ACCIDENT RESCUE SYSTEM USING GSM,GPS AND NODE MCU

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Abstract : The Rapid growth of technology and infrastructure has made our lives easier. The advent of technology has also increased the traffic hazards and the road accidents take place frequently which causes huge loss of life and property because of the poor emergency facilities. Our project will provide an optimum solution to this draw back. According to this project, when a vehicle meets with an accident, the Micro electro mechanical system (MEMS) sensor will detect the signal and this signal will be analyzed by Node MCU. The Node MCU sends the alert message through the GSM Module including the location to police control room or a rescue team. So, the police can immediately trace the location through the GPS Module, after receiving the information. Then after confirming the location necessary action will be taken. The aim of this work is to automatically detect an accident and alert the nearest hospital or medical services about the exact location of the accident.

Keywords : GPS (Global Positioning System); GSM (Global System for Mobile), MEMS Sensor.

I INTRODUCTION

Nowadays, with the world's population continually rising, finding someone or anything is getting more difficult. The growing demand for autos, on the other side, has aggravated traffic hazards and road coincidences. Publics be alive are at grave danger Road accidents account for the majority of accidents fatalities worldwide.

India has the world's highest mortality rate. Speeding, not getting enough sleep, and drinking and driving were all factors in collision. Between 2000 and 2015, there was a 50 percent rise in the number of unintentional deaths, compared to 2000.
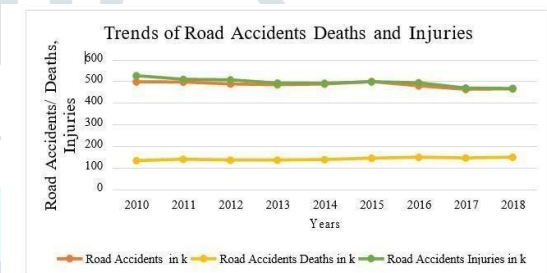

Fig. Road Accidents Deaths and Injuries year to year data

According to the Planning Commission of India, the growing number of traffic deaths costs India 2.5 percent of its GDP each year. "Delay in rescue" is the leading cause of accident fatalities. The issue is that determining whether or not an accident has occurred and locating the location where it occurred is challenging. Another key factor is ineffective medical assistance. According to a study, every minute that an injured crash victim does not receive immediate medical treatment might result in death.The majority of victims die as a result of such circumstances. As a result, the concept of saving lives through solving the problem emerges. In this project, develop an autonomous automobile accident detection system. This system can identify automobile accidents in a much shorter time, and it will send a collision alert signal to the built cellphone digit (saving squad, household participants, and so on...), which can assist in protecting important life.

These consist of an MPU- 6050 module that detects sudden angle changes that might indicate

an accident. The signal is sent using the GSM system, and the accident position can find using the GPS module.Vehicle tracking is possible in any weather condition.This technology is designed to provide the best solution to bad emergency services for traffic accidents in the most efficient manner possible.

II RELATED WORK

Many traffic management systems automatic incident detection methods to detect and respond to develop various traffic incidents as timely as possible. While many researchers have gone into automatic incident detection based on GPS/GSM technologies, The literature review focuses upon reviewing the existing researches on automatic incident detection technologies and seeks for an efficient method of automated accident detection to deliver emergency data. Proposed a prototype proposal designed to improve the chances of survival for passengers involved in car accidents. The proposed system offers automated detection, reports, and assistance to passengers involved in road accidents by exploiting the capabilities offered by vehicular communication technologies.   III PROPOSED SYSTEM

When accidents occur, no one would get know what happened and where it happened. Thus, resulting in a huge loss of life. Air bags and Automatic Breaking System (ABS) safety are available in vehicles but having all these safety systems also there is a chance of getting hurt and person's dies by delay and none gets to know the accident locations. To overcome all such problem Accidental detection and rescue system has following proposed solutions:

Detects and reports the accidents that occurs in vehicles through sending message to family and also send data using GSM and GSP.

- The GPS module in this system assists in locating and analysing the latitude and longitudinal coordinates of the accident site.
- Its send the message through the GSM modem.
- GSM modem is similar to mobile phone without any display, keypad and speakers

This accepts a SIM card, and operates over a subscription to a mobile operator.

