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FAAZ SMART HELMET

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ABSTRACT --- Wearing a helmet is important and required by the law in every country of the world. This paper discusses a simple system that makes it possible for a motorcycle accident victim to get the timely medical attention. In this system we use the vibration sensors, pressure sensors, GPS and GSM to achieve this.

Keywords --- Helmet, GSM, GPS, Sensors, SMS.

I. INTRODUCTION

Motorcycles are the most common and easily available mode of transportation in India. With their ease in use there are many difficulties associated with the use of motorcycles, the most prominent among them are the road accidents. Accidents happen for various reasons like faulty motorcycles, lack of equipment, and improper use of motorcycle. In India 25% of all the road accidents that are motorcycle related end in the death of the driver. The basic reason for this is the untimely medical attention for the person. Considering three major factors for avoiding the accident causes such as make wearing the helmet compulsory, avoid drunk and drive and If a person met with an accident, no one is there to help him. Simply leaving or ignoring the person he may die. The idea of this work is to give information about the rider that he has met with an accident, it gives the information about location where the accident has happened.

II. LITERATURE SURVEY

Jenifer William et-al proposed a system that used an accelerometer to check the tilt of the bike and if the tilt is greater than threshold, it sends the emergency message. The limitation of this system is that if the tilting occurs more than the threshold, it sends the message even if accident has not happened [1].

Manjesh N et-al proposed a system that used a MQ-3 sensor to detect the alcohol in the breath. The limitation of the system is that it uses a potentiometer to adjust to different gas concentrations which is open to the user [2].

Hafer Salim proposed a system to detect the accident and use GPS and GSM modems to contact the emergency services [3].

III. PROPOSED SYSTEM

Our smart helmet includes the integrated electronic system which uses some of the basic components in the world of electronics. The microcontroller coordinates with the GPS, GSM, WIFI and the sensors. When the said subject or precisely the motorcycle rider meets with an accident. The vibration sensor, pressure sensor and the accelerometer triggers after a certain value which can cause damage to the motorcycle rider. Once the sensors are triggered above the certain value. The GPS coordinates along with time are send to the family members and the server via WIFI component and GSM.

Sensor: In our system, we have used pressure sensors and vibration sensors. Pressure sensors are used to determine the amount of pressure being applied on the helmet.

The vibration sensors are used to measure the vibration motion of the system.

Accelerometer: We use two accelerometers in the system, which coordinates with the pressure sensor and vibration sensor simultaneously and analysis the statistics of the output of the pressure and vibration sensor. It chooses the maximum value as its output and sends it to the microcontroller.

GPS (Global Positioning System): This module is used to calculate the position and send it to the microcontroller so that the coordinates can be added to the output message.

GSM (Global System for Mobile Communication): GSM is the most widely used electronic device in the systems, which needs to send the text message and connect to the network.

WI-FI Module: This is used to connect to the internet and send the location of the rider after every minute to the server.

Server: It is used to hold the location data of the rider and acts as a backend to the user interface.

User Interface: This is a combination of a website and a mobile application that is used by the family member of the victim to find the details of the hospitals that are nearest to the accident site by providing the phone number and other details.

Microcontroller: The microcontroller is used as a central component of the system. One microcontroller is used to constantly measure the output of the sensors and if the output goes higher than the threshold, it sends the SMS via GSM.

The second microcontroller is used to connect the Wi-Fi module to the internet and send the data to the server after a delay of minute.
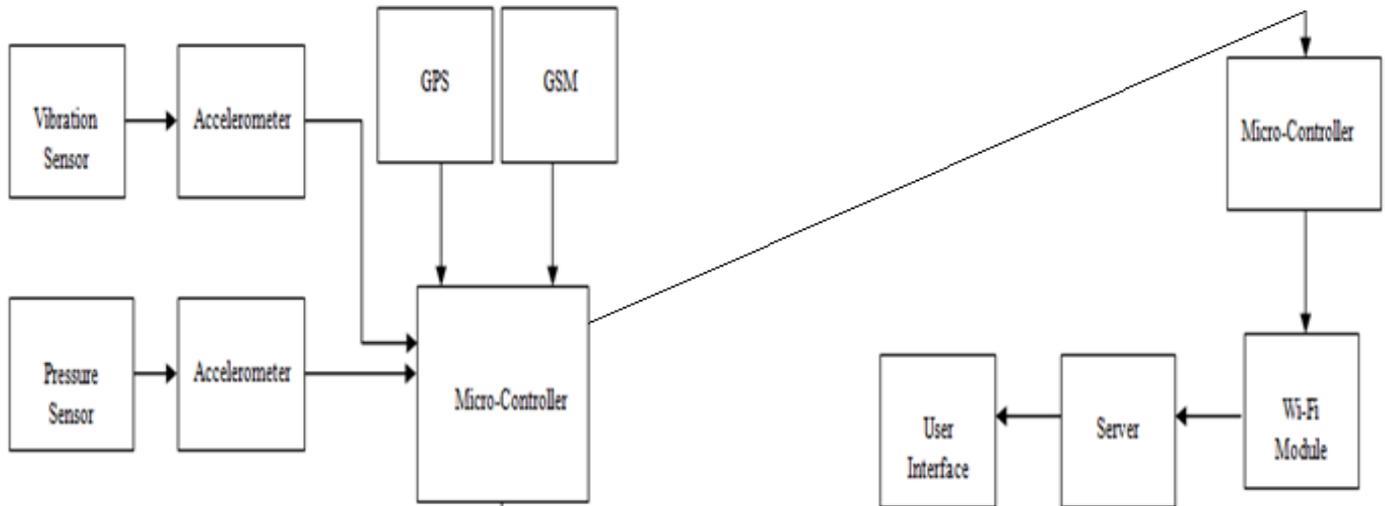
Fig 1. Block Diagram of Proposed System

IV. ALGORITHMS

A. The basic algorithm the locating and sending system will follow is as :

> algo helmet
> threshold←50.
> S←read_sensor_data.
> If(S>threshold) then
>
>> get the gps co-ordinates.
>> initialize the gsm modem.
>> add the co-ordinates to the message.
>> send the message and check status.
>
> send data to the Wi-Fi
> end helmet

B. Algorithm for the system sending data to the server

> algo send
> read data from the sender
> if (data_avaliable)
>> send data to the server
> end send

V. CONCLUSION

The outcome of the project is that we were able to send the SMS to the family member for the victim and the user interface provided an easy way for the victim's family member to contact the nearest hospital.

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