IOT BASED SMART HELMET AND ACCIDENT IDENTIFICATION

KONDEPUDI VIJAYA DURGA[1], BORRA LEELA KRISHNA PRIYA[2],

SAMAYANMANTHULA SAI LAKSHMI[3], SETTIBATHULA SUPRIYA[4],

PASUMARTHI VAMSI VISWANAD[5]

[12345]UG Student, Dept. of ECE, PRAGATI ENGINEERING COLLEGE

ABSTRACT

The two-wheeler automobile has been the most used automobile for transportation because of its low cost. At the same time, it's been the most dangerous automobile because of the accidents happening on road. These accidents might be due to drink and drive etc. Safety and security in vehicle travelling is the pre-eminent concern for all. Ensure this safety our project called "IOT BASED SAMRT HELMET AND ACCIDENT IDENTIFICATION SYSTEM" was developed. This project basically consists of two circuits called "HELMET CIRCUIT" and "AUTOMOBILE CIRCUIT".

A HELMET is a form of protecting gear worn to keep safe the head from injuries. So, a SMART HELMET can detect the accident's location which is included with two sensors called IR SENSOR and ALCOHOL SENSOR. The AUTOMOBILE CIRCUIT consists of 3 axis accelerometer, relay, load sensor etc. The helmet circuit sends a signal to the automobile circuit to start if the helmet is worn and no alcohol detects. Then the automobile checks the load to start. 3 axis-accelerometer senses a crash or hit. After detecting the accident mobile application sends the accident location automatically to police and emergency contact numbers via database.

INTRODUCTION

The Internet of Things (IoT) is the network of physical objects devices, instruments, vehicles, buildings and other items embedded with electronics, circuits, software, sensors and network connectivity that enables these objects to collect and exchange data. The Internet of Things allows objects to be sensed and controlled remotely across existing network infrastructure, creating opportunities for more direct integration of the physical world into computer-based systems, and resulting in improved efficiency and accuracy.

The concept of a network of smart devices was discussed as early as 1982, with a modified Coke machine at Carnegie Mellon University becoming the first internet-

connected appliance [3], able to report its inventory and whether newly loaded drinks were cold. Kevin Ashton (born 1968) is a British technology pioneer who is known for inventing the term "the Internet of Things" to describe a system where the Internet is connected to the physical world via ubiquitous sensors.

IoT is able to interact without human intervention. Some preliminary IoT applications have been already developed in healthcare, transportation, and automotive industries. IoT technologies are at their infant stages; however, many new developments have occurred in the integration of objects with sensors in the Internet. The development of IoT involves many issues such as infrastructure, communications, interfaces, protocols, and standards.

HELMET UNIT

BIKE UNIT
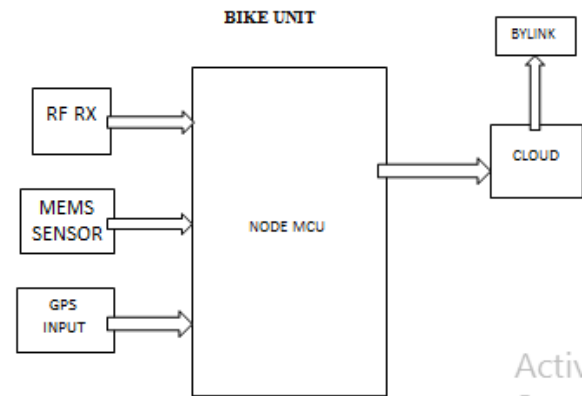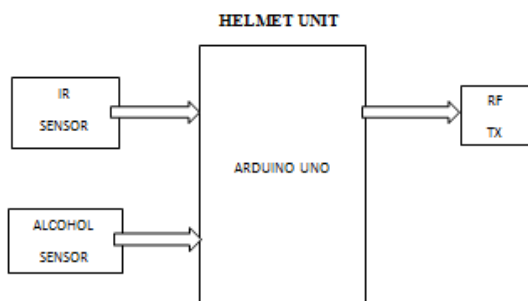
HELMET UNIT

1.   One Arduino Uno is placed on the helmet and with the help of jumping wires bolt wifi module, transmitter.

2.   IR sensor are connected to it the IR sensor is inside the helmet which continuously checks whether there is an object inside its range or not.

3.   When the person is not wearing a helmet the IR sensor gives value "LOW" and with the help of transmitter.

4.   An alcohol sensor detects the attentiveness of ethanol in the air when the drunken person breathes near this sensor.

