AN ADVANCED TECHNIQUE TO PROTECT THE BIKER USING THE SAFETY HELMET

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Abstract: The idea of building up this task originates from social obligation towards the general public. As should be obvious numerous mishaps happening around us, there is a great deal of death toll. As per an overview of India there are around 698 mishaps happening because of bicycle crashes every year. The purposes behind the mishaps might be numerous, for example, no appropriate driving learning, no wellness of the bicycle, rash driving, drink and drive and so on. Now and again the individual harmed the mishap may not be legitimately in charge of the mishap, it might be shortcoming of some other rider, however part of the arrangement it's both the drivers associated with the mishaps who will endure. Regularly, it is cyclists and engine cyclists who are the casualties of such mishaps. One of the significant issue with bicycle riders is that more often than not they try not to wear head protector which could be deadly when mishaps occur. Likewise neglectful drivers are in the propensity for drinking. Affected by alcohol they enjoy rash driving. A brilliant head protector is a one of a kind thought which consequently validates whether the individual is having the helmet and has non-alcoholic breath while driving.

*Keywords :*Arduino board, Alcohol-Sensor, IR Sensor.

I. INTRODUCTION

As of late head protectors have been made mandatory in india. Car crashes in India have expanded step by step. These mishaps hence incorporate crashes among vehicles and creatures, vehicles and walkers, or vehicles and fixed deterrents to reports the normal mishaps every day in India are around 1600 and 550 individuals are biting the dust on every day in view of street mishaps. According to Section-129 of Motor Act-1988 makes it required for each and every riding a bike to wear defensive head-gear keeping to guidelines of the BIS. In India alcohol consumed drive case is a criminal offense of The Motor-Vehicle act-1939. That expresses that the bicycle rider will get rebuff. In presence bicycle rider effectively get got away from law. These are the two principle issues which inspires us for building up this undertaking. The initial step is to distinguish the head protector is wear or not. On the off chance that head protector is wear, at that point start will begin else it will stays off till helmet isn't wear. That purpose we use the IR-Sensors. The subsequent advance is liquor discovery. Liquor sensor is use the breathing values for which recognize the nearness of liquor in rider inhale in the event that it is surpasses allowable range start can't begin. MQ3 sensor is utilized for these. At the point when these two situations are fulfilled then start will begin.

These all is done to make sure that a security framework in a head protector for a decent well being of bicycle rider. The savvy head protector that we created is fixed with sensors which go about as to recognize wear cap or not. Consistently here are 1.4 million repulsive personality wounds (TBI's) in the INDIA. Around 300,000 of these individuals suffer sports related personality wounds each year. Up to 90,000 of the all inclusive community having experienced horrendous cerebrum harm have whole deal or profound established impairments. About $76.5 billion dollars is gone through in treatment related to these injuries. In excess of 50,000 individuals kick the container from TBI.

This recommendation goes for the security and prosperity of motorcyclist against road accident while in like manner giving them an extravagant pleasing bicycle association. Each splendid vehicle has worked in a circuit and various limits.

The circuit of each vehicle is sketched out in such a manner, to the point that the bike won't start except if the rider wears the head defender.

II.   Related Work

Girish Kumar [1] The effect when a motorcyclist fuses into a fast mishap without wearing a head defender is phenomenally unsafe and can understand misfortune. Wearing a head defender can reduce lurch from the impact and may spare a nearness. There are different nations favoring a course that requires the bike rider to wear a head protector precisely when riding on their bike, Indian traffic is considered as a portrayal in our work. With this reason, these anticipate is remarkably made as to improve the security of the bike's rider. Motorcyclist will be frightened precisely when very far is beated. A Force Sensing Resistor (FSR) furthermore, DC motor are utilized for conspicuous verification of the rider's head and ID of bike's rate autonomously. Our proposed work has considered the rules portrayed by Bangalore Traffic Police for vehicles going in metro-city.