- LCD is used to display the accident information and buzzer is used to produce

the sound if any accident happen in the surrounding.
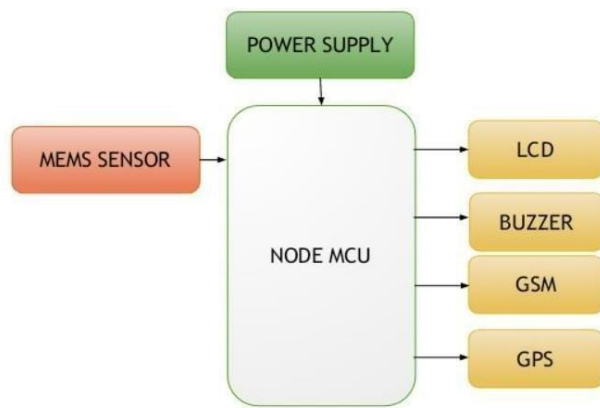
IV METHODOLOGY

In this era of large professional growth everybody is busy with their lives. People, especially in urban areas have to move from one place to another any time of the day with much of speed. Due to this reason and sometimes due to in efficient people in the driving seats road accidents are quite common thing that can happen. Road accidents can snuff out a life if the victim is not given proper medical attention at proper time.

So, in this project we have planned to design a system that can detect road accident and identify the location through GPS. After that, through GSM interface this will be notified to the nearest emergency care unit so that the victim can get immediate medical attention.

This data is in the shape of a latitude and longitude scale. Encoding is completed, and the data is sent to the GSM modem [9]. Node MCU send's the signal to the GSM modem for sending accident message to preinstalled numbers in it gathers the location data by GPS receiver module and then sends the data to the cell phone in Text format SMS and also uploads data of longitude and latitude.
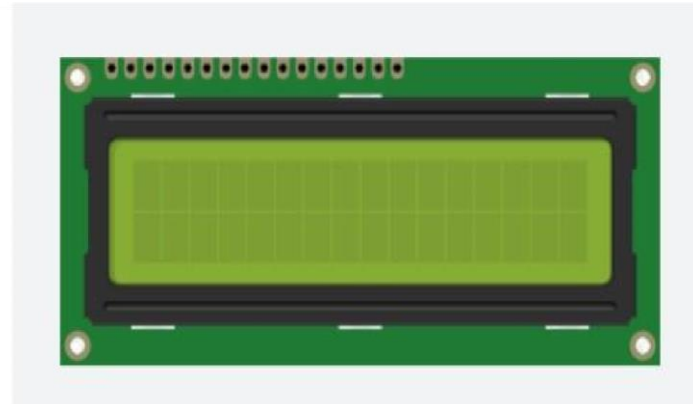
- The Prototype of this Accident Detection and information passing technique uses the following steps:
- The Complete Setup is depicted in the form of block diagram.
- Piezoelectric sensor detects the first occurrence of the accident and it is intimated to the MCU.
- The Latitude and Longitude are detected using GPS and it is sent as message to the rescue team through GSM.
- The message receiver number is pre stored in the EEPROM.
- A OFF Switch is also provided at times of need to avoid the false message.

V BLOCK DIAGRAM

Fig. Accident Identification System Using GSM ,GPS and Node MCU NODE MCU:

In the world of technology, Node MCU has become a hot topic. It has   altered how we work. ESP8266, a cute, microcontroller allows the bitesized Wi-Fi from Expressive Systems, can observe and regulate things from wherever in the globe, making it ideal for just about any project. n addition, there's 128 KB of RAM and 4MB of Flash memory (for programme and data storage).

There is an 802.11b/g/n HT40 Wi-Fi transceiver in the ESP8266, permitting it to link to a Wi-Fi network and cooperate with the Internet, moreover it produce its private network for additional devices to link to.

Specifications:

- O Tensilica1Xtensa132-bitLX106 801to11601MHz Clock Frequency.
- O 128kB1Internal1RAM
- O 4MB1External Flash
- O 802.11b/g/n1Wi-Fi1Transceiver
- O Operating Voltage: 2.5V1to13.6V
- O On-board 3.3V1600mA Regulator
- O CP21021USB-to-UART Converter
- O 4.5 Mbps1Communication1Speed

O

LCD DISPLAY:

LCD stands for liquid crystal display. Character and graphical LCD's are most common among hobbyist and day electronic circuit/project makers. Since their interface serial/parallel pins are defined so it's easy to interface them with many microcontrollers. They are used to show status of the product or provide interface for inputting or selecting some process. Character LCD come in many sizes 8x1, 8x2, 10x2,

16x1, 16x2,16x4, 20x2, 20x4, 24x2, 30x2, 32x2, 40x2 etc. We have used 16x2 LCD for our project.

