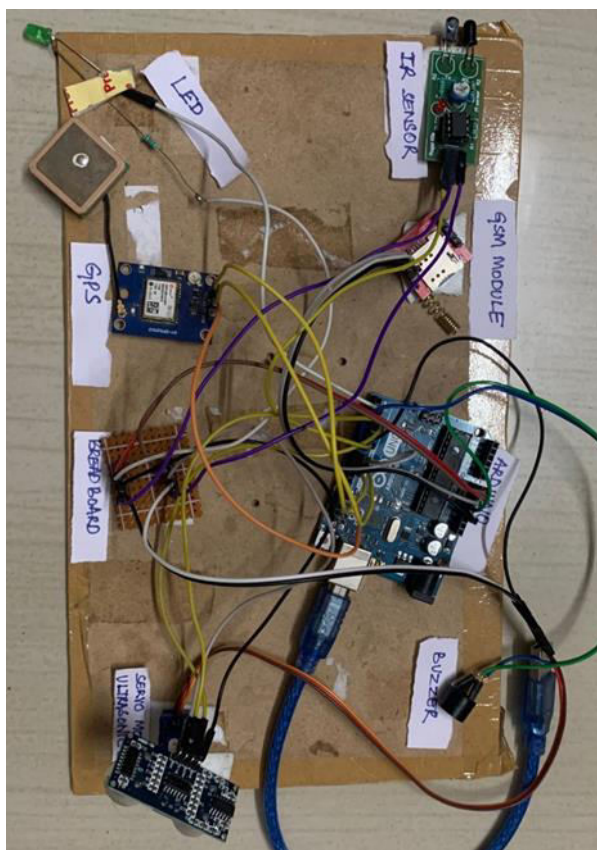
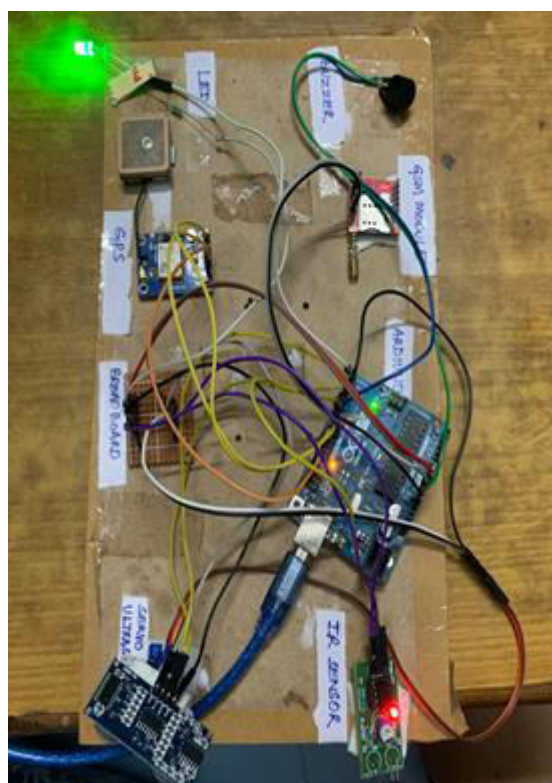Figure no.3: Before any obstacle or any pothole   detected

Figure no.4: After any obstacle and pothole detected

V. CONCLUSION

As far as mortality rate is considered, a major percent of deaths occurs as a result of accidents. In this project the overall system to avoid collision at the initial stage has been developed. Moreover if unavoidable accidents occur, the automatic Smart Rescue system and Smart Lifesaver equipment will ensure that the lives of victims are saved to a greater extent. A system is implemented to avoid accidents in the highways. This project includes use of ultrasonic sensor that detects the vehicle when taken very close to another vehicle, a novel idea is proposed for avoiding the accidents in the highways. In future, this could be implemented in all the vehicles which would be very much helpful for the driving at night were they will very low visibility. The cost for this idea is also very less as the component cost is low and all are open sources.

