SOS DEVICE FOR VEHICLES

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Abstract

With everyone being on the move in a fast-paced world, technologies have been increasing rapidly. As the world gets more and more technologically advanced, we find new technology coming in deeper and deeper into our personal lives that helps us in everyday situations. Technology is a never ending process. To be able to design a product using the current technology that will be beneficial to the lives of others is a huge contribution to the community. This project presents the design and implementation of a fall detection for vehicles which helps in saving lives of many people. The main objective of this project is that we are going to detect if a vehicle met with an accident.so, we can find the victim in a very less time and save his / her life. Accelerometer detects the sudden change in the axes of vehicle and GSM module sends the alert message on the mobile phone (number given in the GSM module) with the location of the accident. Location is sent in the form of Google map link, derived from longitude and latitude from the GSM module. Here we also use a reset switch(button) is provided to terminate the sending of a message in rare case where there is no casualty, this can save the precious time of the ambulance.

1. INTRODUCTION

Road accident is most unwanted thing to happen to a road user. Every day around the world, a large percentage of people die from traffic accident injuries. Due to employment the usage of vehicles like cars, bikes can be increased. users are quite well aware of the general rules and safety measures while using roads but it is only the laxity on part of road users, which cause accidents and crashes. Main cause of accidents and crashes are due to human errors.

Some of the common behavior of humans which results in accident are:

Over Speeding

Drunken Driving

Distractions to Driver

Red Light Jumping

Avoiding Safety Gears like Seat belts and Helmets

Non-adherence to lane driving and overtaking in a wrong manner

To reduce the accident rate in the country this paper introduces a optimum solution. "SOS DEVICE FOR VEHICLES" is introduced; the main objective is to control the accidents by sending a message to the registered mobile using wireless communications techniques. The proposed system will check whether an accident has occurred and notifies to nearest medical center and registered mobile numbers about the place of accident using GSM and GPS modules. The location can be sent through tracking system to cover the geographical coordinates (latitudes and longitudes) over the area.

2. RELATED WORK

A Fall Detection Watch is a piece of electronics that you wear on your wrist, and that looks and functions like a conventional digital watch. What makes it a "fall detection watch" is that it incorporates technology that enables it to "sense" when you fall, and send out an "alert" to a friend or to the emergency services. These products typically also let you press a button to manually call for help.An accident notification system for a vehicle includes a damage predicting system which detects fall of vehicle and a mobile communication terminal which receives a signal predicting injury to the vehicle occupant from the damage predicting system to generate a calling from the vehicle to a call center. The call center performs a notification to an accident response facility on the basis of the calling and obtains prediction information that the vehicle occupant has been injured from the damage predicting system.

3. IMPLEMENTATION

We have observed that in many severe accident cases immediate help is not sent which leads to death of victims; in some cases, the family members of victims are informed after a long period of time; and in some rare cases the identity of victims remain unknown. This problem is usually faced with two-wheeler vehicle where safety measures are not included yet whereas in 4-wheeler vehicle there are certain safety measures like airbags, emergency breaks, etc., hence, there is requirement for immediate help for two-wheeler vehicle. The proposed system alerts the need of ambulance services in case of an accident by sending the location coordinates.Design a system for people which alert the emergency services by sending an emergency notification when a

vehicle met with an accident. The location of the accident will be known so the emergency service can reach the accident spot in comparatively less time and there will be more chances to save the victims life.This project is designed by Arduino Uno. The main aim of the project "SOS DEVICE FOR VEHICLES" is to alert the ambulance services in case of an accident by sending the location coordinates and Google map link to prevent major injury and loss of lives. This system has GPS Receiver, GSM module and Accelerometer. When a vehicle is met with an accident the Accelerometer detects the change in the axis of the vehicle, the GPS Receiver tracks the current location and updates for every few seconds this data is processed by Arduino and sends the data to GSM Module. Then the GSM Module sends an SMS with location of the vehicle to a predefined phone number. So, as we know the location it would take less time for the ambulance to reach the spot and save his/her life.When an accident occurs, there is a delay in rescuing a person, so the idea is an automated system to alert the need for medical help by using Arduino UNO, GPS module, GSM module, and an accelerometer. Arduino UNO controls all the hardware components, when an accident occurs there's a change in the (X, Y, Z) coordinates of the accelerometer, it senses an overall impact. Then Arduino sends a signal to GPS to detect the location of the accident and an alert message is sent through GSM network sim. An emergency message is received to the mobile that is linked to the network. Basically it is an accident notification system for a vehicle which detects the fall of a vehicle and a mobile communication terminal that receives a signal predicting injury to the vehicle occupant from the damage predicting system to generate a calling from the vehicle to a call centre. The call centre performs notification to an accident response facility based on the calling and obtains prediction information that the vehicle occupant has been injured from the damage predicting system.

