



e-ISSN:2582-7219



INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY RESEARCH IN SCIENCE, ENGINEERING AND TECHNOLOGY

Volume 6, Issue 5, May 2023



INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 7.54



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Vehicle Tracking and Accident Alert System

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ABSTRACT: Nowadays many accidents occur on roads due to increase in traffic or due to rash driving on highways. In many situations, the family members or the ambulance authorities are not informed in time. This results in a delay in medical aid to the victim, which may at times prove to be fatal. The main objective of our project “Vehicle Tracking and Accident Notification System” is to avoid such mishaps. The vehicle tracking system provides security to all vehicles by tracking them continuously whereas accident notification rescues people who have met with an accident by detecting accidents with the help of various sensors. Both the systems, provide improved security to all vehicles and prevent death due to untimely treatment by the implementation of global positioning system (GPS), Global System for Mobile (GSM) technologies. The Android application in the mobile phone will send text messages to the nearest medical centre and friends.

KEYWORDS- Accident detection, alert system, GPS, GSM, Accelerometer, Android application.

I.INTRODUCTION

The major death rates in the world are due to the road accidents. India faces the highest death rate in the world. Reasons for the accident are speed driving, lacking sufficient sleep, drink and drive. Automatic accident detection helps to recognize the location of the accident and to find the location of the accident. For an ambulance vehicle, every second is important. If there is a delay in the arrival of ambulance, there will be a loss of life. Delay is caused mainly because of the traffic signals. Therefore, time factor is an important task. Radio Frequency module is used to control the traffic signals automatically. Therefore, the ambulance vehicle will reach the hospital in exact time to save the human. In addition, the main goals for the automatic accident detection techniques are to detect the accident and to send the message automatically to the emergency contacts along with the location. Emergency contacts include family members, friends, hospitals, police station etc. The incidents of accidental deaths have shown increasing trend during the year 2000-2015 with an increase of 50 percent in the year 2010 as compared to the year 2000. According to Planning Commission of India, the total annual economic loss is 2.5% of India's GDP due to rising number of road fatalities. Another important reason can be improper medical help. Survey shows that each minute that an injured crash victim does not receive emergency medical care can cause into fatality. Most victims lose their lives due to such reasons. Therefore, this idea of saving lives by curing the problem comes into existence. Real-time position of the vehicles are informed by the system using the pre-install smart sensing accelerometer equipment. This data is recorded and all the information can be observed by remote location to provide the required services to the victims. Tracking of the vehicle can be done in all-weather condition. GPS and GSM technologies are used in this system to provide all the data to the remote server which are then processed and the extracted information is used to provide the services to the individual at the time of emergency. The main contributions of this paper are: (a) Vehicle registration and preparation, (b) Passengers registration, (c) Monitoring accidents through a web interface located in the PSO headquarter.

PROPOSED SOLUTION

This proposed system is mainly used for tracking various vehicles either small vehicles like cars, motorbikes by their owners or various large size vehicles like buses and loaded trucks by the authorized company. If an accident occurs this tracking system helps to retrieve the exact position of the vehicles. This system sends an automated message to all the pre-install numbers in the device such as the drivers family members, police station, ambulances and the nearest hospitals. Exact position of the vehicles can be acquired by the help of the GPS (Global Positioning System). GSM(Global System for Mobile Communication) is used to send and receive the message to the various people of the accident that has happened. All the entire working of the hardware is executed with the help of the Redness's Micro controller. This micro-controller coordinates with all the modules and helps sending the message. When an accident happens, the shock triggers the sensors resulting into sending signals t the micro controller. Once the signal is received the micro controller then sends the result according to its programming.



II.LITERATURE SURVEY

Mr. S. Kailasam, Mr.Karthiga, Dr.Kartheeban, R.M. Priyadarshini, K Anithadevi, [9] states that due to lack of attention, Drowsiness, and drunk driving are the major causes of road accidents, this paper proposes preparing a system to prevent these circumstances. The proposed system herein aims at preventing and controlling accidents by using a Night Vision Camera. This system monitors the driver's face when the car starts which mainly helps in observing continuously. It uses two functions: One to detect the eye blinking, second is for reading the blinking. Automatic driving and braking systems are also combined with a controlling system using python programming. Speed is automatically reduced until the driver becomes alert and returns to consciousness. The proposed system alerts the driver depending on his state, and makes sure that he is not drowsy. However, if the driver has a medical condition or blinks at an abnormal rate despite not being drowsy, the system will give a false alarm. In the worst case scenario, the driver happens to be in an accident, the system fails to detect the impact and contact the concerned authorities. Lastly the system would constantly consume power and drain the power supply since it monitors the driver continuously. Hence the outcome of not being able to identifying the actual accident scenario made us reject the idea of adding face recognition to our system as it would be costly, power- consuming and inefficient.

