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# GSM AND GPS BASED ACCIDENT IDENTIFICATION SYSTEM

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## ABSTRACT

The high demand for cars increases the number of car accidents and road accidents. People's lives and safety are at stake. This is because our country is not in the best emergency situations. Automatic vehicle accident warning devices were installed. The design is a system that can detect accidents in a short time and send basic information to the emergency center in seconds, including geographic coordinates, time and angle of the car accident. This alert message will be sent to the rescue team in a short time, which will help save precious lives. In this project, we have proposed a vehicle accident warning system based on Arduino using GPS, GSM and navigation. When the accelerometer detects sudden changes in the vehicle's axle, the GSM module sends an alert message to your mobile phone containing the accident location. Advanced technology makes our daily lives easier. As every coin has two sides, technology has its pros and cons. Advances in technology have increased the risk of road accidents resulting in many deaths.

## I.INTRODUCTION

Nowadays, science and innovation have advanced, and transportation systems have.become an important part of the world. In this way, we can smell the air of hybrid animals found on earth. Cars play an important role in our daily lives, but like anything else, there are good and bad. Road accidents are a serious threat to human life. Speed is the main factor in many accidents. The accident detection and warning framework on the PDA tracks accidents with the help of impact sensors and processes the information through a microcontroller unit with GPS, GSM smart applications. This will inform the nearest welfare agencies and the injured family members. 1]. Speed is one of the main reasons why champions fail. Nowadays, GPS has become an important part of vehicles. Apart from being used for different purposes, GPS can also track speed and identify accidents. It uses a very simple and popular GSM modem to transmit the fault location to the alarm service center. It can send a final pre-accident speed check to assess the severity of the accident and can initiate a voice call. In addition to the automatic notification system, users in the car can also be notified of the incident situation by pressing the manual search button. Therefore, since human life is important, the proposed framework will be useful for humans through good management [3]. A vehicle tracking and GPS management system that provides a wide range of global management anytime, anywhere. This framework allows individuals to track the vehicle's location, speed, position and progress. The monitoring process includes setting speed and geographic limits, obtaining vehicle progress, and continuous history reports. It can be used to prevent car theft by combining the device with an automatic alarm and local guidance of the car if it is believed to be stolen. The following vehicles in our framework use a variety of new technologies and communication systems, including GPRS, GSM, Internet

and GPS. For future work, more management can be added to the portable application, and the graphical client interface can be more advanced [6].

## II.LITERATURE SURVEY

Kiran Sawant et al. Create an emergency alert system using a GSM modem with GPS and a Raspberry Pi. The piezoelectric sensor first detects the occurrence of an accident and provides its output to the microcontroller. GPS detects the latitude and longitude of the vehicle. The latitude and longitude of the vehicle is sent as a message via GSM. The static IP address of the emergency dispatch server is already in the EEPROM. Whenever an incident occurs, its location is detected, and a message is sent to a pre-saved static IP address [1]. Mrs. ManasiPatil et al. better traffic management system using Raspberry pi and RFID technology. A Raspberry Pi controller is installed in the vehicle, which is connected to sensors such as wind, temperature, and vibration. These sensors are installed with preset values before an accident occurs. When an accident occurs, the value of one of the sensors changes and a message is sent via GSM to the specified number (ambulance). The GPS module, which is connected to the operator, also transmits the location of the vehicle. When an ambulance message arrives, give the ambulance a clear path. The ambulance has an ARM controller, which connects to the RFID tag and transmits electromagnetic waves. When an ambulance arrives at the traffic signal, the RFID reader on the link detects the signal's electromagnetic waves. If the traffic light is red, patrons walk through the library and turn the red light to green in seconds. In this case, the RFID on the opposing link will automatically turn the relative signal to red. This is a clear path to the ambulance. [2]. V.Sagar Reddy et al developed a navigation based system to ensure driver safety. The advantage of this system is that the location of the vehicle can be tracked by sending a text message or email to an authorized person. The system was designed using a Raspberry Pi (ARM11) that can quickly access the accelerometer to detect objects. If an accident occurs, a message is sent to the authorized personnel so that they can act quickly to save lives and reduce casualties. The images captured by the on-board cameras are sent by email to the relevant parties (such as the owner of the vehicle) along with the type of accident and the time of the accident. [3]. Sri Krishna ChaitanyaVarma et al proposed an automatic vehicle accident detection and communication system using GPS and GSM modem. This system uses a single AT89C52 chip. When the system is powered on, the LED will flash to indicate that the circuit is powered. When the infrared sensors detect an obstacle, an interruption is sent to the microcontroller. GPS will get the location of the vehicle involved in the accident and send back the message. Messages are sent as messages to phone numbers. Messages are received using a GSM modem in the circuit. This message provides information about longitude and latitude values. Using these values the parking space can be determined [4]. Apurva Mane et al. explains the use of Arduino for vehicle crash detection and remote start devices. The main features of this design are the real-time monitoring of the vehicle by sending information about location (longitude, latitude), time and angle to the monitoring station and the user/owner's mobile device as help them get medical help when an accident happens. or accident. help. Users/owners can also get parking space in real-time. Whenever an accident occurs, the MEMS and vibration sensors detect it and send a signal to the microcontroller to locate the specific location where the accident occurred using GPS, then GSM sends the message to official members [5]

## III.EXISTING SYSTEM

In the existing system, there are 2 methods.