Mohd Khairul Afiq [2] A mishap is a particular, startling, irregular and unintended outer activity which happens in a specific time and spot, with no evident and intentional reason however with stamped impacts. Lack of regard of the driver is the main consideration of such mishaps. The traffic specialists give a ton of directions to the vehicle administrators. However, a significant number of them don't comply with the guidelines. Yet at the same time the guidelines are being disregarded by the clients. So as to beat this we presents an astute framework, Smart Helmet, which consequently validate whether the individual is wearing the head protector and has non-liquor breath while riding the bike or other vehicles. Here we have a transmitter at the protective cap and the beneficiary at the bicycle. There is a change used to sure the wearing of cap on the head. The ON state of the switch guarantees the putting of the head protector in legitimate way. A liquor sensor is put close to the mouth of the driver in the head protector to distinguish the nearness of liquor.

SudharsanaVijayan [3] Now a day practically the major number of countries are working very effectively how to make the riding and road riding a safer thing so that maximum number of accidents can be avoided. Yet at the same time in numerous spots, the standards are being disregarded by the clients. So as to beat this issue, an astute framework has been installed in the head protector itself. The sign identified by IR sensor from the ear cartilage district and a liquor sensor will be sending to the vehicle control circuit. It won't turn on the vehicle, when the client is without protective cap or in smashed condition.

Vijay J [4] The reason for this undertaking is to create vehicle mishap anticipation by technique for liquor identifier with an end goal to decrease car crash cases dependent on driving impaired liquor. This undertaking is created by incorporated the liquor sensor with the microcontroller. The liquor sensor utilized in this venture is MQ-3 which to distinguish the present of liquor content in human breath. A start framework which will create sparkle fittings is develop as a model to act like the start starter over the vehicles motor. The start framework will work dependent on the degree of blood liquor content (BAC) from human breaths distinguished by liquor sensor.

III.   Implementation
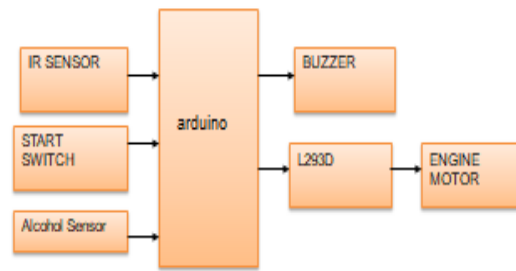The proposed system consists of two major hardware and Software

Fig1 System Architecture

A. Hardware

a. ARDUINO

The arduino is having the following pin configuration

There are some 28 pins for making the input and output from the arduino board. These pins are very much helpful for the making the board do some useful work for example it can be used to take some sensor values from the sensors and make the decision based on the programming we have done on it. The board is having a ATMEGA microcontroller which is like a heart of the board.

Some of the pins are used make the power connection to the board and some others are used to give some kind of signal as a output and others are used to make the connection to sensors so that input can be received from the sensors, before going for the configuration setup and making the entire project assembly one must be able to know which pin is used for which purpose.

Fig2 Arduino Uno

Microcontroller Features	ATmega328P
Operating Voltage	5V
Input Voltage	7-12V
Clock Speed	16MHz
Digital I/O Pins	14 (of which 6 provides PWM output)
Analog Input Pins	6
Flash Memory	32KB (ATmega328)
SRAM	2KB

b. Power supply

The board requires a 5 Volts power to make it work, the pulse sensor and all other hardware devices works in this much of power.
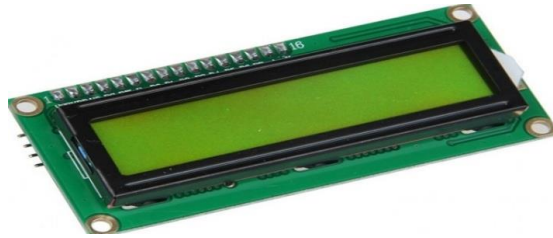
c. L293D Display

Fig3 L293D display

The below diagram is a simple LCD display device which is available in the market its 16X2 display where one can able to view the 16 character in each line and having a maximum of 2 lines, the LCD is a very important part of the application to mention weather a person is having the helmet on or off is shown.

