

# Implementation of Smart Helmet

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**Abstract-** There was a research done by analysts regarding the accidents of bike riders because of Helmet, people paid their ignorance with their lives. Thus people came up with an amazing concept known as smart helmet, this helmet is a good for all conditions. Here in this smart helmet system every safety is included and there is further scope for innovations. The project will help the riders by keeping them safe and although their family can be rest assured about their safety because the smart consist a bough load of components that make riders safe. The alcohol sensor to let driver not drive when drunk to avoid accidents, relay module to on or off power supply as well as motor and LCD display to show all stats and safety instructions display a GSM module used in case of accident the call as well as message will be sent to the guardians. Thus this smart helmet is all the riders need and is very helpful a lot of lives can be saved.

**Keywords-** Smart Helmet, GSM, GPS, Sensors, Accidents, Smart Helmet, Prevention.

## I. INTRODUCTION

The idea of the Smart helmet is done fully for the betterment of society. Two wheelers should use this Smart helmet and it's developed similar that without this helmet the vehicle's ignition won't start. So this will advise the rider at the veritably morning of his trip! And in recent days helmets have come mandatory in agreement with the( section 129) Act of Motor vehicles. It has rigorously stated that each and every person traveling on a two- wheeler must wear defensive hat. This protects the rider from at most neglectfulness like riding without proper knowledge- rules, no proper condition of the bike etc. One main reason the casualty rate in mishap is rising is due to the detention and lack of proper treatment in time and no immediate response from society to inform the police and the sanitarium. Numerous have lost their life in this case. Saving life in golden hours matters a lot then. So, we mustn't let time take any life. The Smart helmet also helps the business police and follows government regulations. The device is fully safe for use of two- wheeler riders.

### 1.1 Background

A. Definition:

Smart helmets include multiple electronic bias and detectors that help druggies gather real- time data and help them in reducing functional pitfalls and perfecting safety in the long run.

B. Atmega328P:



Fig 1: Atmega328P

High Performance, Low Power AVR® 8-Bit Microcontroller High Performance, Low Power AVR® 8-Bit Microcontroller. Advanced RISC Architecture

C. 16X2 LCD Display:



Fig 2: 16X2 LCD Display

16x2 LCD means it can display 16 characters per line and there are 2 such lines. In this LCD each character is displayed in 5x7 pixel matrix.

D. Alcohol Gas Sensor:



Fig 3: Alcohol Gas Sensor

When a drunk person breathes near the alcohol sensor it detects the ethanol in his breathe and provides an output based on alcohol concentration.

E. Relay Module:



Fig 4: Relay Module

A Relay driver IC is an electro-magnetic switch that will be used whenever we want to use a low voltage circuit to switch a light bulb ON and OFF which is connected to 220V mains supply

F. GSM Modem:



Fig 5: GSM module

GSM modem or GSM module is a device that uses GSM mobile telephone technology to provide a wireless data link to a network.

G. RF Transmitter and Receiver:



Fig 6: RF transmitter and receiver

The RF transmitter receives serial data and transmits it wirelessly through its RF antenna. The transmission occurs at the rate of 1 Kbps – 10 Kbps. RF receiver receives the transmitted data and it is operating at the same frequency as that of the transmitter.

H. DC Motor:



A DC motor is any of a class of rotary electrical motors that converts direct current electrical energy into mechanical energy.

1.2 Configuration of Smart Helmet System:



Fig -4 Configuration of Smart Helmet System

It's another object of invention is to design a detector grounded device for detecting a person's accident. It'll check whether the person had worn a helmet or not and it'll insinuate the person to wear the helmet. It'll descry that the person is lying down or standing after the accident has happed. It'll descry that the rider had consumed alcohol or not. It'll warn the rider whether the person is coming ahead or not. It sends

the current position of the rider during his/ her trip with GPS position.

**Design Methods**

**A. Material and tools:**

Accoutrements used in the design of tackle, among others

- 1) Atmega328P Microcontroller as a data processor.
- 2) Alcohol Gas Sensor.
- 3) DC motor.
- 4) Barrel Jack appendage for external power force for Arduino and peripherals.
- 5) GSM Module.
- 6) RF transmitter and Receiver.
- 7) Relay Module.
- 8) 16X2 LCD Display
- 9) The factors of electronics, lines, PCB( Printing Circuit Board), lead and connectors.

**B. Software:**

The supporting software’s used in our work are

- 1) The Arduino IDE is used to produce the program in the microcontroller.
- 2) AdaFruit library and detectors perceptivity operation.

**C. Hardware Design:**

The general description of the system can be observed on block diagram below:



**Fig -5** Block Diagram of Implementation of Smart Helmet



**Fig -6.** Actual smart helmet with all circuit

**II. RESULT**

All the factors are assembled and tested successfully. The circuit is designed in such a manner that bike doesn't start until and unless rider wears the helmet. Also the bike won't start if the rider is drunk, this helmet alarms the rider if he crosses a certain speed limit by buzzing an alarm. If an accident occurs the machine automatically shuts off to avoid farther injuries. A system in which the detector reports an exigency situation to cousins and near police labor force. This can be achieved by garbling GSM, in unborn GPS modules can be installed to transmit the exact GPS equals of the accident to responsible authorities making them apprehensive of the dire situation for quick action which may help in saving lives.

**III. CONCLUSION**

Smart helmet is an effective result to numerous problems. Wearing the helmet and being sober are necessary conditions for the bike to start, reducing the possibilities of accidents. Indeed if a person takes caution occasionally accidents do. Then our machine cut off point reduces the chances of losses significantly. The smart helmet acts as a virtual bobby keeping the motorists in check and making roads safer

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