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AUTOMATED EMERGENCY MESSENGER

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Abstract

The Rapid growth of technology and infrastructure has made our lives easier. Theadvent of technology has also increased the traffic hazards and the road accidents takeplace frequently which causes huge loss of life and property because of the pooremergency facilities. The increasing amount of vehicles create mismanagement incontrolling traffic leading to accidents. Although accidents happen due to various factorsother than traffic management, such as unstable weather, reckless driving, faulty vehiclesor maybe road conditions. But the most important part after an accident is to detect theaccident and take immediate action upon detection. Our project will provide an optimumsolution to this draw back.

1. INTRODUCTION

The number of deaths due to traffic accidents is very high. Looking at the number of deaths

and injuries due to road traffic accidents shows the global crisis of road safety. Nearly 1.3 millionpeople are killed every year and about 50 million injured worldwide due to road accidents, whichaverages to 3,287 lives lost every day. Further more, the data shows that deaths per accident are55 percent around the country. The most likely reason for an individual's death in an accident islack of the first aid provision that is because of emergency services not receiving informationabout accident in time. Emergency response time is extremely vital when it involves incidentsinvolving vehicle accidents. In order to reduce response time, implementation of enhanced traffictechnologies would be necessary, which will help scale back response time and therefore reducefatalities. The purpose of this research is to design and implement such an automated system thatuses FSR to detect vehicle accidents and report it to the nearest available responders to helpcounter these emerging problems and reduce casualties as much as possible. The detectionsystem would help reduce fatalities due to vehicle accidents by decreasing the response time ofemergency services. The system will also provide other emergency services like Fire

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Brigade,Police Department and Medical emergency services. In this work we are utilizing FSR to detectaccidents and report it to the nearest available emergency responders with the exact location ofvictims in emergency. On an emergency responder side, the system will inform responders aboutthe incidents that occur near to them and provide them with real time tracking of emergencyvictims on a Google map. This will help emergency responders keep track of victim's locationand rescue them as soon as possible.

2. RELATED WORK

This literature studies the various technologies that are used worldwide in theautomatic solar radiation tracker systems Arya. D.S, Athulya C.K, Anas.P, Basil Kuriakose, JerinSusan Joy, Leena Thomas proposed a system that states the vehicle accidents are one of the mostleading causes of fatality. The period between the occurrence of an accident and the dispatch ofemergency medical services to the accident site is a critical factor in accident survival rates. Accident detection and messaging system will be stationed in vehicle itself which will be helpful during the time of accident as hospital, police and emergency contact can be informed immediately. The system is executed using GPS and GSM technology. A vibration sensor detectsa collision using piezoelectric effect ; which is the ability of certain materials to generate anelectric charge when they are under mechanical stress. As soon as the collision is detected theGPS module locates the accident (latitude and longitude) and sends a message to the hospital andthe emergency contact using the GSM module. The ambulance arrives to the location which istracked by the GPS module and hence the victim is treated as soon as possible reducing the help time. In case if there is a minor accident, the victim can press a switch (button) to prevent theemergency contacts from being alerted. This system comprises of Arduino, GPS, GSM andvibration sensor, which detects the accident and alerts the authorities immediately, it alsocombats false alarms by using a switch provided for the driver. However, the system does notprovide the medical data and history of the victim and hence there could be a delay in thevictim's treatment. We shall improvise our system in this scope.

3. IMPLEMENTATION

The use of vehicles increases in the proportion of the population. Due to thetraffic congestion, the accidents are also increasing day by day. This causes the loss oflife due to the delay in the arrival of ambulance to the accident spot or from the

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accidentspot to the hospital. So, it is necessary to take the accident victim to the hospital as soonas possible. Whenever, the accident is occurred, it has to be informed to theinvestigation unit. So, it is also beneficial if the intimation is reached to the enquirysection so that the time for the investigation can be minimized. According to this project,when a vehicle meets with an accident, the Force Sensitive Resistor will detect the signaland this signal will be analyzed by Arduino. The Arduino sends the alert message throughthe GSM Module including the location to police control room or a rescue team.The project seeks to follow the following steps:

1. To minimize the deaths occurred due to accident.

2. To alert the nearby medical services about the accident so as to provide immediate
medical aid.

Components:

1.Bread Board

2.GSM Module

3.Arduino R3

3.Jumper Wires

4.FSR(Force Sensitive Resistor)

The Automated Emergency Messenger comprises of a Force Sensitive Resistor(FSR), GSM
Module, and a Aurdino UNO R3. Arduino ground is connected to gsm ground and gsm tx to rxand rx to tx. FSR is connected to Aurdino. The GPS tracking and GSM alert based algorithm isdesigned and implemented with SIM900A-GSM module, Arduino UNO R3 and GPS in
embedded system domain. Microcontroller sends the alert message through the GSM MODEM
including the location to police control room or a rescue team. So the police can immediately
trace the location through the GPS in car, after receiving the information. Then after conformingthe location necessary action will be taken. If the person meets with a small accident or if there isno serious threat to anyone`s life, then the alert message will not be sent by the controller toavoid wasting the valuable time of the medical rescue team.The proposed vehicle accident detection system can track geographical informationautomatically and sends an alert SMS regarding accident. Experimental work has been carriedout carefully. The result shows that higher sensitivity and accuracy is not achieved preciselyusing this project. But still this made the project more user-friendly and reliable.Due to increase in no. of road accidents and lack of emergency services. The detection systemwould help reduce fatalities due to vehicle accidents by decreasing the response time of emergency