d. BUZZER

Fig4 buzzer

A bell is a gadget which makes a humming or signaling clamor. There are a few sorts; the most essential is a piezoelectric bell, which is only a level bit of piezoelectric material with two cathodes. This sort of signal requires some sort of oscillator (or something progressively muddled like a microcontroller) to drive it—in the event that you apply a DC voltage you will simply get a tick. The signal is humming when driver isn't wearing protective cap or driver devour liquor more than standard point of confinement.

e. DC MOTOR
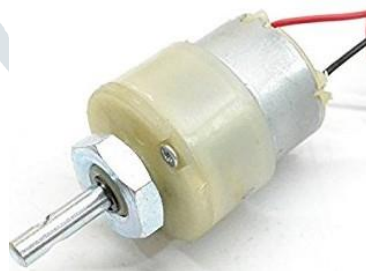
Fig5 dc motor

The DC motor is a mechanical motor used for the rotation of some physical object, this is done using the electromagnetic field. It takes the electrical energy and converts into the mechanical energy.

f. IR sensor

Fig6 IR sensor

The IR sensor is fitted on the left & right side of helmet so that human head will be detected. Here the IR sensors used the obstacle electrons. the IR LED work as the it transmit the IR signal on to the object & the signal is to be reflect back from the surface of the helmet this reflected signals are received by an IR receiver & result is save in the block MCU.

B. Software

The software used to accomplish this work are Ada fruit software, Arduino IDE software.

i. Ada Fruit

Ada Fruit IO is a framework that makes our information helpful. It permits straightforward information association with small programming required. Each feed stores for 30 days, we can compose information to the system across all feeds, up to 60 times each moment. Information creating , updating, and erasing all represent a mark against the breaking point. You may read your information a boundless measure of time, as long as you stay inside the throttle times.

ii. Arduino IDE

The Arduino IDE is a cross stage designer apparatus written in Java. It enables you to control the majority of the product elements of your Arduino. Projects composed utilizing Arduino Software (IDE) are called draws. These representations are written in the word processor and are spared with the document augmentation ino. The editorial manager has highlights for cutting/sticking and for looking/supplanting content. The message zone gives input while sparing and trading and furthermore shows mistakes. The reassure shows content yield by the Arduino Software (IDE), including total mistake messages and other data.

The head protector is intended to work in two distinct modes,

1. Helmet identification
2. Liquor identification and start of motor-bike

In the first phase one will check whether the person who is riding the bike is drunk or not which is done by using some of the liquor identification sensors available in the market. Then in the second step we have the IR sensor whose main work is to identify the helmet, here we do that one by attaching this sensor in front of the bike which will check whether the person is wearing any kind of safety helmet or not, if the person is not wearing it then the signal negative is passed to the circuit which will enable the circuit to stop the engine for that moment when the key is applied to start it.

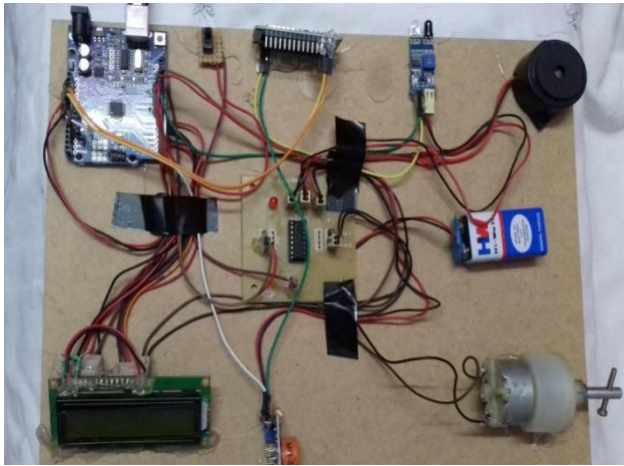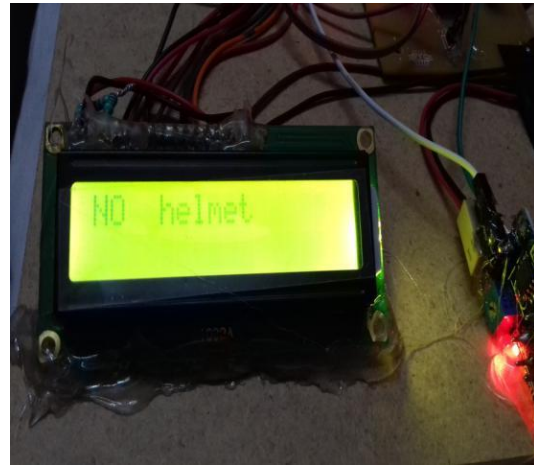## 2. RESULT AND ANALLYSIS

