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An IoT Based Smart Helmet With Smart Locking System

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Abstract:

There might be many reasons for accidents cause, but two of the major reasons are, not wearing helmet while riding of the bike as well as drink and drive scenarios. Accidents are caused almost everywhere which is the reason for rise in the number of accidents. To overcome these problems there's a solution is wearing a helmet that "Smart Helmet". By using this effective helmet we can minimize the accidents. The helmet is designed in such a way that rider should wear the helmet before starting the ignition. There will be two modules in which one is attached on bike and another will be on helmet The RF transmitter is answerable for the wireless communication between the helmet and the bike. Microcontroller are designed to interact and controls the whole. Then coming to alcoholic sensors can detect sense the breath of person. Liquid Crystal Display(LCD) displaying the information like sensors data. System can function as remote immobilizer in case if vehicle is stolen only when should wear the helmet.

➤ **Keyword :** Smart Helmet, Accident Detection, GSM, Sensor, Microcontrolle

Introduction

There are some laws in which the rider should wear the helmet while driving the vehicle under 129 the section of motor vehicle act. This law states that it is compulsory for motor cyclist to wear the helmet. Yet some people still doesn't wear the helmet and that causes more accidents that leads to immediate death. Another major reasons for accidents are old vehicles, below 18 peoples, crossing signals, one way, overspeed. So to overcome this problem an IOT based smart helmet are used, in this smart helmet some important features are used such as MQ3 gas sensor, impact sensor etc, by using this features we can lower accidents and it is very effective and useful. The main advantages of this helmet is that driver should compulsory wear the helmet while riding the bike or else biker will not able to start the bike without wearing the helmet. There are sensors installed in helmet and bike, this is the main advantages in this project.

2.Literature review

In [1] Sharvari Shanthosh Jadhav et al. here we majorly focus on the sensor of MQ3 gas sensor where it can detect the alcohol content in the breath of the rider. Where the MQ3 sensor can be placed inside the helmet and it can be sensed through the breath of the person.

So their the focus that we are concentrated and understood by referring here.

In [2] Swetha Bergonda, et al. says that the system consists of the following where the difference that we are using embedded c and with the microcontroller. And then we use the sensor where the impact sensor. MQ3 sensor is a gas sensor where the impact sensor is used when some of the collision occurs, so we need this two sensors majorly to sense the emergency and to restrict the biker from using the vehicle.

In [3] Guntupalli Sireesha, et al. talks about

GPS tracker means global positioning system, the acronym itself defines the positioning of the system or to know the exact location of the system the information is collected from a device, will be stored on the inside of a device and then it is transmitted through a wireless network. The software for tracking the vehicle will be available in all smartphones. For example drivool 890.

This GPS tracker is used to identify the location where the accidents are occurred so we can detect.

In [4] Rashmi vashisth et al. talks about RF transmitter transmits radio signals between two devices. For example bike and helmet communicate wirelessly through radio frequency communication.

Also LCD is used to display the information sensors data and the whole system is under control and coordination of microcontroller.

In [5] Neelam Yadhav et al. talks about GSM global system for mobile communication module. Even in areas where mobile network is lacking the individual rides the bike, so GSM network is needed to send the sms. So if the

person has met with an accident the message is sent to the predefined number. For example for friends or family, they will get to know the accident has been occurred to the person with the message.

Using this module one will able to know the scenario that has been occurred and keep an up to date information.

In [6] Manoj kumar S et al. the modules which consists in an helmet section can be mentioned as follows. Power supply, RF transceiver, push button, alcohol sensor, microcontroller.

The power supply supplies the power to the helmet section.

The connection between the helmet section and the bike section is connected through a wireless connection via Bluetooth.

Without the connection between the two devices the bike ignition does not gonna happen.

In [7] Amgoth Kishore et al. DC motor is the most common type of motor, the DC motor has two leads, one positive and another one is negative. The DC motor is attached on the Arduino board that rotates when the power is supplied.

If these two leads directly to a battery the motor will rotate. If the switches are leads the motor will rotate oppositely. And the DC motor is present in the bike section.

In [8] Anandhi G, et al. RF module consists of transmitter with a 20m range, the motorist in order to keep check on rash driving and overspeed control can be avoided.

At the point when rider wore the head covering, head covering will be bolted and motor will be turn on.

If the rider is wearing head covering and further more checks and whether the rider has devoured liquor before beginning the ride.

The transfer joined to the motor will turn on if and just if both conditions are met.

In [9] Durga K Prasad Gudavalli, et al. Accelerometer is used to check the inclination of the helmet after the helmet is placed on the head.

In this module it checks whether the inclination is correct or not. So the person has met with an accident wearing the helmet the inclination will be different. By this we will be able to know that the accident been occurred by using accelerometer.

Accelerometer can be placed on the sides of the helmet to check the vibration and the inclination while riding and alert the rider by ringing the buzzer.

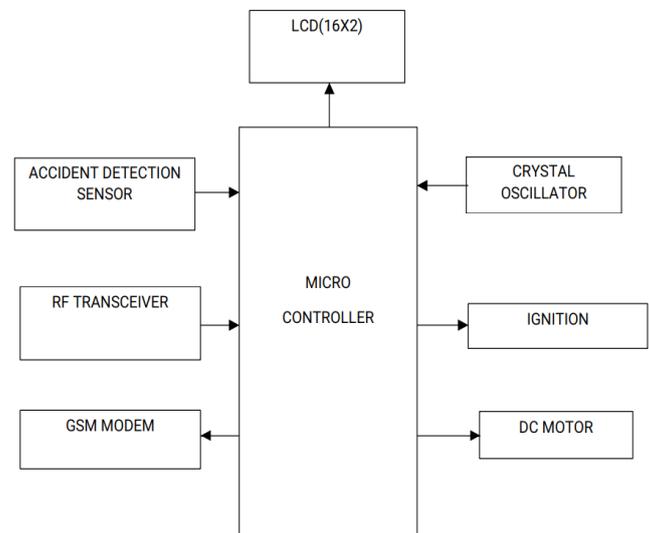
This framework allows the IOT services to be integrated easily and efficiently managed and able to notify the information in real time.

In [10] Tejaswini R,et al. Microcontroller is the main module in this model. A microcontroller is an embedded system to control a singular function in a device.

This function by interpreting data that receives from its I/O peripherals using its central

processor. It is attached on a particular object which performs tasks through the internet, So the transferring of data to the object/people without the interventions of human.

This is block diagram of microcontroller that is present in the bike section



Helmet Section

4. Conclusion

In the proposed system, IOT is used for vehicle accident detection and signal alerts to the authorities or a person in case of an accident occurs, vehicle tracking is done using GPS modem. In this project we have designed an IOT based smart helmet.

Smart helmet guarantees the production of the motorcyclist with the aid of checking whether or not the rider is carrying the helmet.

It also ensures that the rider is under the influence of alcohol or not, if he has consumed alcohol the machine will alert the rider.

The system design provides safety of the riders

Even if a person takes caution sometimes accidents do occur. Here our engine cut off feature reduces the chances of fatalities significantly.

3. Application

- Automotive and transport vehicles.
- Security, Remote monitoring and transportation and logistics.
- This system can also be interfaced with vehicle alerting system.

5.Future work

In the future work various bio-electric sensors can be implemented on the helmet that measures different activities that the statistics can be viewed by the bike rider. In the further enhancements we can also use the basic voice commands to control the bike functions with that the rider can keep his/her helmet in the bike parking without any security measures. In the future work self-driving motorbikes will be developed with artificial intelligence, so the bike rider will be safe and rate of accidents will decrease and no accidents occurs in the future enhancements.

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