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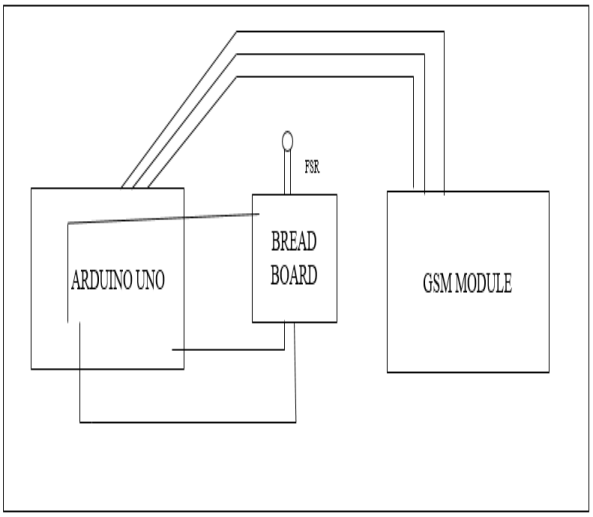
services. The system will also provide other emergency services like Fire Brigade,Police Department and Medical emergency services. In this work we are utilizing android smartphone to detect accidents and report it to the nearest available emergency responders withthe exact location of victims in emergency.The aim of this work is to automatically detect an accident and alert the nearest hospital ormedical services, Family members about the exact location of the accident. Our project willprovide an optimum solution to this draw back. According to this project, when a vehicle meetswith an accident, the Force Detection sensor will detect the signal and this signal will be analyzed by Arduino. The Arduino sends the alert message through the GSM Module includingthe location to police control room or a rescue team.

Block Diagram



4. EXPERIMENTAL RESULTS

This project presents vehicle accident detection and alert system with SMS to the userdefined mobile numbers. The GPS tracking and GSM alert based algorithm is designed andimplemented with SIM900A-GSM module, Arduino UNO R3 and GPS in embedded system

domain. The proposed vehicle accident detection system can track geographical information

automatically and sends an alert SMS regarding accident. Experimental work has been carried

out carefully. The result shows that higher sensitivity and accuracy is not achieved precisely

using this project. But still this made the project more user-friendly and reliable. Microcontroller sends the alert message through the GSM MODEM including the location to police control room or a rescue team. So the police can immediately trace the location through the GPS in car, after receiving the information. Then after conforming the location necessary action will be taken. If the person meets with a small accident or if there is no serious threat to anyone`s life, then thealert message will not be sent by the controller to avoid wasting the valuable time of the medicalrescue team. The high demand of automobiles has also increased the traffic

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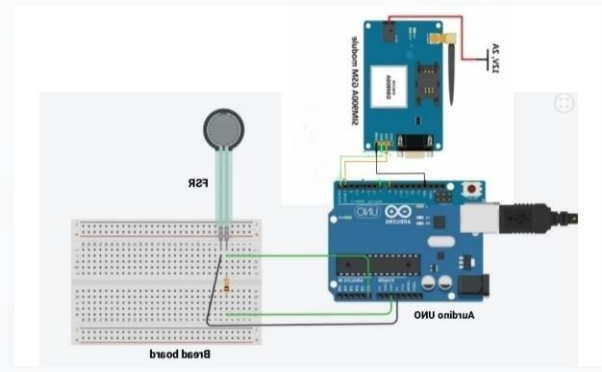
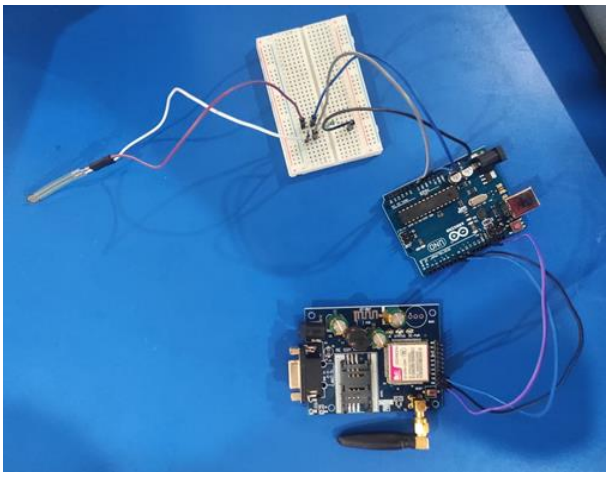
hazards and the roadaccidents. Life of the people is under high risk. This is because of the lack of best emergencyfacilities available in our country. An automatic alarm device for vehicle accidents is introducedin this project. This design is a system which can detect accidents in significantly less time andsends the basic information to first aid center within a few seconds covering geographicalcoordinates occurred. This alert message is sent to the rescue team in a short time, which willhelp in saving the valuable lives. This application provides the optimum solution to pooremergency facilities provided to the roads accidents in

the most feasible way.





5. CONCLUSION

Vehicle tracking systems makes better fleet management and which in turn brings large profits.Better scheduling or route planning can enable you handle larger loads within a particular time.Vehicle tracking both in case of personal as well as business purpose improves safety andsecurity, communication medium, performance monitoring and increases productivity. So in the coming year, it is going to play a major role in our day-to-day living. Main Motto of the Automated Emergency Messenger system project is to decrease the chances of losing life insert

incident which we can't stop from occurring. This device invention is much more useful for the

accidents occurred in deserted places and mid nights. This vehicle tracking and alert feature

plays much more important role in day to day life in future.

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