GPS Module:

GPS stands for Global Positioning System and is used to detect the latitude and longitude of any location on the earth, with the exact UTC time. GPS module is used in our project to track the location of the accident. This device receives the coordinates from the satellite for each and every second, with time and date. In our project, we have used GPS module SKG13BL, which is a Ultra High Sensitivity and Low Power GPS Receiver Module
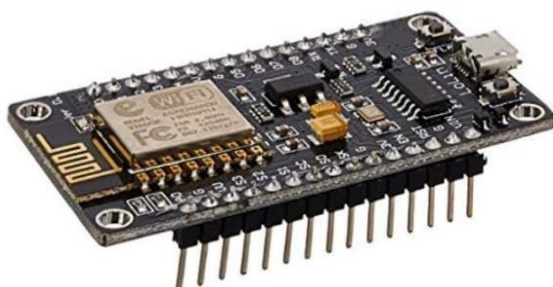

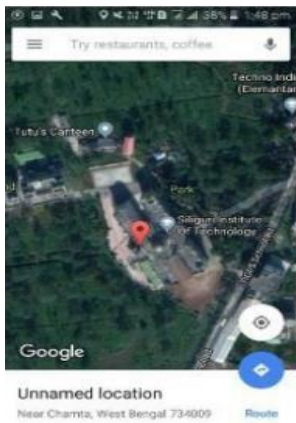**Fig: message received by the specified phone number**

Fig: Location of the accident sent via Google Map.

GSM MODULE:

GSM/GPRS module is used to establish communication between a computer and a GSM- GPRS system. Global System for

Mobile communication (GSM) is an architecture used for mobile communication in most of the countries.

VI ADVANTAGES

- GSM&GPM Alerts police and medical units about accidents.
- Simple design and can be interfaced with other systems.
- Easy to operate by the user.
- Reliable system.
- Easy to operate.
- Monitors hazards and threats.
- Sophisticated security.
- Simple and Reliable Design.

VII RESULT

The system detects accident from vehicle and send message through GSM module. The message is received by another GSM module. Google Map Module It displays Google map show you exact location of accident and it details. It gets detail SMS from accident location. Hence there is small variation in the coordinates, initial value of latitude and longitude are same but fractional value changes with small difference.
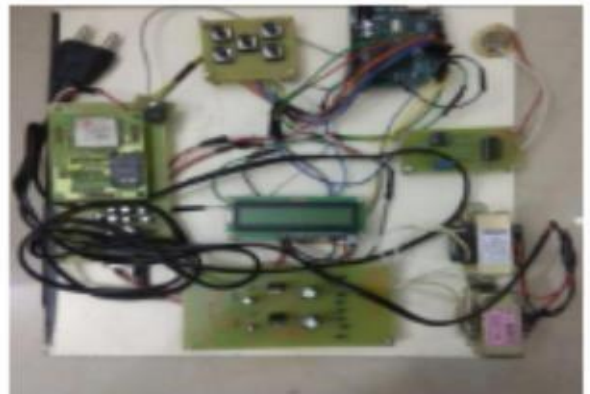
VIII CONCLUSION

Our idea is used to detect accident and automate emergency assistance services. As a result, system is sending SMS to the nearest Emergency assistance service provider from accident location.

The high demand of automobiles has also increased the traffic hazards and the road accidents. Life of the people is under high risk. This is because of the lack of best emergency facilities available in our country. An automatic alarm device for vehicle accidents.

This design is a system which can detect accidents in significantly less time and sends the basic information. This alert message is sent to the rescue team in a short time, which will help in saving the valuable lives.

A Switch is also provided in order to terminate the sending of a message in rare case where there is no casualty, this can save the precious time of the medical rescue team. When the accident occurs the alert message is sent automatically to the rescue team and to the police station and the message is sent through the GSM module.

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