

**SAFETY HELMET FOR BIKE AUTHENTICATION AND ALCOHOL SENSING FOR RIDERS  
USING IOT**<sup>1</sup>V.Siva Sanker Reddy M.tech, PH.D , <sup>2</sup>B.Sirisha, <sup>3</sup>G. Prema Kalyani, <sup>4</sup>B.Sai Lakshmi<sup>5</sup>D. Sandhya Rani, <sup>6</sup>V. Yathisha<sup>1</sup>Assistant Professor, <sup>2,3,4,5,6</sup>B.Tech

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**Abstract:**

A safety helmet is a form of vigilant and more secure head piece apt by a driver which makes motorbike driving safer. The predominant reason of this helmet is to provide protection and safety for riders. A twist of fate is a uncommon, accidental, surprising outer movement which happens in a certain time and location, with no evident and intentional purpose but with considerable effects and offers an embittered experience for some families. Careless of the motorist is the foremost issue of such mishaps. The government of traffic authorities consign few enlightens to the automobile operators. Although lot of people do no longer carry out the rules and instructions. In order to overcome these problems an intelligent system is introduced. The system which inexorably checks if the person is draining the helmet and retain non-alcoholic exhalation moment.

**Introduction:**

An accident said to be any vehicle accident is occurring on a highway. These accidents are collision between vehicles and animals, vehicles and fixed obstacles and not proper road conditions. The world health organization says 1.25million people die each year as a result of road accidents. The main causes of road accidents are drunk and drive condition and not wearing helmet. Usage of helmet by two wheelers riders is compulsory under the section of 129. This act makes it must for a rider to wear a helmet. Alcohol reduces the concentration of the rider and prevents the rider's vision due to the giddiness. Alcohol obscure fear and actuate the riders to take risks. There are laws to check wear helmet and drunk and drive but there is no successful. The motor cycle act, 1939 has a clause which states that liable for punishment at

first offense for imprisonment for a term of 6months or 2000 RS/- fine. This law is very successful, but it is failed usually due to the in charge offers are bribed. The drunk and drive is equally to a murder and he cannot out his own tasks and risks danger. These two are the main reasons which motivate us to build smart helmet in which the first step is detection of the helmet and alcohol detection when both conditions are satisfy then only the bike ignition will start. IR sensor and alcohol sensor are used.

**System model:****Arduino uno:**

Arduino uno is an open source platform used to construct embedded projects. Arduino uno is very simple for both hardware and software. It consists of both a physical programmable and circuit board. Arduino platform is turn into a decamp popular with people aloof started out with electronics for better result. The arduino do not need a isolated bit of hardware in order to bundle new code on to a board. Here we use a USB cable. The IDE of arduino uses a simplified version of c++. The program is simple to learn. Finally the functions of microcontroller is braked by the microcontroller. Uno is for the most leading boards in the arduino family group and considerable elect for beginners.



Figure1: arduino uno

**IR sensor:**

An Infrared sensor is an electronic component that is worn to sensation of the specified characteristics of its surroundings. It perform this functions by either emitting or detecting. This is also able of scaling the heat being emitted by a body and sensing the motion. In electromagnetic spectrum, infrared radiation bottle between the visible and microwave region. The principles involved in working planks radiation law, Stephen Boltzmann law, Wien displacement law. The infrared rays are invisible to human eye.

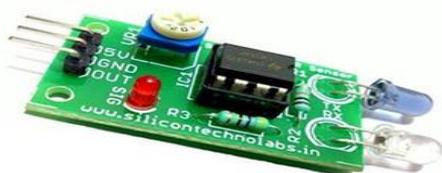


Figure2: IR sensor

**Alcohol sensor:**

An alcohol sensor are used for checking the concentration of alcohol in sample. It is similar to a common Breathalyzer. It has higher sensitivity and faster response time. Sensitivity produce an analog resistive output based on alcohol concentration. The sensitive material used for manufacturing of this sensor is  $\text{SnO}_2$ , whose conductivity is low in clean and neat air. The conductivity increases as the concentration of alcohol gas increases. These sensors modules put up easily interacted with microcontrollers, arduino boards, raspberry pi etc.



Figure3: Alcohol sensor

**Liquid Crystal Display (LCD):**

An LCD is a flat display panel or it also defines as other electronically modulated optical devices that uses the modulating light properties of liquid

crystals combined with polarizers. Liquid crystals are combined with polarizers. Liquid crystals does not emit the light directly. Rather using a back light or reflector to provide image in color or monochrome light LCD'S. These are available to display arbitrary images or fixed images with low content information which can be displayed or hide, such as digit and seven segment display, as in a digital clock LCD'S are widely used in LCD televisions, computer monitors, air craft cockpit displays etc.

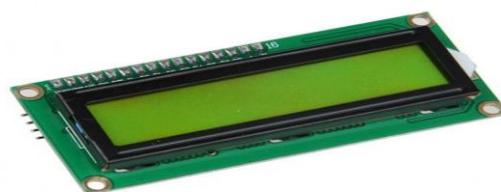


Figure4: Liquid crystal Display

**Power Supply Unit:**

Power unit is used to convert AC power to low voltage DC power. In this, we are using +5v & -5v. Transformer primary side has 230/50 Hz, secondary side voltage is step down to 12/50hz. The voltage is rectified using a full wave rectifier. The output is inclined to the filter and the filter is used to remove the unwanted signals. Filter output is connected to the regulator, this regulator is convert constant dc voltage.



Figure5: Power Supply Unit

**DC motor:**

Dc motor or engine is used to convert the electrical energy into mechanical energy in the form of rotation. Dc motor is one of the primitive motor design. A dc motor hope on the fact that like or

similar magnet poles repels and unlike or opposite magnetic poles attract each other. The dc motor design is simple to understand and controlling the speed of a brushed dc motor is also easy. The dc motor is designed to curb the magnetic interaction between a current carrying conductor and an external magnetic field to generate rotational motion.



Figure6: DC Motor

**Proposed system:**

Here we are considering, a transmitter and receiver at the helmet and at the bike. To detect the presence of alcohol, near to the mouth of the driver an alcohol sensor is placed. The arduino reads information from the sensor and sensor gives the result to arduino. An IR sensor to know whether the driver wear the helmet or not. The receiver at the bike receives the information from the transmitter in the helmet. The engine should not ON if any of the two conditions is violated and at the same time by using an IOT, a message is passed to their family members.

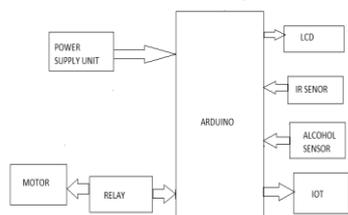


Figure: Block Diagram

**Experimental Result:**

The below figure shows the experimental set up of our project. The adaptor is connected to the board and then after switch on the power supply. Both the sensors operates on negative logic means they will

be in high state before they sense. They will be low when they sense. When the sensors are sense then automatically the engine will be OFF and a message is passed to their well-wishers because of IOT.



**Conclusion:**

In this project, we are having a trend to develop a safety helmet system and to detect the alcohol and using of the helmet. In this using IOT message is send to the other persons .The system provides smart helmet that is nearly new to expose the alcohol percentage consumed by the rider and even if the straphanger is jaded the helmet or not either and the message is send to their family members. While all the previously develop helmet only detect the presence of helmet but not the alcohol. Hopefully this system will provides the riders safety and restrict drunk and drive condition and the traffic rules are followed.

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