

Intelligent Accident Informer

H.Keerthika, V.Hiroshaan

Abstract— With the development of modern technology and the expansion of road network transportation system also developed tremendously. Automobile has become greater importance in our daily life for various purposes. Along with these advancements, huge number of road traffic accidents also has surged. Road traffic injuries and fatalities have emerged as major public health concern. Vehicles use airbag mechanism along with the seat belts in order to reduce risk in the accidents. Even though unwanted accidental deaths are happening because of the delay in emergency services reach to the accident place. As a solution of this concern, this research produces a system which is a further implementation of the airbag system. When the collision occurs, depending on the severity of the collision the airbag will deploy, at the same time the proposed system also gets the signal from the airbag control unit and Arduino will extract the latitude longitude information of the location from the GPS module, then location details along with the vehicle number will be send to the predefined phone numbers this is already stored in the system. Emergency service providers also get the accident information, and they can easily reach to the place very quickly using the location details. This will avoid the unnecessary death and illness happen due to the huge blood loss. Their family members also get the alert message about the accident.

Index Terms— GSM module, GPS module, Arduino, Airbag

1 INTRODUCTION

With the development of modern technology and the expansion of road network transportation system also developed tremendously. Automobile has become greater importance in our daily life for various purposes. Along with these advancements, huge number of road traffic accidents also has surged. Road traffic injuries and fatalities have emerged as major public health concern. Vehicles use airbag mechanism along with the seat belts in order to reduce risk in the accidents. Even though unwanted accidental deaths are happening because of the delay in emergency services reach to the accident place. Utilize the capability of a GPS receiver to monitor speed of a vehicle and detect accident basing on monitored speed and send accident location to an Alert Service Centre is proposed as a solution for this problem (Amin et al., 2012). But it is not an efficient way to detect the accidents. As a solution of this concern, this research produces a system which is a further implementation of the airbag system which is cost effective and more accurate. When the collision occurs, depending on the severity of the collision the airbag will deploy, at the same time the proposed system also gets the signal from the airbag control unit and Arduino will extract the latitude longitude information of the location from the GPS module, then location details along with the vehicle number will be send to the predefined phone numbers this is already stored in the system.

2 METHODOLOGY

This system uses signal which is come from the airbag control

unit in order to improve the accuracy and efficiency in addition to reduce the cost of development. Because almost all modern cars available in the market have airbag mechanism to reduce risk and damage in accidents. System get signal when there is any crash, compare the collision value with threshold value. If it is more than the threshold value which is defined inside then, Arduino extract the location details from the GPS module and send an alert message along with location detail using GSM modem, otherwise it will discard the signal.

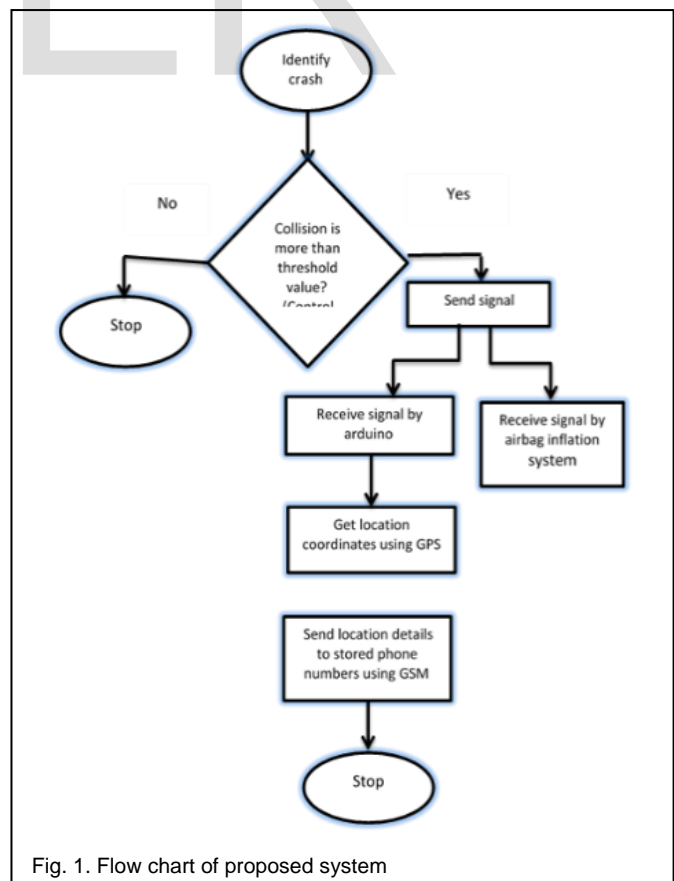


Fig. 1. Flow chart of proposed system

- H. Keerthika, Senior Software Engineer at KochaSoft Inc, Sri Lanka, PH-+94778023738. E-mail: sskeerthi09@gmail.com
- V.Hiroshaan, Lecturer at University College of Jaffna, Sri Lanka, PH-+94771965123. E-mail: hiroshaanv@gmail.com

3 RESULTS AND DISCUSSION

Existing system is identifying the crash by comparing the speed of a vehicle with previous speed in every second [1]. But it is not an efficient way to identify the crash. If the driver put a sudden break, then also it identifies the situation as accident and send message to emergency service. This will waste the time of emergency service providers.

NHTSA calculates that using a seat belt and having an airbag reduces the risk of death by 61 percent. Simply put, this combination is the most basic and effective safety precaution available [2].

National Highway Traffic Safety Administration calculates using a seat belt and having an airbag reduces the risk of death by 61 percent [2]. This does not necessarily prevent total injury or death; it can be very helpful in cushioning the passengers in a car. Therefore, they may need a help from emergency service providers. In order to overcome the drawback of existing system, increase the effectiveness of safety and accuracy of accident detection, my proposed system going to utilize the existing airbag technology available in a modern car and automate the process of informing the accident after it happens. This will reduce the cost of using sensors for detecting the accidents and also increases the accuracy. Proposed system will get signal from airbag control unit in severe accident situations.

4 CONCLUSION

Most of modern cars now available in the markets are deployed with airbag mechanism in order to protect during accidents. Even after the deployment of airbag victim of the accident may need medical treatment. As a conclusion using this proposed system along with the airbag mechanism will reduce the certain amount of unwanted accidental deaths happen due to the delay of medical service.

Instead of using separate sensor for detect the accidents; here I have integrated the system with airbag control unit. This approach increases the accuracy of the proposed system and also reduces the cost of implementing a sensor to detect the accidents.

REFERENCES

- [1] Amin, M.S., Jalil, J., Reaz, M.B.I. (2012). Accident detection and reporting system using GPS, GPRS and GSM technology, Informatics, Electronics & Vision (ICIEV), 640 - 643.
- [2] Cars.com Staff (2015). Advances in Airbag Technology. Retrieved September 10, 2015, from the World Wide Web:http://www.cars.com/go/advice/Story.jsp?section=safe&story=techAir&subject=safe_