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# ACCIDENT MONITORING AND RESCUE SYSTEM

Mr. Aman Kaushik<sup>1</sup>, Lucky Verma<sup>2</sup>

<sup>1</sup>Assistant Professor, AIT-CSE, Chandigarh University, Gharuan(Mohali) <sup>2</sup>B.E CSE (Internet of Things), Chandigarh University

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*Abstract*— In the world of increasing vehicles because of rapid growth in automobile sector number of accidents on the roads also increased. After accident happens sometimes car owner or driver becomes unconscious. Then it will become a necessary thing to inform his/her relative or police or hospital to prevent loss of life caused due to any delay. This protocol demonstrates how sensors can be optimized by implementing IoT (Internet of Things) and can save a person's life. In this proposed system as soon as car struck hardly to any object or its accelerometer value get changed after particular point that set as threshold then a message or call will be send to his/her relative, police or emergency services. This information message contains the information about the accident location. This protocol has been made using free cloud services and various types of smart devices like temperature sensor, on board accelerometer and GPS module embedded with CC3200 Launchpad. It includes jumper wires, connectors, power bank, USB cable and small car. Twilio cloud is a developer platform for communication that provides various API's like SMS, video, audio, call services. Temboo is an IoT based cloud platform for sending messages by using ssid and unique numher

## **1.** INTRODUCTION

In the world of increasing vehicles because of rapid growth in automobile sector number of accidents on the roads also increased. After accident happens sometimes car owner or driver becomes unconscious. Then it will become a necessary thing to inform his/her relative or police or hospital to prevent loss of life caused due to any delay. This protocol demonstrates how sensors can be optimized by implementing iot (internet of things) and can save a person's life. In this proposed system as soon as car struck hardly to any object or its accelerometer value get changed after particular point that set as threshold then a message or call will be send to his/her relative, police or emergency services. This information message contains the information about the accident location. This protocol has been made using free cloud services and various types of smart devices like temperature sensor, on board accelerometer and gps module embedded with cc3200 launchpad. It includes jumper wires, connectors, power bank, usb cable and small car. Twilio cloud is a developer platform for communication that provides various api's like sms, video, audio, call services. Temboo is an iot based cloud platform for sending messages by using ssid and unique number.

## 2. LITERATURE SURVEY

To monitor the accident and tracing of the vehicle various technologies have been implemented and are available in present days. A former way of accident detection was calling to the nearest hospital after occurring of accident manually. But it causes delay in arrival of ambulance.

Other system used Arduino board as microcontroller unit but it needs extra Wi-Fi module to communicate with other devices. That cause complexity in implementation of system due to increase in number of devices embedded with Arduino. Moreover Arduino has less memory as well as GPIO (General Purpose Input Output) pins than CC3200 that makes it less advanced than the present proposed system.

Other existing system used IoT and cloud services which detect the vehicle by SVM (support vehicle machine) that is developed by Ant Colony Algorithm (ACA). Its aim is to differentiate accident occurred between traffic area and non-traffic area.

One system used GSM module to send the information message having value of GPS in the form of latitude and longitude. But our proposed system can send the information message having GPS value, temperature readings and accelerometer value.

### **3. PROBLEM IDENTIFICATION**

This paper has been written for bringing out the major problem of accident and to reduce the death rate increased in accidents is basically the actual area of concern. The condition of Indian roads is not good cannot be improved immediately. According to NDTV, there is one death every four minutes due to a road accident in India. So we start working on how we can reduce road accident and rescue them.so we make a IoT based device that will helpful for all human beings.

