

Accident Detection and Driver Identification

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Abstract – With the increase in the number of vehicles, the traffic hazards and the road accidents take place frequently which causes huge loss of life and property. According to this project when a vehicle meets with an accident immediately vibration sensor will detect the signal and sends it to Arduino. Arduino sends the alert message through the RF Module including the location and vehicle number to nearest rescue station or police station. Location of accident is obtained through address assigning device. So the police can immediately trace the location of accident and the driver of vehicles. Through driver identification website police can easily collect full information of the driver in hit and run case then after confirming the location necessary action will be taken.

Index Terms – Vehicles, Accident, Location, Identification.

1. INTRODUCTION

The rapid development of economic construction and people's living standard continues to improve. As well as road vehicle accident take place frequently which caused huge losses of life and property to the country and people. Traffic has become an important event in the national interest. Poor emergency incident is a major cause for the high number of traffic fatalities and the death rate in our country. A number of technological and sociological improvements have helped reduce traffic fatalities during the past decade, e.g. each 1% increase in seat belt usage is estimated to save 136 lives. Advanced life saving measures, such as electronic stability control, also show significant promise for reducing injuries, e.g. crash analysis studies have shown that approximately 34% of fatal traffic accidents could have been prevented with the use of electronic stability control. Moreover, each minute that an injured crash victim does not receive emergency medical care can make a large difference in their survival rate, e.g. analysis shows that reducing accident response time by one minute correlates to a six percent difference in the number of lives saved. This module provides information about the accident to the hospital and police station. As a result of sudden help public life may save and the traffic jams are reduced.

Everyday there is a news of hit and run case. With the increase in number of hit and run case and incapability of police to catch

the culprit of such accident, boost up the negligence among the drivers.

2. RELATED WORK

There are lots of people working on accident detection project. In most of the proposed project there has been discussion about accident detection only. These project form the base of "accident detection and driver identification" project. Few of the related works are:-

- Harsh Varma, Sri Krishna Chaitanya Varma, Poornesh "Automatic Vehicle Accident Detection, And Messaging System Using GPS and GSM Modems" International Journal of Scientific & Engineering Research, Volume 4, Issue 8, August-2013
- P.Kaladevi, T.Kokila, S.Narmath, V.Janani "Accident Detection Using Android Smart Phone" International Journal of Innovative Research in Computer and Communication Engineering Vol.2, Special Issue 1, March 2014.

2.1."Automatic Vehicle Accident detection And Messaging System Using GPS and GSM Modems"

The aim of these work is to find the vehicle accident location by means of sending a message using a system which is placed inside of vehicle system. The main purpose is to provide security to the vehicle in very reasonable cost. So in this work we are using the basic microcontroller AT89C52 for cost effective and also for easy understanding. Here they used assembly programming for better accuracy and GPS and GSM modules which helps to trace the vehicle anywhere on the globe. The exact location of the vehicle is sent to our remote devices (mobile phones) using GSM modem.

2.2 "Accident Detection Using Android Smart Phone"

Nowadays, nobody in this world is ready to look what's happening around them. Even though, if any accident occurs no one cares about it. This is an intention to implement an innovative solution for this problem by developing an

Accident detection System using android smart phone from the accident zone. This system has been developed and implemented using the heart beat sensor based mobile technology integrated with the evolving android smart phone. The application for accident detection which primarily measures the heart beat rate using heart beat sensor. After getting the signal from sensor this system filter out the background noise and detect only the sound of the pulse. The microphone would need to be held near to the heart or somewhere the movement of blood made enough noise to be detected using some sort of audio signal processing. Then count the time between each pulse to get the pulse rate. The normal human heart beat range is 60 to 100 Beats Per Minute (BPM). If there is any variation from the normal heart beat range, then the system detects that may be an accident or not. Then the system will immediately transmit the location of the accident to the pre-configured contacts through Short Message Service (SMS). In case of an accident is occurred then the driver is prompted to respond by touch or voice in order to eliminate any false detection. So the proposed system ensures that to reduce the human death ratio by accidents.

3. PORPOSED MODELLING

Our proposed system consists of two model:-

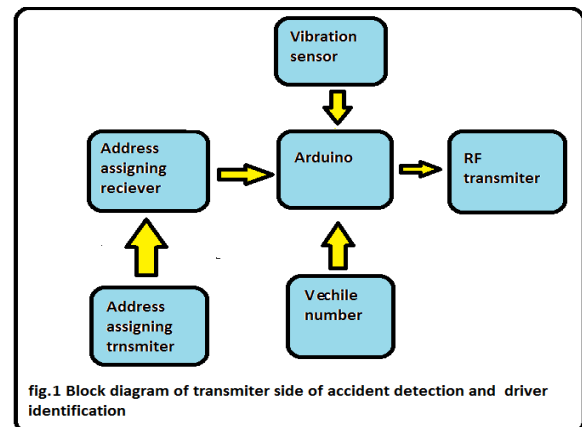
- 1) Transmitter side
- 2) Receiver side

3.1. Transmitter side

The block diagram of transmitter side of accident detection and driver identification is shown in fig.1. The transmitter side consists of Arduino, vibration sensor to detect the accident, address assigning receiver to determine the location of vehicles, RF transmitter to transmit information to the nearest hospital, police station and rescue station.

