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AUTOMATIC ACCIDENT TRACKING AND MESSAGING SYSTEM

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Abstract - ***With the growing population the use of vehicles has become superfluous and this has led to the Accidents increasing at an alarming rate resulting in a large loss of property and human life. A large number of precious lives are lost due to road accidents every day. The common reasons are driver's mistake and late response from emergency services. There is a need to have an effective road accident detection and information communication system in place to save injured persons. A system that sends information to nearby hospitals about the accident location for timely response is absolutely in need. The demand on performance and quality of automobiles increase rapidly, but there is also demand on anti-accident system for vehicles. This project aims at finding the occurrence of any accident and reporting the location of accident to the nearest hospital so that immediate help can be provided to the injured person. Using the accelerometer the accidents can be detected. The location spot is retrieved using Global Positioning System which is a navigational system using a network of satellites orbiting the earth. Then the nearest hospital is found and the message will be send to the hospital in the form of Google map link to get the necessary help and thus ambulance service and required aid can reach in the shortest time possible.***

***Key Words*: ACCIDENT DETECTION, INFORMATION COMMUNICATION SYSTEM, *GLOBAL POSITIONING SYSTEM*, ACCELEROMETER.**

1. INTRODUCTION

A large number of precious lives are lost due to road traffic accidents every day. The common reasons are driver's mistake and late response from emergency services. There is a need to have an effective road accident detection and information communication system in place to save injured persons. A system that sends information messages to nearby hospitals about the accident location for timely response is absolutely in need. The demand on performance and quality of automobiles increase rapidly, but there is also demand on anti-accident system for vehicles.

GPS based accident identification and messsaging system is focusing on accident happened during travelling specially to save life of many people's by reporting to hospitals about the accidents.

The main intention of this project is to find the accident spot at any place and intimating it to the nearest hospital through the GPS. The GPS based vehicle accident identification module contains accelerometer, GPS Receiver and messaging system. GPS Receiver is used for detecting location of the vehicle, messaging system is used for sending the alert SMS with the coordinates and the link to Google Map. Accelerometer is used for detecting the accident. And an LCD is also used for displaying status messages or coordinates.

2. RELATED WORK

Automatic Vehicle Accident Detection and Messaging System Using GSM and GPS Modem[1], When an accident occurs it is detected with help of a sensor which activates the device, the sensor gives its output to the microcontroller. The microcontroller sends the alert message automatically to the police station and the relatives of the person. The message is sent through the GSM module and the location of the accident is detected with the help of the GPS module. Hence with this project implementation we can detect the position of the vehicle where the accident has occurred so that we can provide the first aid as early as possible.

Go Safe: Android application for accident detection and notification[2], in which GoSafe application, a lightweight, flexible and power-efficient smartphone based vehicle to infrastructure communication system for improving road safety and enhancing the driving experience. This system notifies motor vehicle drivers about events that may be encountered while driving, this application will alert user's if there is any accident happen on road. So that other vehicle will choose another path/route. Using accelerometer sensor ,velocity and speed of that particular vehicle will be calculated.

Accident Detection System using Arduino[3], in which The system incorporates a single-board embedded system that contains GPS and GSM modems connected with a microcontroller. The entire set-up is installed in the vehicle. A vibration sensor is used. It measures the vibration at the location it is placed. The signal is then compared with the standard values which further confers the accident of the car, unnecessary shock or vibration produced by machines, tilt of the car with respect to the earth's axis can be identified with the level of acceleration. Global Positioning System (GPS) is used to identify the location of the vehicle. GSM is used to inform the exact vehicular location to the pre-coded numbers.

Automatic Accident Detection[4], in which the accident detection module reports an accident by using three axis accelerometer to the cloud sever that would automatically dispatches the nearest ambulance by processing the GPS coordinates and providing specific route to the certain accident spot. The android application used by the ambulance driver assists the driver to reach the location quickly and safely.

3. OVERVIEW OF PROPOSED SYSTEM

A large number of precious lives are lost due to road accidents every day. The common reasons are driver's mistake and late response from emergency services. So to avoid the risk this project helps in an effective road accident detection and communicating the information to the nearest hospital in place to save injured persons. This system detects the accident and sends the message to the nearest hospital with the location. According to the proposed system when a vehicle meets with an accident, the accelerometer will sense the occurence of an accident. The GPS then detects the latitude and longitudinal position of the vehicle. It is essential to locate the position to provide medical assistance. Then the nearest hospital is found by calculating and comparing the distance from the accident location. Then the alert message is sent to that hospital with the location.

