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# Accident Detection and Alert System for Medical Assistance

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**Abstract:- Each day around the world a lot of people die in fatal road accidents. Most of the fatalities occur due to unavailability of proper medical attention. More than 1.25 million people die in road accident. The aim of this project is to find the vehicle, where it is, and locate the vehicle by means of sending a message using a system which is placed inside of vehicle system, most of the times we may not be able to find accident spot due to we don't know where accident has occurred. Project Accident Detection and Alerting System for Medical Assistance are designed to avoid such situation. As soon as accident is detected our system locates the corresponding coordinates and sends them to nearby emergency services as well as to the family members of victim so that they can also reach as soon as possible.**

***Keywords:-*** *Accident detection and alert, Medical Assistance, Internet of Things(IOT), Acceleration sensor, Global Positioning System(GPS).*

## I. INTRODUCTION

Transportation has high importance in our daily routine, but it can cause disaster and even fatalities. Road Accident are detrimental i.e. they uses countries 3% of GDP. Furthermore, between 20-50 million injuries occur in road accidents. If the current trend keep on going then by the year 2030 deaths due to road accidents will become 7$^{th}$ leading cause, in 2009 it was at 9$^{th}$, it is leading cause in age 17-30 year old age group. Half of the fatalities occurs on the road are pedestrians, cyclists and motorcyclists. As the numbers of vehicles are growing number of road accidents are also raising tremendously, accidents also cause heavy traffic. We have developed a system which uses cellular IOT and GPS to locate and send the necessary information.

## II. OBJECTIVE

Goal of this article are as follows:

- To Study the accident statics
- To study current existing systems
- To develop a system which over comes cons of existing system.
- Reduce the fatality rate
- To identify and eliminate irrelevant components present in existing system
- Make an economical system for detection and alert system.

## III. EXISISTING SYSTEM

We studied numerous existing system most of them used Bluetooth to be connected. The foremost disadvantage of Bluetooth technology is that it uses a lot of battery power, furthermore device has to connect each time the vehicle is started. Bluetooth has very weak security system giving rise to threats. Speed promised by Bluetooth 4.0 is up to 25Mbps which is far slower than cellular 4G LTE i.e. up to 420Mbps. Additionally, Bluetooth can be easily hacked and Bluetooth can cause embedding of virus in our system.

## IV. PROPOSED SYSTEM

In our system we have install cellular 4G LTE technology which is fast and efficient as well. Additionally we have used shock detector which keep detecting shock when the shock is measure above the defined value then using GPS technology is locates the vehicle on the globe. It sends the marked location and alerts the nearest emergency services such as police station, hospital, ambulance service and to the family members of the person.

## V. METHODOLOGY

The following technologies were used in our system

- GPS( Global Positioning System)


Fig 1:- GPS Sensor

GPS is a space-based global navigation satellite system which provides reliable location information in all weather and at all times and anywhere on or near the Earth will when and where there is an unobstructed line of sight to four or more GPS satellites. GPS satellites broadcast signals from space, which every GPS receiver uses to calculate its 3D location (latitude, longitude, and altitude) also the current time. Presently this system will transmit the latitude and longitude, with this information the location could be calculated by the nearest GSM transmission location with the help of mobile service communication networks.

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- *Shock Sensors*

Fig 2:- Shock Sensor

This is a sensor which measures the sudden physical impact. It is a subtype of vibration sensor and accelerometer .Shock sensors are crucial as they inform the system that accident might have occurred.

- *Cellular IOT Device*

This is hearts of our systems which connects all the sensors to the internet and provide massive data flow.

Fig 3:- Cellular IOT Device

Cellular IOT provides an alternative to low power, wide area networks (acronym: "LPWAN") like the non-cellular "LoRaWAN" and "Sigfox" technologies, which operate in unlicensed bands.

- *8051 Microcontroller*

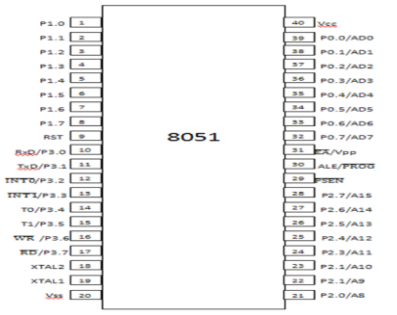


Fig 4:- 8051 Pin Diagram

The AT89C52 is a low-power, high-performance CMOS 8-bit microcomputer nearby 8K bytes of Speck programmable and erasable read only respect (PEROM). The tool is feigned object Atmel's high-density non-volatile reminiscence technology and is in keeping hither the industry-standard 80C51 and 80C52 instruction set and pin out. The on-scrutinize Moment allows the program memory to be reprogrammed in-system or by a money-grubbing non-volatile memory programmer. By into the bargain a changeable 8-bit CPU in the matter of Flash on a rigid chip, the Atmel AT89C52 is an effective microcomputer which provides a highly-flexible and an economical solution to many embedded control applications.

## VI. SYSTEM ARCHITECTURE

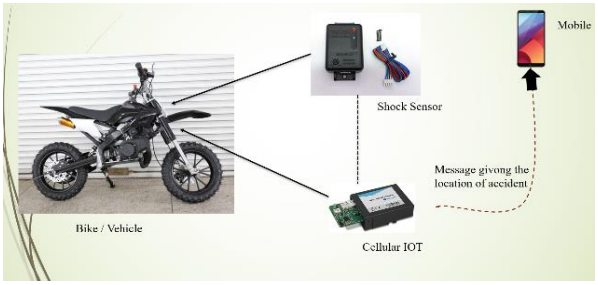


Fig 5:- System Architecture

As discussed earlier our system involves shock sensors, GPS and cellular IOT device. When Shock sensors measures sudden physical impact the GPS locates the corresponding coordination and the cellular IOT devices send the coordination, impact, time of impact to the nearest emergency services so that the assistance reaches victim as soon as possible with necessary equipment. Also the data of victim will be available on device such as blood group and any previous medical history. So that hassle free treatment can be provided.

## VII. MODULE DESCRIPTION

Our system utilises 8051 microcontroller along with shock sensor, cellular IOT device, GPS in our architecture. All of the components perform their assigned task to form a well organised system

## VIII. APPLICATION

Our system can be used mostly with vehicles in order to prevent any fatality due to lack of medical assistance provided to victim.

## IX. CONCLUSION

Transportation has great impact in our regular life so that fatalities. In order to avoid deaths the data should be added while installing system and a pre-configured contact number should be provided so that they can provide efficient first-aid kit.

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