RajvardhanRish, SofiyaYede, Keshav Kunal, Nutan V Bansode [10] proposed a system which states that the leading cause of deaths in road accidents is due to delay in medical help. This can be prevented by messaging the authorities and emergency contacts too on time. The system consists of GPS, GSM, accelerometer and Arduino. It alerts nearest hospital, police headquarters, family and friends during the time of mishap mainly by detecting changes in accelerometer. The system sends a google map link using GPS module and Arduino. The vehicle sets the flag bit of the Arduino UNO as an accident is identified until it detects abrupt deviation from the threshold values with the help of the measuring system detector. Throughout the accident, the device sets the effective sensitive value for measuring instrument detectors, unless a crash is observed. Once the accident or set bit is detected by the measuring instrument detector, Arduino activates the GSM module, has a manually saved signal of the accident victim's emergency contact, and sends a pre-stored SMS to that contact.

III.METHODOLOGY

OBJECTIVES AND SCOPE

The main objective of this project is to prevent casualties which happen due to lack of medical assistance in time. Certainly, if the accident happens due to other cases, the used electronic devices will be able to provide the spontaneous message and exact location to police and ambulance in order to recover victims. Avoiding casualties caused by road accidents is the main goal of this paper, with the help of Accelerometer and GPS present in the mobile phones. Based on the data collected from these sensors, which are present in most mobile phones, the location of the accident is sent at the same time of the accident to the friends and relatives which the user allowed and stored, and also to the rescue and emergency services.

EXISTING SYSTEM

This idea proposal has been introduced at the start of the modern age of mobile phones. With the introduction of GPS sensors in the mobile, security applications based on GPS were proposed. Then they proposed special hardware devices which can be linked with mobile phones. Though, it had the disadvantage of actually buying extra hardware with more money. With the massive development of mobile phones in the last decade and new sensors added with the development, the extra hardware can be avoided. The present application of this paper is present in a very few countries and providing the information with the relatives and friends with the emergency services the efficiency of the application can be increased massively.

drawbacks of the Existing System:

The live system can't work if any of the following occur at the time of the crash:

- Automatic or phone is disconnected or damaged.
- No GPS signal at the time of the crash.
- Insufficient cellular signal to upload crash details.



PROBLEM STATEMENT

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 an 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.

PROPOSED METHOD

The main idea of this paper is to build an application that makes use of the sensors present in mobile phones like GPS and Accelerometer and detect any collision if there is a sudden external disturbance in the speed with the help of the Sensor Fusion Based Algorithm. With the help of the data obtained from the Accelerometer sensor, when there is a sudden disturbance to the mobile phone, the user is notified with an alert message before sending the request help signal. If no emergency is required, they can cancel it within 10 seconds. But, if they press the “Call Help” button or if the alert message is unattended for more than 10 seconds, the "request for help" message will be sent to the emergency services as well as the family members, the users provided.

SYSTEM ARCHITECTURE

In this system, the external disturbance is detected by the accident detection module and when it is detected, a function is called to find the current location of the user with the help of GPS in the Location Detection Module. The location data obtained from the GPS is sent to the emergency services to request help. accelerometer which keeps on informing the coordinate of vehicle position to the microcontroller. If it is found at random, the GPS location tracker tracks and informs the emergency number with values of latitude, longitude and google map position using the GSM SIM module

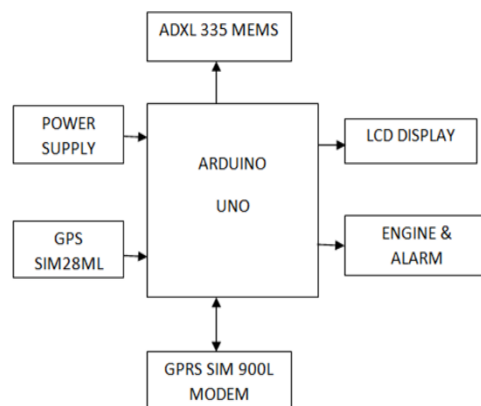


Figure.1 Arduino System

Vehicle unit sends the information to the emergency contacts like police control room and an ambulance unit

