Smart Technology Safety Helmet

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Abstract—In present time many cases of bike accident can be seen around us. The people get injured or might be dead and one of the reason is not wearing helmet. Many people could save their life in accident cases if they wear helmet at the time of accident. So as to overcome these problems, a Smart helmet is proposed having a control system built inside a helmet. The idea is obtained after knowing that the increasing number of fatal road accidents over the years is cause for concern among motorcyclists. It consist a RF transmitter and a RF receiver system. The bike will not get start without wearing helmet by the user, as user wear helmet a RF signal radiate from transmitter and once these RF signal get sensed by the receiver placed in the ignition switch of the bike, bike will get start.

Keywords—Smart helmet, IR sensor, alcohol sensor, GPS, GSM, road safety.

I. INTRODUCTION

ROAD traffic crashes take the lives of nearly 1.3 million every year and injure 20-50 million more in the world. World’s population, have comprehensive road safety laws on five key risk factors: drinking and driving, speeding, and failing to use motorcycle helmets, seat-belts and child restraints. So, to overcome from this problem this smart helmet is being introduced which helps to reduce number of accidents that takes every day and also helps to reduce death ratio. This paper presents the smart helmet that ensures that the rider cannot start the bike without wearing it. This helmet uses simple cable replacement for wirelessly switching on a bike, so that the bike would not start without both the key and the helmet. Also, whenever the driver starts ignition, the alcohol sensor measures the content of the alcohol in his breath and automatically switches off the bike if he is drunken. To make driving more safe GSM and GPS technology is used. Vibration sensors are placed in different places of helmet where the probability of hitting is more which are connected to microcontroller board. So when the rider crashes and the helmet hit the ground, these sensors sense and gives to the microcontroller board, then controller extract GPS data using the GPS module that is interfaced to it.

When the data exceeds minimum stress limit then GSM module automatically sends message to ambulance or family members.

II. LITERATURE SURVEY

Er. Nitin Agarwal(2017) In the previous research work that focuses on the point that the bike will not get start if the rider is not wearing helmet, so we modified this feature and make ones bike secure at crucial time. So, we recapitulated the above features and introduce the project with some more unique characteristics.

Intelligent Helmet: In this research paper the accelerometer used for the balancing of the bike rider. If the bike will tilt than the threshold value will consider that the accident occurred and through the GSM & GPS the message will be send to the family member or ambulance.

Accident notification system by using two modem GPS and GSM: The main purpose of this project to find the location of where the accident has occurred and if the bike is stolen then to find the position of the theft vehicle.

III. PROBLEM IDENTIFICATION

If tilting of helmet is done more than threshold level even if accident is not occurred then message will send which is inconvenient.

It is always not possible to send the message to the user on time because of network issues. In some place where there is no network available then it is difficult to send the message.

IV. PROPOSED SOLUTION

For the Inconvenient sending of message we are going to implement the SOS button so as the rider falls down or got accident then the rider with helmet fall on ground so at that time the SOS button get press and the message is to the family member and ambulance.

For this GSM and GPS problem of network we use GSM sim900 because it support and work for 2G network and in India all location have a 2G network so this kind of problem we not occurs.
V. METHODOLOGY

The Arduino mega is interfaced with GPS and GSM modules for finding the location of the rider and is helpful in finding the bad intersection or hole, due to which rider can identify the hole. GSM is used for authentication purpose if the bike is stolen with helmet, the user sends the code to the GSM. With the help of GPS, the location of bike is tracked and it can be saved from theft. And if an unauthorized person doesn’t have helmet and take the bike away from authorized user then motion sensors starts working which helps to find the location of the bike so it prevents from theft also.

**POWER SUPPLY (Battery)**
- 5V Power Supply.
- 12V Power Supply.

**Microcontroller (AT89s52)**
- AT89s52 is low power, high performance CMOS 8-bit microcontroller with 8-kbytes of in System Programmable flash memory.
- It is highly flexible and cost effective.
- It is used for controlling and programming.
Liquid Crystal Display (LCD)
- LCD is connected with 89s52 microcontroller.
- We are using 16x2 LCD.
- LCD is used to display the actual distance between object and Sensor.

RF Transmitter and Receiver
- Range in open space (Standard Conditions) : 100 Meters
- RX Receiver Frequency : 433 MHz
- RX Typical Sensitivity : 105 Dbm
- RX Supply Current : 3.5 mA
- RX IF Frequency : 1MHZ

Global System for Mobile Communication (GSM)
- Supply voltage 3.4V – 4.5V.
- Tri-Band GSM 300/900/1800 MHz
- SMS cell broadcast.
- Antenna connector and antenna pad.

IR sensor
- Operating Voltage: 3.0V – 5.0V
- Detection range: 2cm – 30cm
- Current Consumption: at 23 mA-43 mA.

Global Positioning System (GPS)
- High sensitivity -160dBm.
- Searching up to 65 Channel of satellites.
- Low power consumption.
- Real time navigation for location based services.
- Works from +5V DC.
- Magnetic base active antenna with 3 meter wire length.

VI. CONCLUSION
Finally our purpose of this project is to encourage people to wear helmet so that lives of thousands of people can be saved. Bike location and road obstacle track using smart helmet has been designed wirelessly so that the helmet unit can connect with bike dashboard unit due to which bike is start as well as the obstacles within the path will also be tracked..

REFERENCES