Hardware Description:

1. Arduino Uno

2. GSM Module (SIM900A)

3. GPS Module (NEO6M)

4. Accelerator (ADXL335)

5. Connecting Wires

6. Battery 8V

7. Bread Board

Software Description:

1.Arduino IDE

4. EXPERIMENTAL RESULTS

The required connections are made of all the components with Arduino Uno. The

Arduino Uno which is the main micro-controller is given power from a power source and the GSM module is also given a power supply of 12v, 1A from an external source. Once the circuit and the code are running smoothly it is now time to check if our project is working or not. Take the accelerometer and either shake it vigorously or tilt it extremely. This marks the change in the X, Y, Z coordinates of the accelerometer. This triggers the GSM and GPS module and a message is sent to the number registered in the GSM module along with the location of the user. For the prototype first the stationary coordinates of the accelerometer are measured and then those coordinates are measured which are displayed when the accelerometer is tilted extremely or when there is vigorous shaking in the accelerometer. The difference in the X, Y and Z coordinates are measured and hence the limit up to which the accelerometer can be tilted is set based on that. Once this threshold value is exceeded a trigger is sent to the GPS module which has access to the location and then a trigger is sent to the GPS module which has a 4G sim, is used to send the SOS message along with location. The number to which we want to send the SOS message is set in the code and can be change anytime we want.
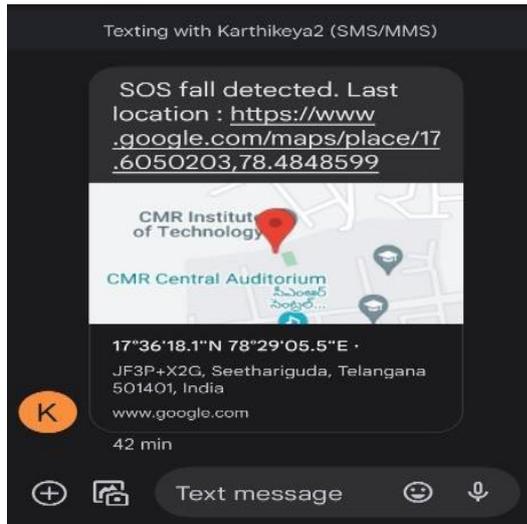
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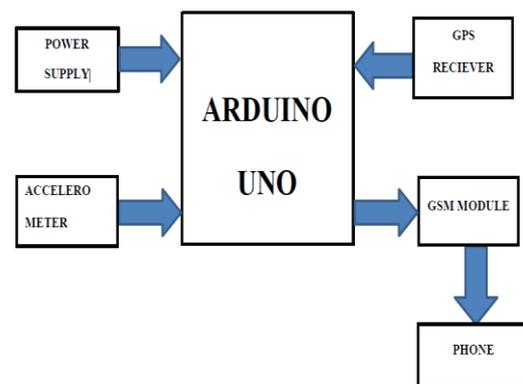
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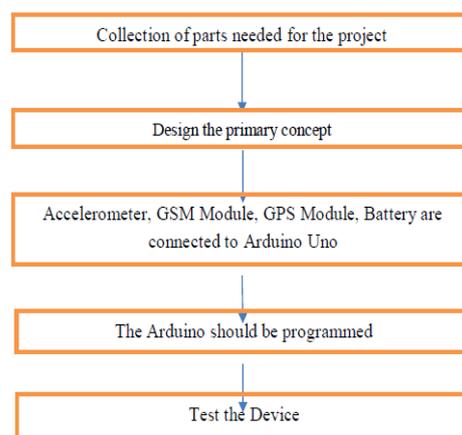
Project Flow

5. CONCLUSION

In a country like India, where vehicular transportation is maximum there are prone to be a lot of accidents too. For such cases a solution like this is suitable wherein if there is an accident a message is sent to someone we trust like our friend or family and we are letting them know we are in danger. This helps for a faster approach of emergency service which is fatal in determining whether a person will live or die. In an accident every second is fatal and important.

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