Final Report

ACCIDENT ALERT SYSTEM

TEAM MEMBERS

21BEC7242 – B.PARDIV SATYA KUMAR
21BEC7245 – S.DEVI SRI PRASAD
21BEC7256 – A.SAI MOHAN RANEES
21BCE9911 – S.RAJ KUMAR
21BCE9655 – R.CHANDU
21BCE9766 – A.BHANU PRAKASH

Guided By –

ASISH KUMAR DALAI

VIT-AP UNIVERSITY

Vellore Institute of Technology

VIT-AP University

G-30, Inavolu Beside AP Secretariat,

Amaravati, Andhra Pradesh-522237

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Abstract of the Project:

In day to day life a large number of people die from traffic accidents. In India a total of 1,51,113 were killed in 4,80,652 road accidents during the year 2019. Overspeeding was the leading cause for deaths in road accidents. So in this proposed project we are going to control the speed of the vehicle according to the respected zones using arduino. Our project explains that various color strips are marked on the roads where we need to control the speed within the limit and the vehicle will have a color sensor attached in it which will recognize the color marked on the road and accordingly maintain the vehicle's speed in that particular limit. The use of vehicles increases in the proportion of the population. Due to the traffic congestion, the accidents are also increasing day by day. This causes the loss of life due to the delay in the arrival of ambulances to the accident spot or from the accident spot to the hospital. So, it is necessary to take the accident victim to the hospital as soon as possible. Whenever, the accident occurs, it has to be informed to the investigation unit.So, it is also beneficial if the intimation is reached to the enquiry section so that the time for the investigation can be minimized.

Introduction:

Nowadays the use of vehicles is increasing day by day. Which turns into an increase in the vehicle accident with increased vehicle count. The major cause of accidents can be obstacles in the road, driving speed, etc. This project introduces a provision taking and alert system which alerts or warns the person who is driving the vehicle and if the car is out of control, then the accident occurs. Once the accident occurs this system will send the information about the incident and situation to the app which is in the phone. This system can be used for all type of automobiles including cars and bikes with slight updating and modification while system development.

An accident prevention and alert system is a system designed to help prevent accidents and to alert people in case of an accident. It is a system that is essential for ensuring the safety of individuals in various industries such as transportation, construction, and manufacturing. This report will detail the design, development, and testing of an accident prevention and alert system.

Problem Identification:

- The carelessness of a single individual may cause damage to many people. In every state there is some road which deals with high traffic over the year. There is a certain speed limit for convenient vehicles. These zones are school, universities, hospitals, accident zones etc..
- By statistics 30% cases were fatal accidents, 27% grievous injuries, 36% minor injuries and 7% non-injury accidents are revealed.
- The fatal crash incidence density was more than two times higher in rural than in urban areas as expected. This was primarily driven by the injury fatality.
- There is a need for a better security system because there is a high level of theft nowadays. There must be a system to monitor and communicate with each person to save their life before the danger.
- There are many people in need of medical assistance due to road accidents. But there is delay in medical emergency because of the poor network.

Objective:

In the modern world of science and technology, Transportation system is an integral part of living. Having this with us gives us the feel of the most civilized creatures on the planet. Automobiles play a vital role in our daily life but like every other thing, with some positives there are negatives too. Road accidents are the major threat to human lives. Speed is the key factor responsible for many of the accidents. Therefore, there is a need to control all the accidents.

One of the methods for accident detection was, manual accident detection, which relied on the passengers passing by the accident spot who notify the concerned emergency authorities for any safety measures to be taken but this method was having a loophole in it because its efficiency was not reliable because someone have to witness the accident also this method incorporates delays and inaccuracies due to witness's expression problem. Despite many safety measures and programs launched by the governmental as well as nongovernmental organizations to make people aware of the safe driving concept, life claimed by these accidents are increasing at an alarming rate. The main goal of the system is to control the accident by alerting the person who is driving the car with the help of a prerecorded voice alert. So that driver can control the situation before it goes out of control. This objective will help to prevent the vehicle from accident.

