

# LIFE SAVING DEVICE USING GPS - GSM BASED TRACKING AND MONITORING SYSTEM

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**Abstract:** The rise of technology and infrastructure has made our lives easier. The entrance of technology has also increased the traffic hazards and also the road accidents happen frequently which causes huge loss of life and property due to the poor emergency facilities. This project is a few system which is developed automatically to detect an accident and alert the closest emergency services. This technique may locate the place of the accident so the medical services is directed immediately towards it. The system comprises of accelerometer, vibration sensor GPS and GSM Module support in sending message. Accelerometer detects the sudden change within the axes of car. Vibration sensor detects the heavy vibration within the vehicle. Ultrasonic sensor decrease speed of the vehicle when it comes closer to the opposite vehicle and GSM module sends the alert message to mobile with the situation of the accident. Location of accident is consigned within the kind of Google Map link, derived from the latitude and longitude from GPS module. Then after confirming the situation necessary action are going to be taken and this can help to achieve the rescue service in time and save the precious human life.

**Keywords** – Arduino NANO, GPS Module, GSM Module, Tracking, Vibration Sensor.

## I. INTRODUCTION

Traffic is on the increase because the demand for vehicles is getting higher day by day. So, transportation needs improvement as, since demands are increasing, there'll be more possibility of car accidents. Vehicle accidents are one in every of the leading causes of the fatalities. It'll be a heavy consequence if people can't get assistance on right time. Poor emergency incident may be a major reason for death rate in our country. Crash analysis studies have shown, traffic accidents could be prevented with the utilization of this advanced life saving measure. This design focuses on providing basic information on the accident site to the emergency contacts. As a result of the sudden help, precious life may get saved. During this work, a three-axis accelerometer and GPS tracking system work for accidental

monitoring. This design detects accidents in less time and sends this information to the specified authorities. The development of a transportation has been the generative power for citizenry to own the best civilization above creatures within the earth. Automobile features a great importance in our way of life. We utilize it to travel to our work place, confine touch with our friends and family, and deliver our goods. But it may also bring disaster to us and even can kill us through accidents. Speed is one in every of the foremost important and basic risk factors in driving. It not only affects the severity of a crash, but also increases risk of being involved in an exceedingly crash. Despite many efforts taken by different governmental and nongovernmental organizations all round the world by various programs to aware against careless driving, yet accidents are going down every now then. However, frequent lives could be saved if the emergency assistance could get the smash information in time. As such, productive automatic accident detection with an automatic information to the emergency service with the accident location may be a prime must defend the beneficial human life. This project is to employ proposes to advance the potential of a GPS receiver to detect the speed of a vehicle and detect an accident basing on the supervises speed and send the placement and time of the accident from the GPS data processed by a microcontroller by using the GSM network to the Alert Service Centre.

## II. LITERATURE SURVEY

T Kalyani, because the usage of vehicles is increasing drastically, the hazards thanks to vehicles is additionally increased. The better cause for accidents is high speed, drunk and drive, distracting minds, over stress and thanks to electronic appliances. This paper approaches with accident detection system that happens thanks to inattention of the one who is driving the vehicle. This introduces accident alerting system which alerts the one who is driving the vehicle. If the person isn't during a position to regulate the vehicle then the accident occurs. Once the accident shows to the vehicle this system will send instruction to registered mobile number.

S. Mutharasu, Arduino Based Vehicle Accident Alert System using GPS, GSM and Accelerometer. Accelerometer notices the sudden variation within the axes of car and GSM module send the active message on your

itinerant with the situation of the accident. The propel technology has made our day to day lives easier. Since every coin has two sides similarly technology has its benefits similarly as its disadvantages. The increase in technology has increased the speed of road accidents which causes huge loss of life. The poor emergency facilities available in our country just increase this problem. Our project goes to produce an answer to the present problem.

S. Mohan ram , Now a days we are able to track vehicles using many applications which helps in securing personal vehicles, public vehicles, feet units et al.. Furthermore there's a rapid increase within the occurrence of the Road accident. This paper is a couple of system which is developed to automatically detect an accident and alert the closest hospitals and medical services about it. This technique also can locate the place of the accident in order that the medical services may be directed immediately towards it. The goal of this paper is to make up a Vehicle accidental monitoring system using MEMS, GPS and GSM Technology. The system involves of accelerometer, MCU, GPS & GSM Module support in sending message. The accelerometer is employed to detect fall and Threshold Algorithm are accustomed detect accident. Short Message will involve GPS [Latitude, Longitude] which helps in locating the vehicles.