Fig7 Hardware setup

Fig10 When the driver is not wearing helmet
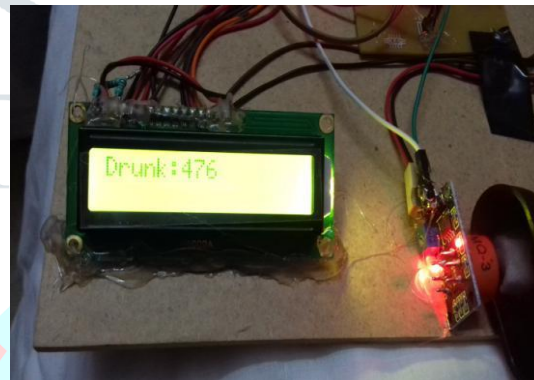

Fig8 Ignition on and Helmet detection

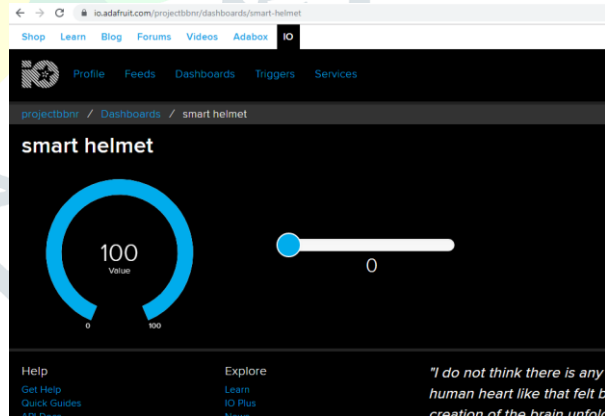Fig11 Biker drunk over the standard limit

Fig9 Detection of Alcohol

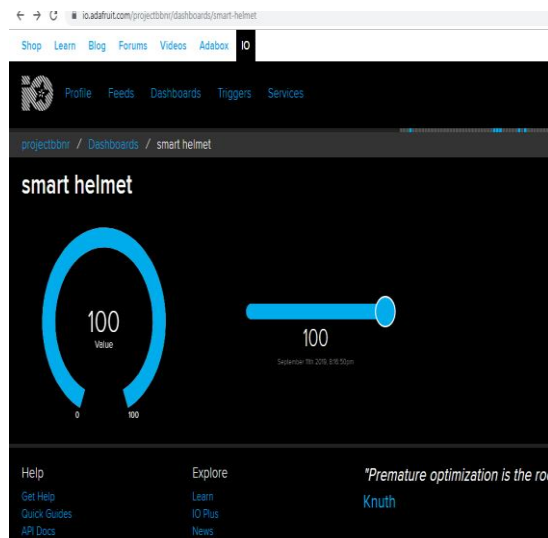Fig12 shows the biker wear the helmet and did not consume alcohol

Fig14 shows the data stored in cloud

Fig13 shows the biker wear the helmet and consume alcohol

3. CONCLUSION

Here application is built up a brilliant head protector based framework which was effectively ready to recognize whether the rider as worn the cap or not. It likewise sets a caution on the off chance that he has devoured liquor past allowable levels. Aside from this, the framework likewise screens environmental contamination levels. This protective cap can lessen number of street mishaps that happens each day.

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