Components:

USB Cable

Arduino UNO

Breadboard

Battery

Car kit

motor driver

LCD Screen

Audio Speaker

Sensor Switch

Micro Sim Card Quad Band Module

Communication equipment

Ultrasonic Sensor

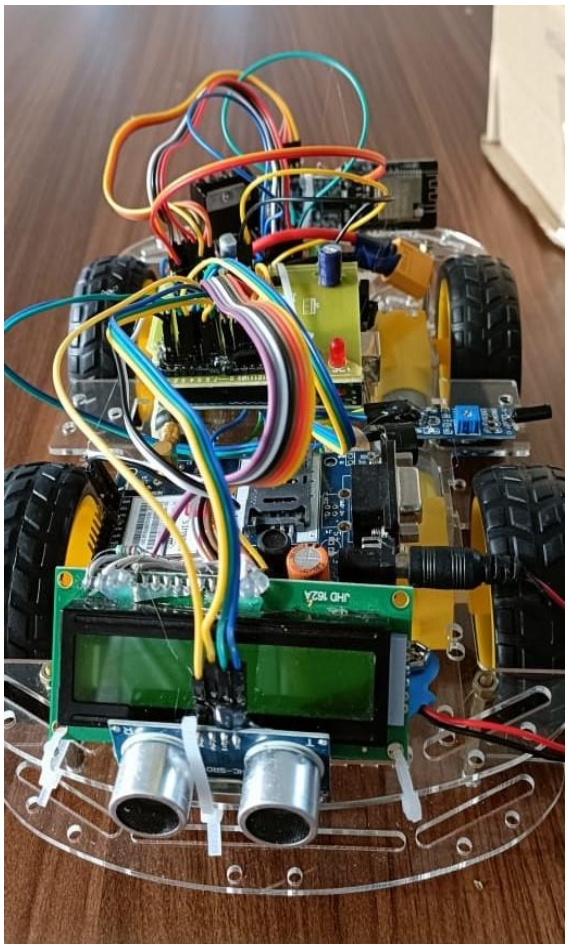
Micro Motor

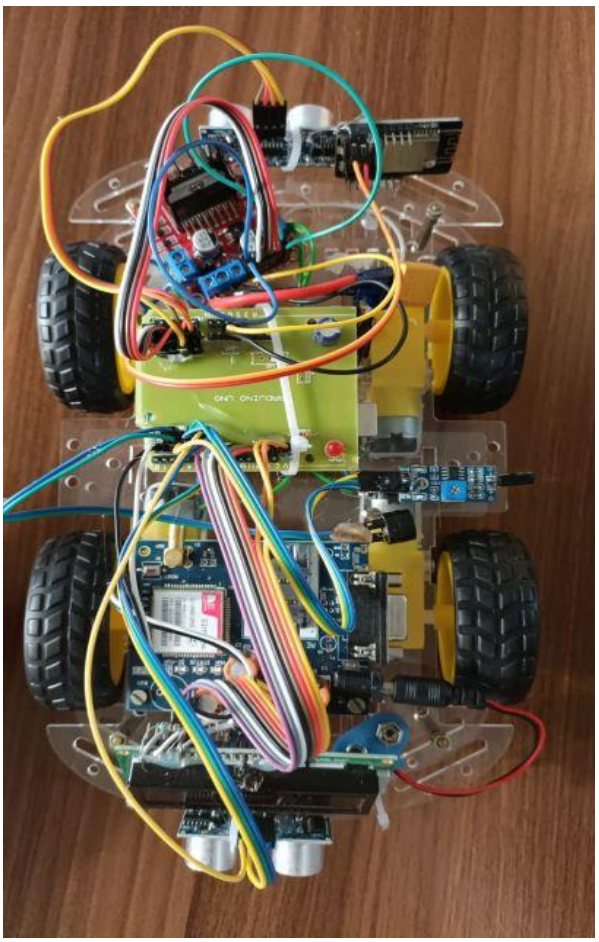
Cart Board

Working:

This project involves an accident alert system implemented with Arduino. It utilizes an ultrasonic sensor to detect approaching obstacles and promptly notifies the user through a beeping sound, as such case the car slows down and stops after some time. The ultrasonic sensor is strategically positioned at both the front and back of the setup to ensure comprehensive accident detection. In the event of an accident, the GSM900 module comes into play, promptly sending an SMS to a designated emergency mobile numbers. This number is pre-configured within the module using a SIM card housed within it.

RESULT:





Future Scope:

This system is very efficient in reducing the road accidents and prevent overspeeding in restricted zones.In existing project, there is no autonomous speed restriction in the vehicle to avoid accidents. We can also add live tracking of speed and location in the mobile application. If we detect the living things which are crossing before the vehicle we can prevent many accidents and can save, millions of lives.

References:

1)Amulya A M,Volume 5, Issue 4, April 2018,pp.2537- 2540, "Intelligent speed control system".

2) Vaishal B. Niranjane, IJEECS ISSN 2348- 117XVolume 6,Issue 3,March 2017. "Automatic Vehicle Speed Control System Using Zigbee Technology".

3)Amarnarayan,pISSN:2321-2241,Volume 5,Issue,May2016,eISSN:2321-225X,pISSN :2341 "Automatic Over speed Controlling of Vehicle".