S. R. Aishwarya, Nowadays, road accidents are very high. Over time medical aid can help save lives. We are eliminating the delay time between the accident happened and rescue team with the help of vehicle accident detection and notification system. In occurrence of accident the Contact Sensors that are mounted on the vehicle will break and it will send the signals to ESP32 microcontroller. Microcontroller then sends the alert notification of Accident Occurred! through GSM. The notification will be send on the Mobile through an app where the user can find the live location of vehicle with the help of GPS. Also, in case the vehicle has been theft, the owner can find the live location of vehicle through the Mobile App.

Shailesh Bhavthankar, explained Wireless System for Vehicle Accident Detection and Reporting using Accelerometer and GPS. In this paper, Accelerometer sensor is used to detect crash and GPS give location of vehicle. In case of any accident, the system send automated message to the preprogrammed number such as family member or emergency medical services via GSM.

Jagdish A.Patel explained Raspberry Pi based smart home. This paper aims at designing a basic home automation application on Raspberry Pi through Interfacing camera as security purpose and the algorithm for the same is implemented in developed in python environment which is the default programming environment provided by Raspberry Pi..

### III. METHODOLOGY

A 9V compact power surplus will power the Arduino board. The GPS and the GSM shield and the impact sensor will derive power from the Arduino board itself. The circuit is first initialized and the GPS and GSM module is turned on. The system hold till the GSM module acquires a signal and is

registered with the network. The system then goes on standby until the impact sensor gives a positive output. Once the accident is detected, Arduino acquires the current location of the vehicle using the GPS module and the co-ordinates are then sent via SMS to emergency services and/or contacts the user may have stored.

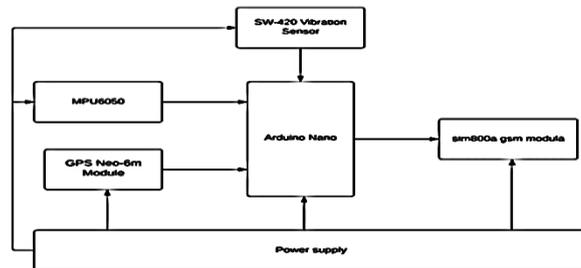


Fig.1: Block Diagram

#### A. Technical Background

This Project deals with fields like IoT, Health Care and Automation. Also, it deals with both software and hardware side equally in terms of contribution. The Hardware part of the project helps in controlling the speed of the vehicle and stops it automatically when the software side of the system detects an obstacle using Image Processing. Python, Anaconda and TensorFlow plays a major role and contributes a lot in this Accident detection project.

#### B. Proposed Solution

Over the last few years, number of researches is conducted on accident monitoring system for human security using GPS and GSM. Our system consists of five main units which coordinates with each other and makes sure that ambulance reaches the hospital without any delay. This system is divided into following units, in the proposed system, vehicle unit installed in the vehicle that sense the accident. If vehicle met an accident, immediately send the location of the accident to the main server. From the control unit, a message is sent to the nearby ambulance. Control unit finds the shortest route to the accident spot, ambulance, hospital. Also send this path to the ambulance and it transmitted the information to the traffic unit through RF communication. Also, using this information the control unit controls all the nodes in the path of the ambulance and make it ON, which ensures that the ambulance reaches the hospital in time.

#### C. Hardware Components (Required for prototype)

1. Arduino Nano
2. Vibration Sensor
3. MEMS Sensor
4. GSM Module
5. GPS Module

#### D. Software Requirements

1. Arduino IDE
2. Embedded

### E. Implementation

The controller used in this project is Arduino which is used for controlling all the modules in the circuit. The two major parts other than the controller is the GPS module which is used as a receiver and other module is GSM. To receive the coordinates of the vehicle GPS module is used and GSM will send the received coordinates to the user through SMS. There is an additional LCD which is used for displaying status message or coordinates.