LIST OF MODULES

A. Accident detection
B. Location Tracking
C. Messaging communication

A. ACCIDENT DETECTION

Accident can be detected using accelerometer. There are three parameters which are measured by accelerometer. Motion in the axial direction stresses the crystal due to the inertial force of the mass and produces a signal proportional to acceleration of that mass. This small acceleration signal can be amplified for acceleration measurements or converted with in sensors into a velocity or displacement signal. If the vehicle met with an accident then the position of the vehicle will change. Accelerometer will take sample values of x, y and z related to the axis of the vehicle for few seconds and keep this as sample to compare with other values. For each second the position is calculated and compared with the previously calculated sample values. If the difference between them is more than 50 then it is assumed that the accident is occurred. Generally the working principle of the whole system is: the accelerometer detects the accident happened depending on the mass applied on it and sensing and activate alarm and send message to notify hospital. Fig. 1 shows the block diagram of the system.

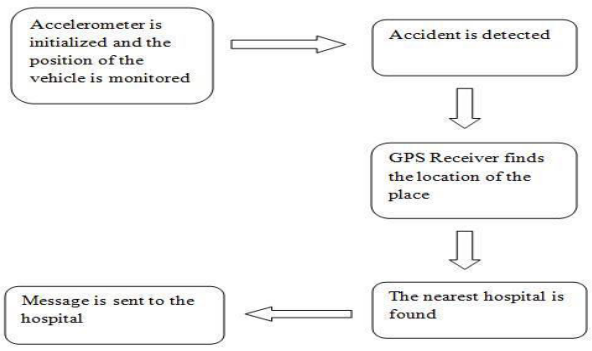

Fig 1 : Block diagram of proposed system **B. LOCATION TRACKING**

When accelerometer detects the accident it initiates the GPS Receiver module. GPS Receiver is used to track the location of accident in our project. This device receives the coordinates from the satellite for each and every second, with time and date. This module will give the extracted string which contains the Latitude and Longitude Coordinates.

The coordinate can be extracted from string by processing it. Latitude and Longitude values can be extracted and store it in other arrays for processing.

C. MESSAGE COMMUNICATION

After calculating the latitude and longitude value of the place the message should be sent to the nearest hospital.Now the calculated longitude and latitude values taken as input for the further steps. Database is created and details about the hospitals are stored in it. It contains the latitude and longitude values of the hospitals. It also contains the phone number of the hospitals. By using the algorithm the calculated longitude and latitude values is compared to all the values of the hospitals that are stored in the database. Then the nearest hospital is found by calculating the distance. Then its corresponding phone number is retrieved from the database using queries. Using the scripting language, the message is sent to that phone number. The message contains the information about the longitude and latitude of the location where accident is occurred.

4. OPEN SOURCE TOOLS

Visual Studio

The Visual Studio *integrated development environment* is a creative launching pad that you can use to edit, debug, and build code, and then publish an app. An integrated development environment (IDE) is a feature-rich program that can be used for many aspects of software development. Over and above the standard editor and debugger that most IDEs provide, Visual Studio includes compilers, code completion tools, graphical designers, and many more features to ease the software development process.

Microsoft SQL Server

Microsoft SQL Server is a relational database management system developed by Microsoft. As a database server, it is a software product with the primary function of storing and retrieving data as requested by other software applications—which may run either on the same computer or on another computer across a network.

5. CONCLUSION

The developed system will help to have an effective road accident detection and information communication system in place to save injured persons. Vehicle tracking system improves safety and security. So in the coming year, it is going to play a major role in our day-to-day living. Main motto of the accident alert system project is to decrease the chances of losing life in such accident which we can't stop from occurring. Whenever accident is alerted the paramedics are reached to the particular location to increase the chances of life. This device invention is much more useful for the

accidents occurred in deserted places and midnights. This project will be helpful to save the injured person without any delay. As the information is passed quickly, there is no possibility for the delay of the services.

6. REFERENCES

[1] Nimisha Chaturvedi1, Pallika Srivastava2, "Automatic Vehicle Accident Detection and Messaging System Using GSM and GPS Modem", International Research Journal of Engineering and Technology (IRJET), Volume: 05 Issue: 03 | Mar-2018

[2] Isha Khot, Madhura Jadhav, Abhijeet Desai,Vaibhav Bangar, "Go Safe: Android application for accident detection and notification", International Research Journal of Engineering and Technology (IRJET), Volume: 05 Issue: 05 | May-2018

[3] Prof.Pankaj A Bhoit, Koli Gopal, Wadile Sagar, Tejaswini Sisodiya, Patil Satish, "Accident Detection System using Arduino", International Science and Technology Journal, Volume 7, Issue 4, 2018

[4] Anisur Rahman Khan, Pranav Suri, Supriya Patil, Tejaswini Sonawane, Tejashree A. Paigude, "Automatic Accident Detection", International Journal of Engineering Science and Computing, Volume: 08 Issue: 03, March 2018

[5] Dr. I .Kala Professor and Head, Ms. S. Preethi UG Scholar, Ms. R. Saranya UG Scholar, Ms. B. Yogitha UG Scholar, "AN IOT BASED VEHICLE TRACKING AND ACCIDENT DETECTION SYSTEM", IJAICT Volume 4, Issue 11, March 2018.