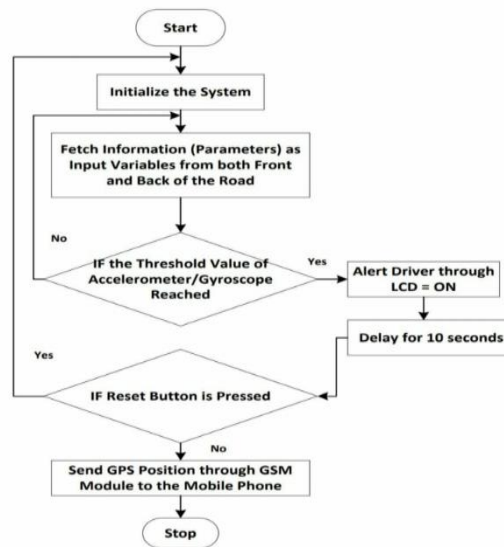


Figure.2 Accident detection alert System

1. The Arduino setup is installed in a vehicle's crash guard or in bumpers of the vehicle on each side.
 2. When collision occurs it triggers the push button and it sends a notification to the Arduino Board.
 3. Arduino will take this input and will convert to the SIM808.
 4. The coordinates are shared through GSM.
 5. Through GSM the notification is passed to the saved mobile number.
 6. It contains the exact GPS location.
 7. The application is used to know the route and location.
 8. If the accident is not severe the person can turn off the buzzer and the device will come back to normal.
- The block diagram of fig 3 depicts the totalblue print of the proposed project for eyeblinksensor.

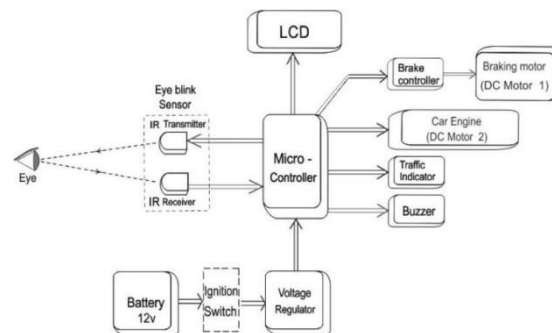


Figure.3 Block diagram of the vehicle accident prevention system.

The Purpose of such a model is to advance a system to detect fatigue symptoms in drivers and control the speed of vehicle to avoid accidents by means of an automatic braking system. The vehicle accident prevention system using eye blink sensor with an automatic breaking system is represented by the logical (flowchart) model in figure 4.

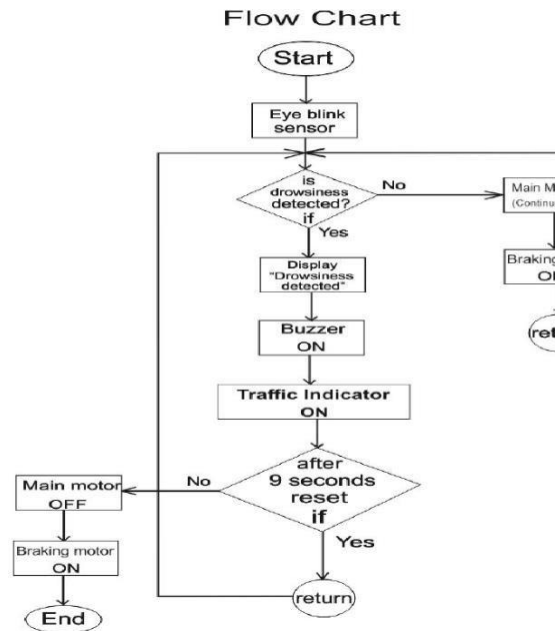


Figure.4 The logical flow (Flow Chart) Model of vehicle accident Prevention circuit using Eye Blink Sensor

IMPLEMENTATION

Our system comprises two phases: accident detection and notification phase. For the accident detection phase, a smartphone application has been fully implemented. For the notification phase, a web-based system has been implemented for use by hospitals.

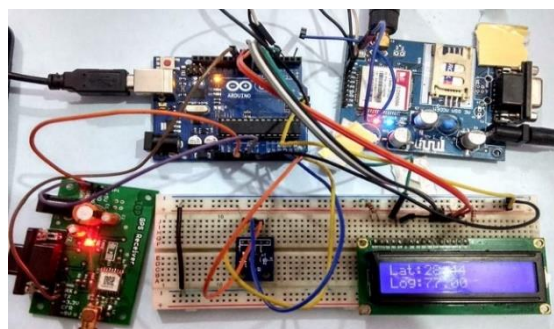


Figure.5 Prototype of the project

IV.FUTURE ENHANCEMENT

The proposed system deals with the detection of the accidents. But this can be extended by providing medication to the victims at the accident spot. By increasing the technology, we can also avoid accidents by providing alerts systems that can stop the vehicle to overcome the accidents.

part is an Android application introduced in drivers Smartphones which is used to get the point-by-point map. In general, the benefits of this system are low cost, secure and simple to use. The system introduced in this work reduces the casualties due to accidents.