5.   it discloses the alcohol gas in his breath and obtains the output based on alcohol concentration.
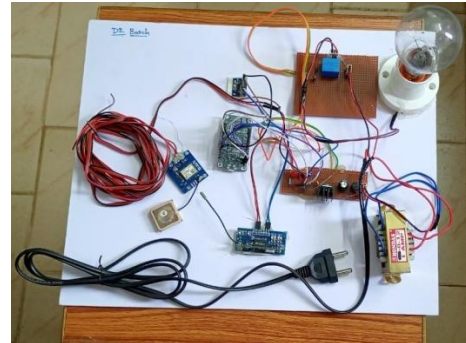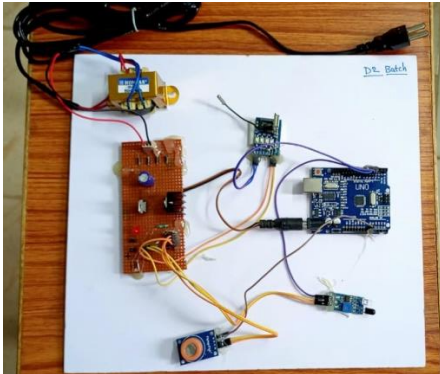
BIKE UNIT

1.   This section comprises RF receiver, GPS, Mems Sensor.

2.   The RF receiver gets the signal from the helmet section and decodes signal using decoder

3.   If the person is over drunk then ignition will be automatically offed by the relay and if any accidents occur message will be sent using GPS module.

4.   A sim has to be inserted into the sim card port in modem and can be operated using a mobile device, it can send and receive messages from registered numbers.

OPERATION

1.   To sense the helmet, IR transmitter receiver pair is used. To sense the alcohol content, an alcohol sensor-MQ3 Gas sensor is used for the same. Based on tilt sense based on accelerometer, fall detection of the vehicle is known.

2.   Based on these three data, the microcontroller allows the vehicle to get started. If any parameter is found to be invalid, the controller will send an auto message via GSM module to a registered user and an alarm will also be triggered.

3.   After this if the fall is detected then the location i.e., latitude & longitude
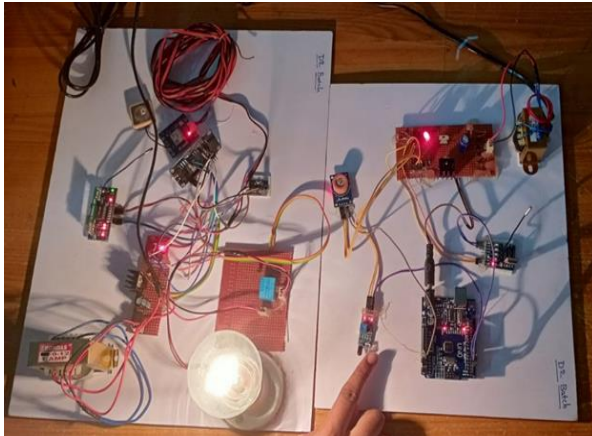
APPLICATIONS

1.   Used in motor vehicles to ensure safety of the rider.

2.   Alcohol detector can also be implemented in cars.

3.   It can be used in real time safety system.

4.   This safety system technology can further be enhanced in car and also by replacing the helmet with seat belt.

5.   Vehicle monitoring.

6.   Can be applied to the persons who are working in the underground.

7.   Mining helmets.

ADVANTAGES

1.   Detection of accident in remote are can be easily detected and medical services provided in short time.

2.   Simply avoiding drunken drive by using alcohol detector. It will reduces

a.   the probability of accidents.

3.   Decrease in death rates due to head injuries

4.   Reduces the work load of traffic police.

5.   Security system for motorcycles.

6.   Less power consuming safety system.

7.   Provide wireless connection security.

CONCLUSION

Smart Helmet stands as an effective solution to many kinds of problems. This will help to reduce the number of road accidents. It will automatically alert user to wear helmet if he doesn't wear, it also detects the alcohol that the driver consumes and also alert the hospitals and the emergency contacts when the person is met with an accident. So, there will be a lot of reductions in the number of accidents when compared to the previous years. In future there may be a lot of demands to these kinds of helmets then at that time it may become difficult to manufacture the whole circuit in the printed circuit board so that the circuit gets smaller in size and it can easily fit into the helmet.

FUTURE SCOPE

We can implement various bioelectric sensors on the helmet to measure various activities and we can view the statistics of the rider. We can use voice commands to

control the basic bike functionalities. Now the rider can leave the helmet on the two-wheeler while parking, without any special actions or security measures. We can use solar energy on two-wheelers for charging the electric vehicles and for mobile devices. In the future self - driving motorbikes can be developed with artificial intelligence and the rider will be safe and no accidents will occur.

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