The whole system works on a 5V or 9V dc regulated power supply. Whenever the accident occurs the vibrations are sensed by the vibration sensor and these signals are given to the Arduino. The vehicle number is also given to Arduino. The address of the vehicle received in address assigning receiver from address assigning transmitter is also given to Arduino. Here we are using two mobile phones and a dtmf decoder module to use as an address assigning transmitter and address assigning receiver in these project.

In some conditions where there are no casualties or when there is no need of the medical facility to the person, then the messaging can be terminated with the help of the switch provided in order to avoid wasting the valuable time of the medical rescue team.

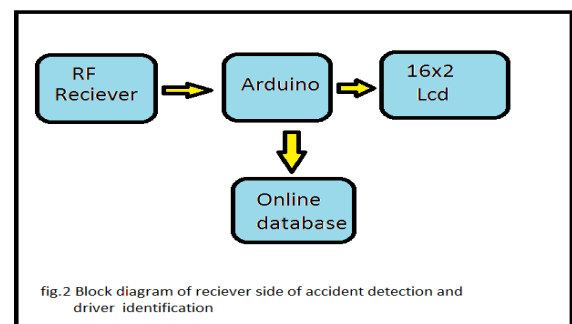


3.2. Reciever side

The block diagram of receiver side of accident detection and driver identification is shown in fig.2. The reciever side consists of Arduino, RF receiver, 16x2 lcd display to display message and online database for driver information through vehicle number. We are using a website made on php for online database of drivers registered at RTO.

Vehicle number received can be used to find out the information of driver with online dbms available at "www.studolite.tk/vehicle.php"

(imaginary database, eg:-vehicle number : - mh-31-0326)





4. RESULTS AND DISCUSSIONS

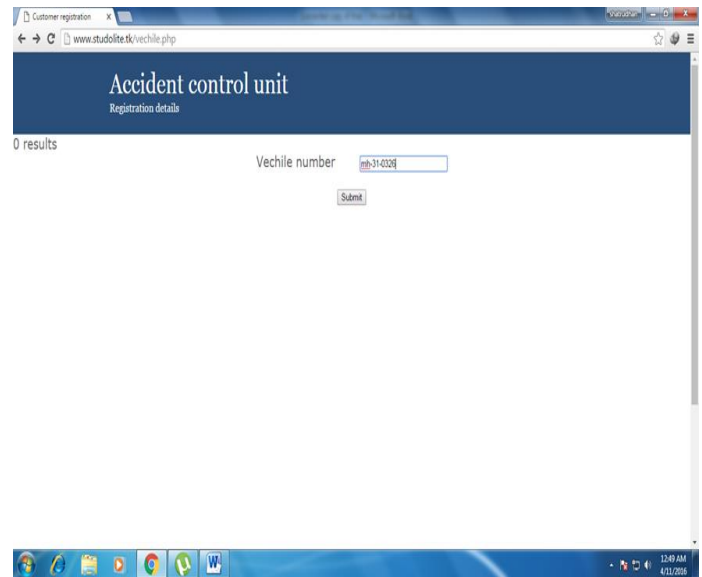
The message received through RF receiver is given to Arduino which is displayed on 16x2 lcd. Received vehicle number is used for identifying the driver meet with accident.

4.1 Lcd output



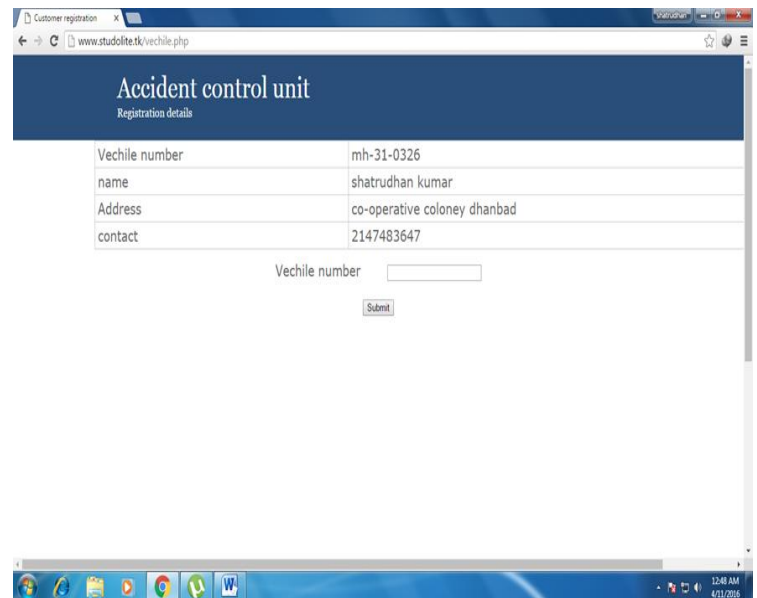
4.2. Information of driver

Received vehicle number is searched in the database available at Police station through the website www.studolite.tk/vehicle.php (for demonstration these website is created with anonymous details)



Search result

The complete information of driver obtained is shown below:



5. CONCLUSION

A working model of Accident detection and driver identification using Arduino, RF, address assigning device (mobile phone + dtmf decoder) and Website has been implemented successfully.

The biggest advantage of our research is that it will also be helpful in identification of driver involved in hit and run case. This system locates the accident spot accurately, realizing the automation of accident detection and messaging system. Consequently, it will save the precious time required to save the accident victims. Further this system can be implemented

using the vibration sensors as well as the sound sensors, in order to make it more accurate and efficient to detect an accident.

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