# Hi-tech Helmet and Accidental Free Transportation System

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### Abstract

This Paper provides an excellent alternative to the existing Accidental avoidance techniques. These include Hi-tech helmet and an electronic system which can be applied in mechanical system as two wheelers to avoid accidents on roads by compulsion of wearing helmet. GPS and GSM technologies are used to find the present location of object and sent a SMS at accidental situation. Piezoelectric Crystal is enough to sense vibration and provide the electric pulse to the Transmitter circuit. Accidental free electronic system works on the output of vibration sensors which can be used to sense the vibration when accident is occurred.

#### Keywords

#### GPS, GSM, Piezoelectric Crystal, Pressure Sensors.

# 1. Introduction

The uses of two wheelers and four wheelers are rapidly increasing now a days. This leads many accidents take place on roads daily. Several People loses their lives in road accidents. Accidents avoidance techniques which are innovated till now, are not enough to save the lives of people. Mostly two wheeler bikers avoids to wear the helmet. Vehicles on road can be controlled manually and by using any machine or device. Helmet can be played vital role if it is full with useful technology [1]. The problem is not easy but it is also not impossible to remove. For the solution of this problem an Accidental free electronic system and a helmet with useful technologies can be used. These technology can be served as compulsion of wearing helmet as well as automatically aware to the ambulance and family members by sending the SMS with exact location in accidental condition. These can be reduced the death of people in road accidents [3].

# 2. Problem Analysis

The main problem is motor vehicles invented for making human life better but it affect adverse on human being in the form of accident. Road accidents take place mostly by motor vehicles and motor vehicle is only a human made device if it causes badly in the form of road accidents. Accidents on roads cause harmful injuries to the biker. Mostly death occurs due to collision at brain of biker. This happens due to avoid the helmet while driving. In the accidental condition primary treatment to the victim delays. This leads increasing no. of deaths in road accidents [2].

Accidents occur when two or more vehicles collide to each other. Therefore Collision avoidance of vehicles can be enough to avoid accidents. Speed of vehicle cannot be controlled in the situation of accident. But safety factor can be increased to save lives [4].

# 3. Problem Solutions

One technology which can be used for this purpose is compulsion of wearing the helmet to the bikers as well as an automatic SMS alert in the accidental situation with exact location of the biker [3]. This needs a system which can be applied on vehicles. This system must be operated only in the situation of collision and ignition system of bike must not start without receiving the signal from transmitter at the helmet. Thus helmet must be wearied by the biker. This system must be compatible to the user. In this system ignition system of bike would be start only when relay is connected and it could be only possible when receiver circuit would get the signal from transmitter at the helmet. In two wheeler vehicles a helmet with useful technologies can be used to avoid undesirable situation [5].

# 4. Our Methodology

Our methodology consists of two modules.

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International Journal of Advanced Technology and Engineering Exploration ISSN (Print): 2394-5443 ISSN (Online): 2394-7454 Volume-2 Issue-6 May-2015

One for GPS & GSM module and Second is compulsion of wearing helmet.

### 4.1 MODULE (I)

In this module GPS & GSM module are used with microcontroller and transmitter circuit. Piezo sensor is used to sense the vibration. In the situation of collision Piezo sensor sends the signal to the transmitter circuit at the helmet with the operating frequency which is free to use and receiver circuit receives the signal then after sends to the microcontroller (PIC-Peripheral Interface Controller). Microcontroller sends signal to the GSM with the current location of the person in the form of coordinates. Now GSM sends the message to the feed mobile number as ambulance, police and family members. The coordinates with received message can be traced with the help of any smart application such as map coordinates and others. Transmitter circuit operates in the fixed range of frequency which is free to use. GPS used for continues monitoring of the location of biker. Inside the transmitter circuit, a transmitter used to transmit the signal sensed by the transducer for sensing vibrations, situated inside the helmet [4]



Fig.1: Block Diagram of GPS and GSM Module

#### 4.2 Module (II)

This module is used to avoid accidents on road. This purpose fulfills by using a vibration sensor connected with transmitting circuit. Wearing helmet must be necessary for start the vehicle because of receiving circuit is connected with the relay and relay is connected between the battery and ignition system of vehicle. Thus when the person wears the helmet, Force sensing resistor sends the electric signal to the transmitting circuit and at the receiver end receiver circuit sends the signal to the relay. Then ignition system starts of vehicle. Thus helmet must be wearied by biker to start the ignition system of vehicle [6].



#### Fig. 2: Block Diagram of Accidental free Transportation System

# 5. Results

Essentialness or compulsion of wearing the helmet to the vehicle driver is the outcome of this project with the automatic alert in collision situation. Bike will start only when biker wears the helmet. This can be proved as lives saver for those who get the road accident. This paper enables the compulsion of Wearing helmet. In the situation of collision GPS & GSM system can be vital for saving lives. This paper shows the positive impact of wearing helmet to the vehicle driver. The outcomes of this paper are can be shown by following images.



Fig. 3: Transmitter circuit on Helmet Section

Transmitter circuit functions in two condition. First is when biker wears the helmet, it sends the signal to the receiver unit at bike section and the other is when Biker gets accident, in this situation piezo sensor sends electric pulse to the transmitter circuit which can be sent to the receiver unit.



Fig.4: Receiver Circuit at Bike Section

Receiver circuit situated on bike section. In receiver section GPS provides continues monitoring of current location. When receiver circuit gets the output from transmitter circuit, it enables the relay. Therefore ignition system of bike will start. This results compulsion of wearing the helmet to the biker. Receiver circuit also functions when accidental situation occurs, in this condition receiver unit sends messages to the Ambulance, Police and Family members with the exact position of biker in the form of coordinates. These coordinates received with a message stats as-"ACCIDENT OCCURRED" with coordinates. The above message can be easily shown in the following image [7].



Fig.5 : Received message in Accidental Situation

# 6. Conclusion and Future Work

Road safety for driver is an essential requirement of society. As the Number of vehicles increase day by day. Collision of vehicle also Increases simultaneously. In this situation this project fulfill the Purpose of saving lives. Helmet is best safety equipment for driver. In the nutshell it can be said that compulsion of wearing the helmet to the vehicle driver can impact more to save lives in accidental situation. In future we would try to apply compulsion of seat belt wearing to the four vehicle drivers. So that their lives also would be saved in the accidental situation [8].

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### International Journal of Advanced Technology and Engineering Exploration ISSN (Print): 2394-5443 ISSN (Online): 2394-7454 Volume-2 Issue-6 May-2015

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