Thus, we conclude that the proposed system removes all the drawback of existing system and enhanced with the iot system, so its mays the driving system very smart.
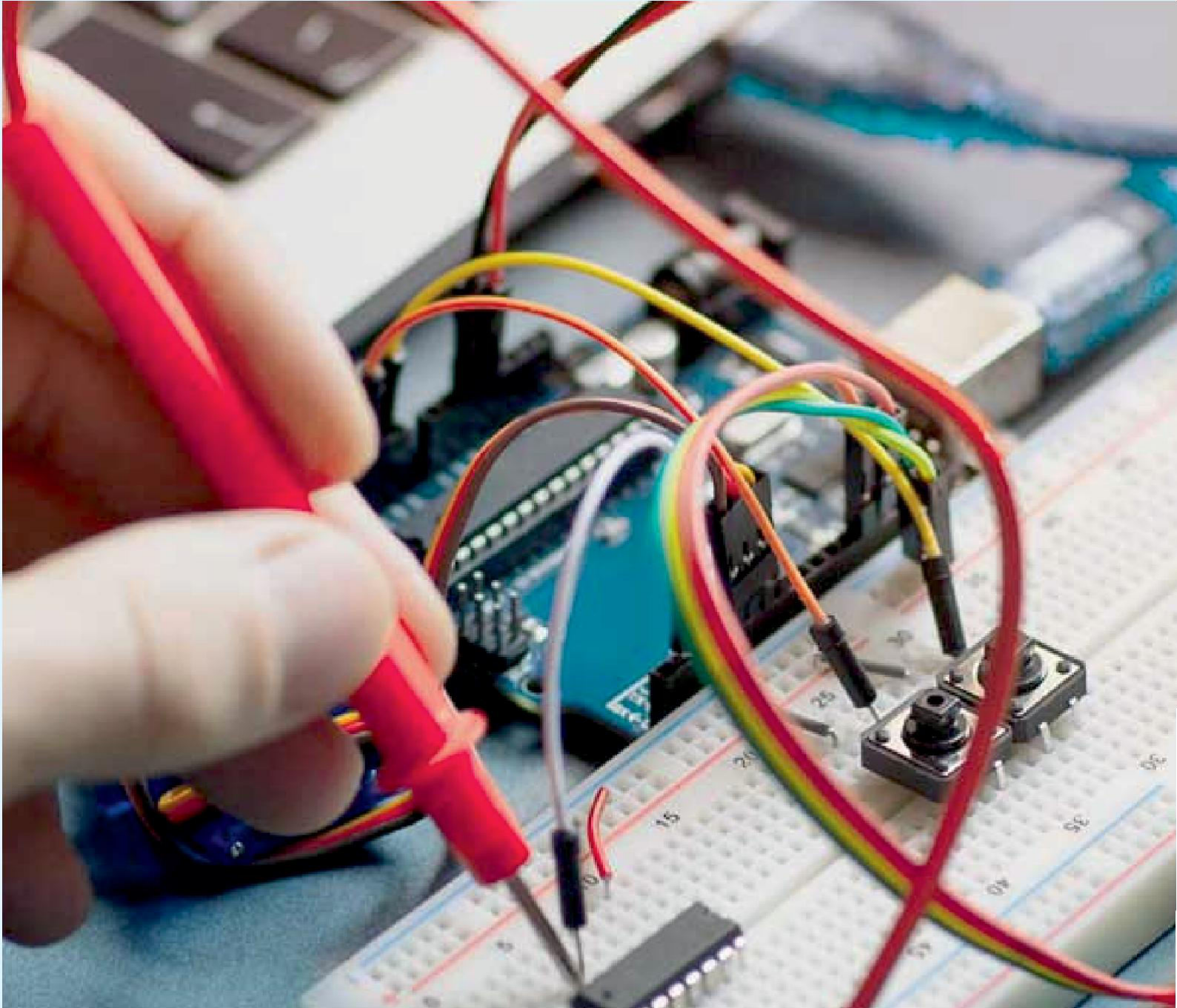
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