Intelligent Bike Ignition System with Helmet

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***Abstract*- There is increased number of road accidents over the years. In such accidental cases the accidents occurred due to two wheelers are increasing because of less safety. Intelligent Bike Ignition system with smart helmet is a project undertaken to increase the road safety among the bikers. Through the study, it is analyzed that the helmets used are not in safety features. Therefore, this project is designed to introduce safety systems for the motorcyclist to wear helmet properly and compulsory. With the help of image processing unit using Raspberry Pi and open cv, GPS and GSM, bike ignition start only when helmet is worn by biker and in case of accident in throughout journey the message with accident location is sent to the family member that is to predefined number.**

***Index Terms*- Raspberry Pi, Camera, GPS, GSM, Accelerometer**

I. INTRODUCTION

In today's fast growing world everyone wants to reach from one place to another place as fast as possible. The use of bike is very common mode of human transportation. And also traffic rules by two wheeler vehicles are violated day by day on great scale. In the country like India, the cases of bike accidents are much more as compared to other countries of the world. So it is a matter of great concern globally. A biker's helmet is a protective headgear used by the biker, which protects the rider's head from impact during accident. Speeding and not wearing the helmet are the main reasons for injuries. The chances of the injuries will be more if rider do not wear the helmet. The helmet provides ventilation system and protects rider's head from injuries.

If accident occurs it becomes necessary to inform the ambulance for treatment but only few people get the ambulance service at right time and at right place but few people don't get service at all. There are number of rules by the government of India for safety of the bikers. To check whether the traffic rules are followed by the bikers or not there is a traffic police but rules are not followed strongly in India so automatic system is required which ensures that some rules are followed.

To solve these problems we are going to implement intelligent bike ignition system with smart helmet which automatically checks whether the rider has worn helmet or not, if the person has worn the helmet then bike will start otherwise bike will not start. In case of any accident throughout the journey a message having location of accident will automatically sends to the family member that is predefined number and also to the ambulance with the help of inbuilt GSM and GPS module.

II. LITERATURE SURVEY

- Jennifer William, Kaustubh Padwal, Nexon Samuel, Akshay Bawkar, "Intelligent Helmet" International Journal of Scientific & Engineering Research, Volume 7, Issue 3, March-2016. 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 with location. But Limitation of this project is, If tilting of helmet is done more than threshold level even if accident is not occurred then message will send which is inconvenient.
- Shabrin,Bhayashree Jagaddish Nikharge,Maithri M Poojary, T Pooja, Sadhana B "Smart Helmet-Intelligent Safety for motorcyclist" International research journal of engineering and technology, volume 03, Issue 03, March 2016. In this research paper the Raspberry pi and open cv is used to detect the helmet. If the person has worn the helmet then the bike will start otherwise bike will not start. If helmet is stolen this system is not applicable.

- Prof. Chitte P.P. , Mr. Salunke Akshay S. , Mr. Thorat Aniruddha N. , Mr. Bhosale Nilesh T. " Smart Helmet & Intelligent Bike System", International Research Journal of Engineering and Technology (IRJET) , Volume: 03 Issue: 05 , May-2016. In this research paper advance feature like alcohol detection, accident identification, location tracking, use as a hands free device, solar powered, fall detection is implemented.
- Nitin Agarwal, Anshul Kumar Singh, Pushpendra Pratap Singh, Rajesh Sahani. "SMART HELMET", International Research Journal of Engineering and Technology (IRJET), Volume: 02 Issue: 02 | May-2015. In this research paper By using RF transmitter and RF receiver, the motorcycle can be moved if it receive signal from the helmet .

III. BLOCK DIAGRAM

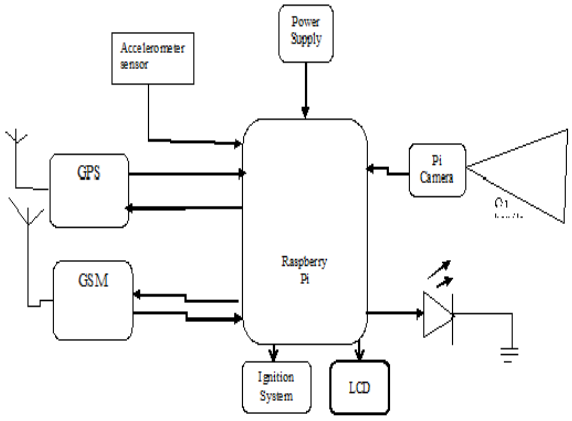

Fig.: Block Diagram

When key is inserted for starting the bike, raspberry pi camera turns on and starts capturing the images so that the image of helmet is captured. When helmet is not worn by the motorcyclist at that time the number of pixels in the image will be counted as well as after wearing the helmet the number of pixels in image are counted. There is change in number of pixels of an image. By using this set point is given and helmet is detected.