•Manual detection system

•Driver initiated detection system

•Automatic detection system

**a. Manual Detection System**

In this method, accident is detected from.

- -motorist report
- -transportation department
- -public crews report
- -aerial surveillance
- -close circuit camera surveillance.

The drawback of this type of detection system is that someone has to witness the incident. The driver initiated detection system. Moreover, there are delays and inaccuracies due to the expression problem of the witness.

**b. Driver Initiated Detection System**

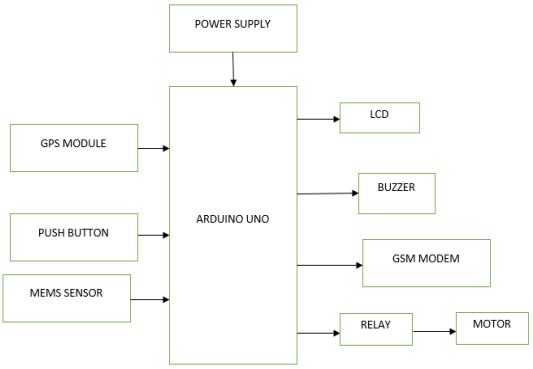
The driver initiated incident detection system has more advantages which includes the quick reaction, more incident information etc. However, with the severity of the accident, drivers may not be able to report at all.

## IV.PROPOSED SYSTEM:

In this project, we have proposed a vehicle accident warning system based on Arduino using GPS, GSM and navigation. When the accelerometer detects sudden changes in the vehicle's axle, the GSM module sends an alert message to your mobile phone containing the accident

location. Advanced technology makes our daily lives easier.

**BLOCK DIAGRAM:**




**V.HARDWARE DESCRIPTION:**

**A. Arduino Uno**:

Arduino Uno is a micro-board based on the ATmega328P 8-bit microcontroller. In addition to the ATmega328P, it also contains a crystal oscillator, serial communication, voltage regulator, and other components to support the microcontroller. The Arduino Uno has 14 digital input/output pins (6 of which can be used as PWM outputs), 6 analog input pins, a USB connector, a power bank, an ICSP header, and a reset button. Arduino can be used to communicate with computers, other Arduino boards, or other microcontrollers. The ATmega328P microcontroller provides UART TTL (5V) serial communication, which can be accessed using digital pin 0 (Rx) and digital pin 1 (Tx). The ATmega16U2 on board does serial communication over USB and appears as a virtual port to the computer on the computer. The ATmega16U2 firmware uses a standard USB COM driver, no external drivers are required. However, on Windows, an .inf file is required. The Arduino software includes a serial monitor that allows simple text data to be sent to the Arduino board.

Fig 1: Arduino UNO

**B.GSM MODULE:**

The SIM900A is a ready-to-use GSM/GPRS module used in many mobile phones and PDAs. This feature can also be used to develop IoT (Internet of Things) and embedded applications. The SIM900A is a dual-band GSM/GPRS device operating at EGSM 900MHz and DCS 1800MHz. The SIM900A includes multiple GPRS Class 10/Class 8 slots (optional) and supports GPRS CS-1, CS-2, CS-3 and CS-4 coding schemes.


Fig 2: GSM Module

**C.GPS MODULE:**

NEO-6MV2 is a GPS (Global Positioning System) module used for navigation. This module simply checks its location on the ground and outputs the longitude and latitude of its location. This simple, cost-effective transmitter offers a wide range of connectivity options in a small (16 x 12.2 x 2.4 mm) package. The compact architecture, power supply and memory options make the NEO-6 module ideal for low-cost and space-efficient mobile devices. Its innovative design gives NEO-6MV2 excellent navigation performance even in the most challenging environments.

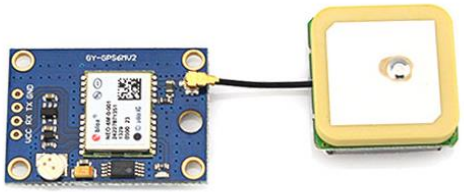
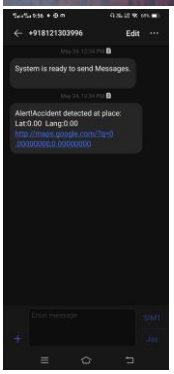


Fig 3: GPS Modem

## VI.RESULTS:


Once buzzer gets triggered, we will get latitude and longitude values .


Then it will detect accident place along with longitude value.


Message sent to phone no. which we have given in program along with latitude, longitude andlocation.

## VII.CONCLUSION

Our system uses the Arduino uno to detect the accident site and send a message to the relatives and rescue system. It uses the Internet of Things to change the way our models interact and help manage traffic. We use the GPS component to determine the exact location of the incident and the GSM component to send messages to emergency contacts. We believe that IoT can change the nature of systems and respond to various applications in traffic management. Our system can be integrated into the vehicle's airbag system to prevent vehicle occupants from hitting interior items such as steering wheels and windows. You can also add a camera to the system and click a photo of the crash site to locate the system directly. It can also help with insurance claims and accidents.

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