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A SURVEY ON AUTOMATIC ACCIDENT DETECTION TECHNIQUES

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Abstract: - In recent year's accident become the part of life. Sometimes victims need the mercy of the people for their help. And there are some chances accident might not be noted in the mid times of the night. There are some techniques to detect the accident and to message the emergency contacts of the victims. The main purpose of the accident detection techniques is, to intimate the emergency contacts of the victim. This paper proposes some of the accident detection techniques.

Keywords*:* Accident Detection, Message, Emergency contacts

1. 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, drunk 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. So time factor is an important task. Radio Frequency module is used to control the traffic signals automatically. So, the ambulance vehicle will reach the hospital in exact time to save the human. And also 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..

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2. Automatic Accident Detection Techniques

In this section we are going to discuss about some of the accident detection techniques.

2.1 Automatic Vehicle Accident Detection and Messaging System Using GPS and GSM Modems

The objective of the project is to detect the accident of the vehicle where it is located and to send the message automatically to the emergency contacts the system is placed inside the vehicle itself. The basic microcontroller AT89C52 is used because of its cost efficiency and also for easy understanding. To find the accident location GPS is used [1]. It gives the latitude and longitude of the location. GSM module is used to

send the message to the emergency services. The message along with the location is sent to the mobile phones of the emergency contacts.

If LED is ON then it indicates the power supply to the circuit of the system. IR sensor is used to detect the obstacle. If there is any obstacle then it will be sent to the microcontroller. Accident location is identified by the GPS and sent to the microcontroller. And that information is sent to the emergency contacts of the victim through the GSM module. Accident location will be in the form of latitude and longitude values using these values we can find the position of the vehicle.GSM module works similarly to the mobile phones we can either message or call a person.LCD is used to display the current status of the GSM module and GPS. It is used to save the time and the time required to save the accident victims

2.2 Car Authentication and Accident Intimation System Using GPS and GSM

This project is designed to save the human lives. It contains three main modules. They are SMS ignition module, malfunction module and accident alert module. First module, it is user defined module. When the car starts moving it will send the text message to the car's owner, only if a reply is received the user is allowed to crank the car. Second module, it is used to send message to the service centre to check whether it has any malfunction or not in the car. Third module, when a car met with an accident an alert message is sent to the emergency contacts or health centre [2].

When an accident happens to the car, then the vehicle's number along with GPS co-ordinates of the location and a text to the emergency contacts will be sent. It ensures the timely help to the needy. If a car gets crank immediately a text will be sent to the owner of the car regarding the status of the vehicle. For communication between PIC microcontroller, GSM and GPS, UART is used. Advantages of the proposed work are it provides high security, no need to search the service centre and a medical support to the victims.

2.3 Intelligent accident identification system using GPS, GSM modem

The objective of this project is to reduce the delay caused by traffic congestion and to find the shortest path by controlling traffic signals. This system consists of five main modules which coordinates with each other and assures that ambulance reaches the health center on time. The five modules are vehicle unit, Main server, Ambulance unit, Traffic unit, Hospital unit. In this project, Vehicle unit installed in the vehicle that monitors the accident [3].

If vehicle met an accident, on the dot send the location of the accident to the main server. From the control unit, a notice is sent to the nearby ambulance. Control unit finds the shortest route to the accident spot, ambulance and hospital. And send the route to the ambulance and it transmitted the information to the traffic unit through RF communication. By using the information the control unit controls all the nodes in the path of the ambulance and make it ON, and assures that the ambulance reaches the hospital in time. By this new system the time lap is reduced by applying the RF technologies.

2.4 Design and Development of Automatic Vehicle accident detection & Localization of Automobile Using Bluetooth Technology

This project provides an android application to the mobile system. And a Bluetooth mounted on the moving vehicle with accident detecting sensor to identify if accident happens. To provide location and time information anywhere on the earth, GPS (Global Positioning System) is used as a space based global navigation satellite system. The location provided by the GPS is longitude and latitude and using these co-ordinates we can find the location in Google earth technology. In wireless communication to send a message GSM (Global System Mobile Communication) is used . SMS is a common feature with all mobile networks service providers[4].

The proposed system consists of in-vehicle GPS receiver, GSM modems and embedded controller. The application users can monitor the location graphically on Google earth. They can also get other information of automobile in the fleet. This tracking system can be used to monitor various parameters related to safety, emergency services. This project has two modules. First module is the tracking device attached to the vehicle. It consists of GPS receiver, Microcontroller and GSM module. Second module, has GSM module and workstation PC. Modem receives the SMS that includes the coordinates of GPS and engine parameters.

2.5 Monitoring and Detecting Vehicle Based On Accelerometer And Memes Using GSM And GPS Technologies

This project provides an automatic accident detection notification system. The modules of this project are accelerometer sensor, temperature sensor, Fire sensor, GPS, GSM, buzzer and LCD display these are all built on the ARM 7 microcontroller [5]. Accelerometer sensor is used to detect he accident. If there is any change in the acceleration of the vehicle immediately it will assume as an accident. A buzzer is set, if the driver unable to press the buzzer for about 30s after the accident, the system will automatically send the message to the emergency contacts and along with the accident location detected by the GPS. It also monitors the vehicle temperature using the temperature sensor if the engine gets over heat the system creates an alert. Fire sensor is used to detect whether it is an fire accident.LCD display is used to display the status of the system.

4. Conclusion

In the previous section we have discussed about the accident detection techniques. The common solution provided by the accident detection techniques are intimating the emergency contacts by sending the message of the victim. Accelerometer sensor is used to detect the changes in the acceleration of the vehicle. GSM is used to send the message to the emergency contacts.

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