# 4. HARDWARE COMPONENTS

### CC3200 LAUNCHPAD:

CC3200 LAUNCHPAD IS A MICROCONTROLLER BOARD FOR WIRELESS COMMUNICATION, THE INDUSTRY'S FIRST SINGLE-CHIP PROGRAMMABLE MCU WITH BUILT-IN WI-FI CONNECTIVITY. CC3200 LAUNCHPAD IS THE CENTRAL PART OF THIS SYSTEM USED TO DETECT WHEN AN ACCIDENT OCCURS AND COMMUNICATE WITH OTHER DEVICES. IT RECEIVES THE INFORMATION FROM ON-BOARD ACCELEROMETER AND GPS MODULE AND UPLOADS THE DATA OVER THE TEMBOO CLOUD. INTERNATIONAL RESEARCH JOURNAL OF ENGINEERING AND TECHNOLOGY (IRJET)

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## **GPS MODULE:**

GPS MODULE (GY-GPS6MV2) IS A DEVICE THAT RECEIVES INFORMATION FROM GPS (GLOBAL POSITIONING SYSTEM) SATELLITE AND THEN CALCULATES THE GEOGRAPHICAL POSITION OF ANY PARTICULAR OBJECT. IT IS ALSO KNOWN AS GPS RECEIVER AS IT COLLECTS DATA FROM SATELLITES.

## **JUMPER WIRES:**

THESE ARE SIMPLY A TYPE OF CONDUCTING WIRES THAT CONNECTS TWO TERMINALS IN A CONNECTION AND FORM A CIRCUIT. THESE ARE MADE OF HIGH-GRADE COPPER MATERIAL THAT MAKES IT MORE SAFE AND DURABLE. THESE CONNECT THE **GPS** MODULE WITH **CC3200** BOARD AND ESTABLISH A CONNECTION BETWEEN THEM.

### **CLOUD SERVICES:**

• TEMBOO IS AN IOT BASED CLOUD PLATFORM WHICH PROVIDES SAAS SERVICES TO THE CUSTOMERS. SAAS REFERS TO SOFTWARE AS A SERVICE THAT GIVES THE CAPABILITY TO SAVE, MANIPULATE AND MONITOR THE DATA OVER THE CLOUD FROM ANYWHERE AND BY ANY TYPE OF DEVICES. IT PROVIDES VARIOUS TOOLS AND SERVICES WHICH CONSUMERS CAN UTILIZE. BY PREDEFINED CHORES AND API'S USER CAN CONNECT HETEROGENEOUS TYPE OF DEVICES AND MAKE AN M2M COMMUNICATION BETWEEN THEM.





### **5. WORKING MODULE**



Fig 2:- Basic Model of Proposed System

Whenever a car struck hardly to any object then it causes a sudden change in acceleration of a moving car more than the threshold we set. Then onboard Accelerometer (BMA222) which communicates using I2C protocol to the microprocessor sends value of its axes to the cloud. GPS Module (GY-GPS6MV2) has been attached to the system.

The accelerometer values, the current GPS coordinates and the speed of the vehicle is sent as an SMS over Twilio's SMS services. This system has both automatic and manual modes, that is if the driver is conscious and feels threatened. CC3200 Launchpad has inbuilt Wi-Fi capability that is the central part of the system used to transfer the input/output of all devices to other parts. USB cable is used to connect CC3200 Launchpad with power bank. Power bank used as a power source for CC3200 Launchpad. GPS module connected with car to trace its location. Energia that is IDE (Integrated development software environment) is used for programming. This protocol can be implemented on large scale using bigger platform. It can be done using more sensors like smoke sensor to detect fire inside or outside of the car. Pressure sensor can be used for determining the opening of airbags. This system is implemented as a protocol on small car but it can be implemented on all vehicles.

## 6. CONCLUSION

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This protocol has presented an optimum solution for accident detection and increased the possibility of saving lives of people occurred in an accident. It includes various technologies and smart devices like cc3200, gps module, on-board temperature sensor and accelerometer, jumper wires, temboo cloud service and twilio sms service. This proposed system aims to inform the victim's relatives and nearby emergency services about the location of the accident. Accelerometer detects the accident occurred and then gps receiver get the information about the accident location. Cc3200 send the information over the cloud using energia software where relatives or emergency services monitor the data. Then twilio send the information message having acceleration, longitude and latitude value and accident location on map. INTERNATIONAL RESEARCH JOURNAL OF ENGINEERING AND TECHNOLOGY (IRJET)

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