4)Gummarekula Sattibabu, Volume 2,Issue8,pp.32-34 "Automatic Vehicle Speed Control With Wireless ,InVehicle Road Sign Delivery System Using ARM 7".

Code:

```
#include <LiquidCrystal.h>
LiquidCrystal lcd(8, 9, 10, 11, 12, 13);
int m1=A3;
int m2=A2;
int m3=A5;
int m4=A4;
int i=0;
int tr=A1;
int ec=A0;
int tr1=7;
int ec1=6;
int buz =3;
int sw =4;
int dist()
{
  digitalWrite(tr,1);
  delayMicroseconds(10);
  digitalWrite(tr,0);
  delayMicroseconds(2);
  int dst=pulseIn(ec,1)/58.2;
  return dst;
}
int dist1()
{
  digitalWrite(tr1,1);
  delayMicroseconds(10);
  digitalWrite(tr1,0);
  delayMicroseconds(2);
```

```
  int dst1=pulseIn(ec1,1)/58.2;
  return dst1;
}void setup() {
  // put your setup code here, to run once:
pinMode(m1,OUTPUT);
pinMode(m2,OUTPUT);
pinMode(m3,OUTPUT);
pinMode(m4,OUTPUT);
lcd.begin(16,2);
lcd.print("WELCOME");
Serial.begin(9600);
  pinMode(tr,OUTPUT);
  pinMode(ec,INPUT);
   pinMode(tr1,OUTPUT);
  pinMode(ec1,INPUT);
  pinMode(sw,INPUT);

  pinMode(buz,OUTPUT);
  digitalWrite(buz,0);

Serial.begin(9600);
}
void loop() {
  // put your main code here, to run repeatedly:
    digitalWrite(m1,1);
    digitalWrite(m2,0);
    digitalWrite(m3,1);
    digitalWrite(m4,0);
    int dst1=dist();
```

```
int dst2=dist1();
int vib=digitalRead(sw);
Serial.println("F:"+String(dst1) + "  B:"+String(dst2) + "  V:"+String(vib));
lcd.clear();
lcd.print("F:"+String(dst1) + "  B:"+String(dst2) + "  V:"+String(vib));
delay(500);
if(dst1<10)
{

digitalWrite(buz,1);
delay(1000);
digitalWrite(buz,0);
int kk=0;
while(kk<2000)
{

digitalWrite(m1,1);
digitalWrite(m2,0);
digitalWrite(m3,1);
digitalWrite(m4,0);
delay(1);
   digitalWrite(m1,0);
digitalWrite(m2,0);
digitalWrite(m3,0);
digitalWrite(m4,0);
delay(1);
}
}
if(dst2<10)
```

```
    {
      digitalWrite(buz,1);
     delay(100);
     digitalWrite(buz,0);
      delay(100);
    }

    if(vib==0)
    {
     lcd.setCursor(0,1);
     lcd.print("ACCIDENT DETECTED");
     digitalWrite(m1,0);
     digitalWrite(m2,0);
     digitalWrite(m3,0);
     digitalWrite(m4,0);
     send_sms();
    }
  }
  void send_sms()
  {

    digitalWrite(buz,1);
  Serial.println("Sending SMS...");
  Serial.println("AT");
  delay(1000);
  Serial.println("ATE0");
  delay(1000);
  Serial.println("AT+CMGF=1");
  delay(1000);
```

- Serial.print("AT+CMGS=\"6304863902\"\r\n");// Replace x with mobile number
- delay(1000);
- Serial.println("Alert: Accident detected ");
- delay(100);
- Serial.println((char)26);// ASCII code of CTRL+Z
- delay(5000);
- Serial.println("Sending SMS...");
- Serial.println("AT");
- delay(1000);
- Serial.println("ATE0");
- delay(1000);
- Serial.println("AT+CMGF=1");
- delay(1000);
- Serial.print("AT+CMGS=\"6304863902\"\r\n");// Replace x with mobile number
- delay(100);
- Serial.println("Alert: Accident detected");
- delay(100);
- Serial.println((char)26);// ASCII code of CTRL+Z
- delay(5000);
- digitalWrite(buz,0);
- while(1);
- }

Conclusion:

The accident prevention and alert system is an essential system that helps ensure the safety of individuals in various industries. The system was designed using state-of-the-art technology and programming languages and was thoroughly tested to ensure its reliability and accuracy. The system is scalable and modular, allowing for easy integration of new sensors and functionality. Overall, the accident prevention and alert system is an important tool for preventing accidents and protecting people from potential hazards.

----------* THE END ***----------**