### F. Working principle

When a person is driving the vehicle met with an accident then the vibrations of the vehicle is received by the vibration sensor and the sensor acts as an accident detection module which further send the information to the micro controller and the location of the vehicle is received through GPS module and the coordinates The vehicle is sent to the GSM module. The received information is sent to arduino uno. The received coordinate information is collected and is send to the respected person,hospitals and police station through SMS.

### G. Circuit Diagram

The circuit diagram consists of the Arduino NANO connected with the mpu6050 across a vibration sensor and the other end arduino is connected with the gsm and sps module. The circuit diagram of is shown in Fig. 2.

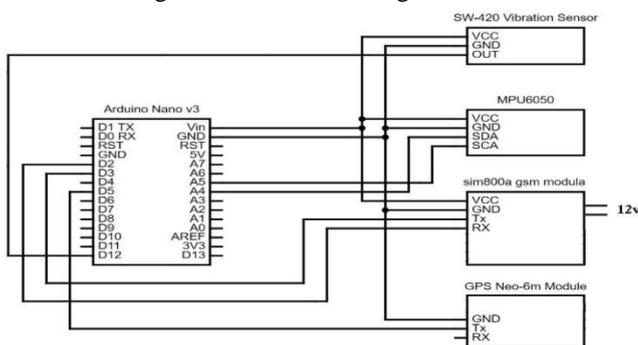


Fig.2: Circuit Diagram

## IV. SIMULATION

Embedded C is a set of language extensions for the C programming language by the C Standards Committee to address commonality issues that exist between C extensions for different embedded systems. Embedded C programming typically requires nonstandard extensions to the C language in order to support enhanced microprocessor features such as fixed-point arithmetic, multiple distinct memory banks, and basic I/O operations. The C Standards Committee produced a Technical Report, most recently revised in 2008 and reviewed in 2013 providing a common standard for all implementations to adhere to. It includes a number of features not available in normal C, such as fixed-point arithmetic, named address spaces and basic I/O hardware addressing. Embedded C uses most of the syntax and semantics of standard C, e.g., main() function, variable definition, datatype declaration, conditional statements (if, switch case), loops (while, for), functions,

arrays and strings, structures and union, bit operations, macros, etc..

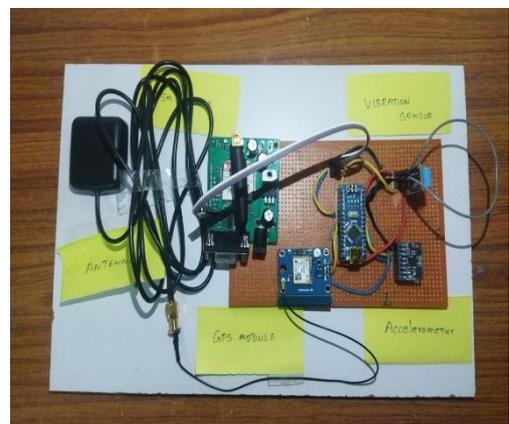
## V. CONCLUSION

Papers provide various methods to detect accidents using both hardware and software methods which give good results. Most of the discussed methods also provide the driving force with the choice of turning of the alarm in cases where the accident isn't serious or false detections of an accident. These methods are either mostly hooked in to some hardware like sensors that need to be present within the car or require a sensible phone to be present within the car. While the utilization of such hardware can convince be a more cost-efficient approach it's the disadvantage of being destroyed within the accident and hence giving spurious or no readings in the least . Hence, an approach that doesn't depend upon any hardware device or sensor that's related to the car is required for the detection of traffic accidents.

## VI. FUTURE SCOPE

The system are often interfaced with vehicle airbag system that forestalls vehicle occupants from striking interior objects like the wheel or window. this will even be developed by interconnecting a camera to the controller module that takes the photograph of the accident spot that creates the tracking easier. Mostly in accidents, it becomes serious because the drivers lose control and fail to prevent the vehicle. In such cases, the vibration sensor are going to be triggered due to the vibrations received and also processed by the processor. The processor has got to be linked to the devices which may lock the brakes when triggered. With this improvement, we will stop the vehicle and may weaken the impact of the accident. This system also can be utilized in fleet management, food services, traffic violation cases, rental vehicle.

## VII. RESULT



## VII. REFERENCE

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