Helmet detection is indicated by using LED indicator. LED glows continuously when helmet is on head of the motorcyclist whenever motorcyclist removes the Helmet LED will goes off. After the detection of helmet the output of raspberry pi is given to the ignition system of bike using relay circuit.

In throughout journey of motorcyclist if there is an accident occurred then it is detected by the position of the accelerometer sensor. The output of the accelerometer sensor is given to the raspberry pi. While programming the raspberry pi the ambulance number and the motorcyclist's family members number is predefined. If there is an accident in throughout journey then message with accidental location is sent to these two numbers using GPS and GSM modules.

The message will sent on the platform of the global system of mobile communication (GSM). And also the position of the bike will track by using global positioning system (GPS).

IV. RESULT

Our project entitled "Intelligent Bike Ignition System with Helmet" is successfully completed and the results obtained are satisfactory. It will be easier for the people who are going to take the project for the further modifications. The developed system efficiently ensures:

1. Rider is wearing helmet throughout the ride.
2. Accident Detection

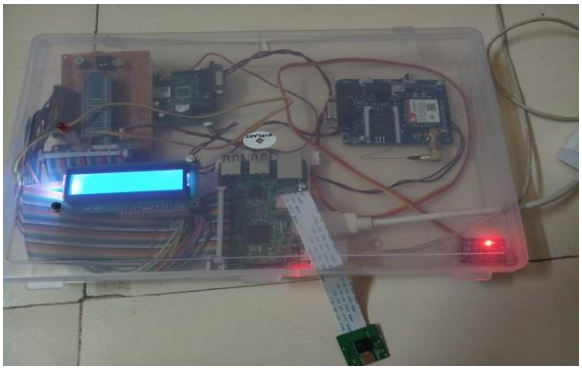

Fig.: Assembly of project

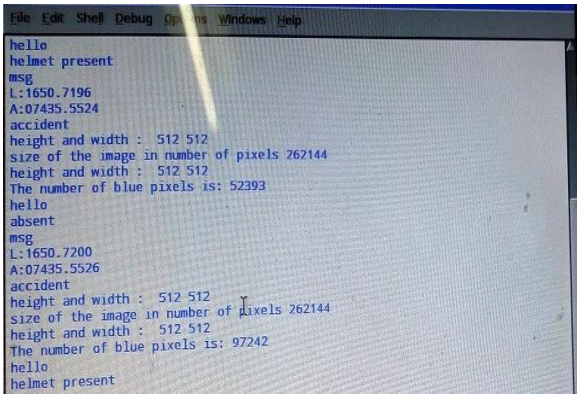

Fig.: conditions of helmet present or absent

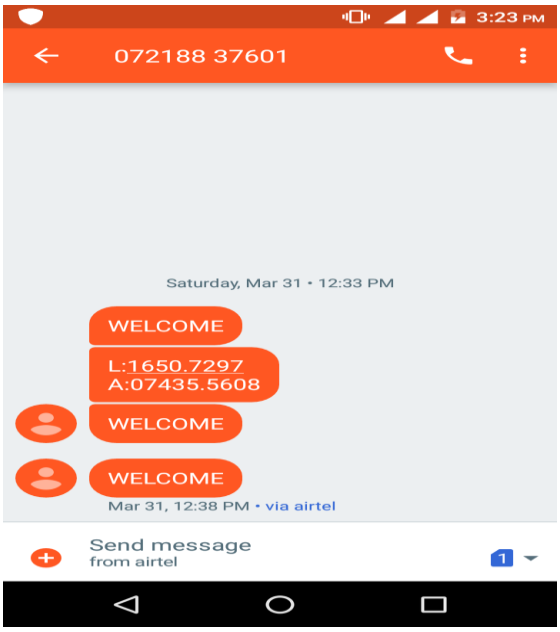

Fig.: message sent to the predefined number

Above figure shows the message sent to the predefined number along with location. In this message longitude and latitude of the location sent to the number.

V. CONCLUSION

In day-today life the peoples who are using bicycle have a safety feature. In India where road accidents are happens in large number. There is an need of safety feature. Here we provide safety to the people. Along with an more features. People get the immediate service after accidents. This is impact on reduce in no of deaths during the accidents.

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