V.CONCLUSION

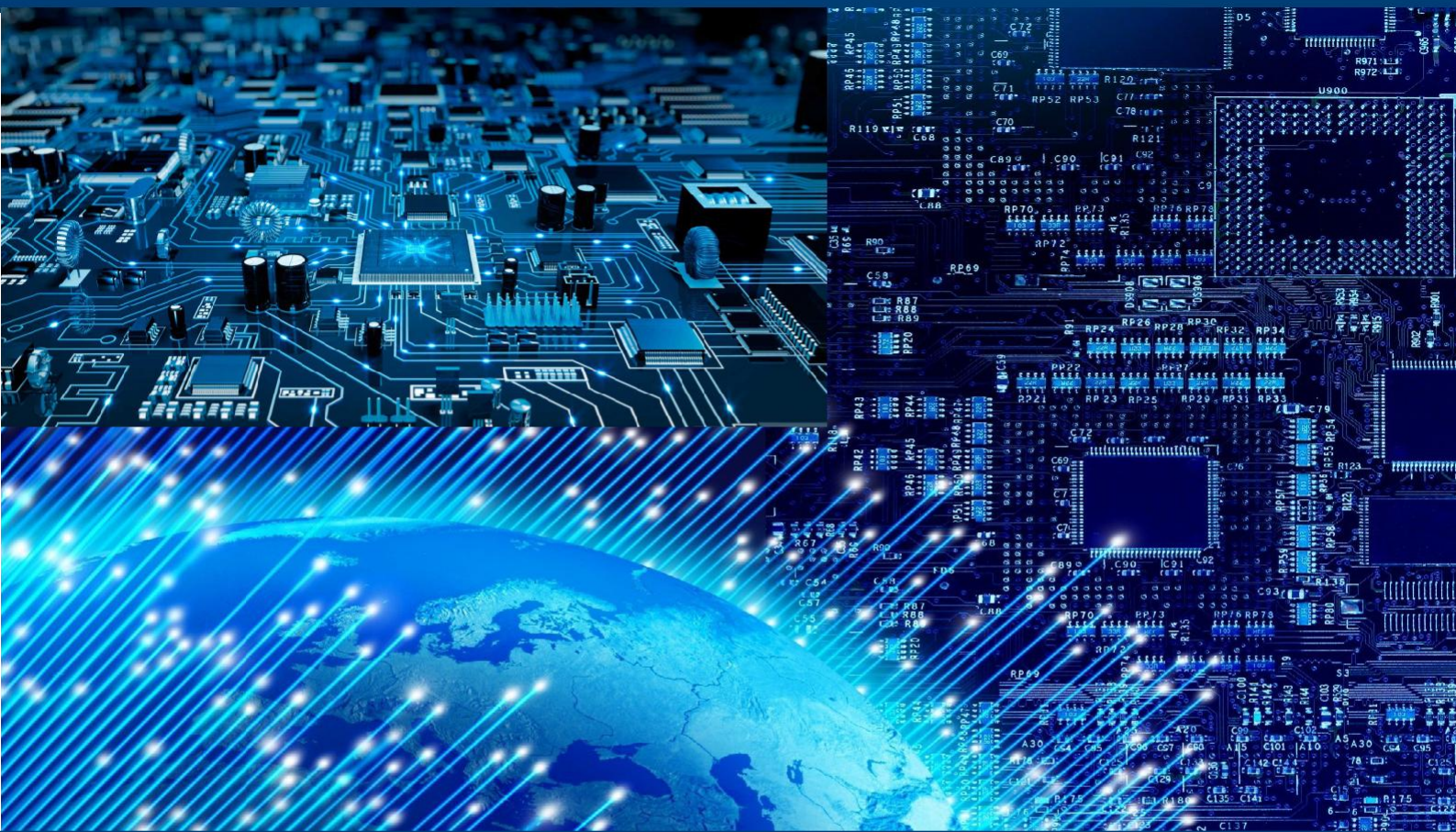
Proposing an IOT system which may help the community decreasing the death rates resulting from vehicles accidents. It also provides many advantages compared to traditional systems, namely, minimizing injured passengers' interaction, providing basic medical information to rescue teams, recognizing exact and accurate accident's locations, and facilitating the routing process. The IOT device keeps sending continuous notification of crash occurrence until it makes sure its reception by the headquarter. Accident detection device installed in a vehicle when meets with an accident will send SMS/ messages to the pre-install numbers of the driver's family members, police station, ambulance



and nearest hospital. This embedded system is useful for tracking and retrieving the exact position of any vehicle which has met with an accident by using Global Positioning System (GPS) and sensors. This project provides very good idea of how we can extract a location of accident and send the SMS notifications and help can be provided to the victims.

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