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Brisk Helmet and Light Control System

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***Abstract:** As the numbers of two wheelers on the road are increasing accidents due to them are also increasing day by day. A brisk helmet is a type of protective device for the bike rider which ensure safer driving . Our project introduces a system helmet usage mandatory and also to improve the night ride with smart headlamp control system. The first step is to check the helmet is worn or not and just after that check the rider breath for alcohol content only if both conditions are satisfied then ignition will start otherwise it will remain off till helmet is not wear.*
***Keywords:** brisk helmet, Biker's safety , Alcohol detection, Headlamp control , Gyroscope .*

I. INTRODUCTION

Indian market has seen a rapid growth in sales of motor vehicles in the last decade, road rules and regulations remained the same. As India holds a large share in the number of vehicles on road in this world, it also holds a large share of road accidents occurring in it. Accidents in Indian roads is a cumulative factor of many reasons such as the carelessness and misbehavior of the drivers and also the undeveloped and congested roads. On the basis of sheer number of two-wheelers are more compared to four - wheelers in our roads, also in the case of accidents two - wheelers stand first. The vehicles which are newly launch has may add on features to assure safety. Even with this sophisticated functions, the safety of motorcyclist on the road is still not assured completely. So after a lot of researches we came up with a project that proposes a system to make the wearing of helmet mandatory and a smart headlamp control on the bike to make night riding safer. These are the three main features that we introduce in our project. The first step is to identify whether the helmet is worn or not. If the rider wears the helmet then ignition will start otherwise it will remain off - this is implemented using a snap switch. The second step is alcohol detection. An alcohol sensor is used which detect the presence of alcohol in the breath of the rider. If it is beyond the permissible range, ignition will not start - This is accomplished using an MQ3 sensor. When these two conditions are satisfied then ignition will start. The third main issue is the night driving which causes vehicle accidents due to the inability of the night vision.

II. PROPOSED SYSTEM

Our paper consists of two sections a helmet section and a bike section. The block for the helmet section:

A. Transmitter Section

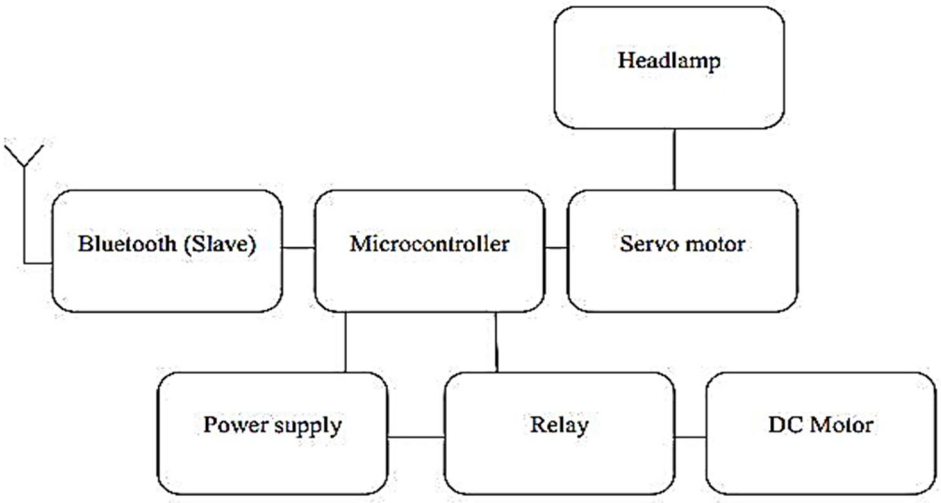


Fig. 1 Block diagram of Bike section

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B. Receiver Section

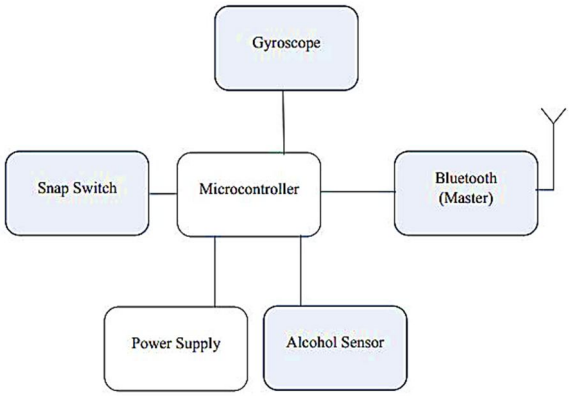


Fig. 2 Block diagram of Helmet section

The receiver / bike section consists of Bluetooth module (Slave) which receives the signals sent from the helmet section, the microcontroller that controls all the functions at the bike section, a relay and dc motor which gets activated when data send from the helmet section becomes available. When the helmet is worn, the snap switch gives a logic high output to the microcontroller. Then the alcohol sensor checks for alcohol content and if there is no alcohol present then a logic 0 output given to the microcontroller, then through Bluetooth module connected the microcontroller it sends the raw values received from the gyroscope.

III. RESULTS

The output of the project is shown in a prototype. The several stages of the programming is shown below with help of the serial monitor on Arduino IDE software.



Fig. 3 Serial output when switch is not active

We know that the helmet contains a snap/Roll switch for the presence of helmet. The program is written in such a way that there is no useful output when switch is inactive which means there is no output in the Normally Open pin of the switch which is connected in series with a Resistor (100Ω) to one of the digital pins. A Serial.println command is used to give a visual feed of the above mentioned state.

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Fig. 4 Serial output when alcohol is detected

When the rider wears the helmet the switch is activated so the program now goes to the second choice which is alcohol detection using the Mq3 gas sensor module interfaced with the microcontroller board. The sensor checks for alcohol content, if detected does nothing, but for the sake visual acknowledgment we use Serial.println command to show a piece of string.

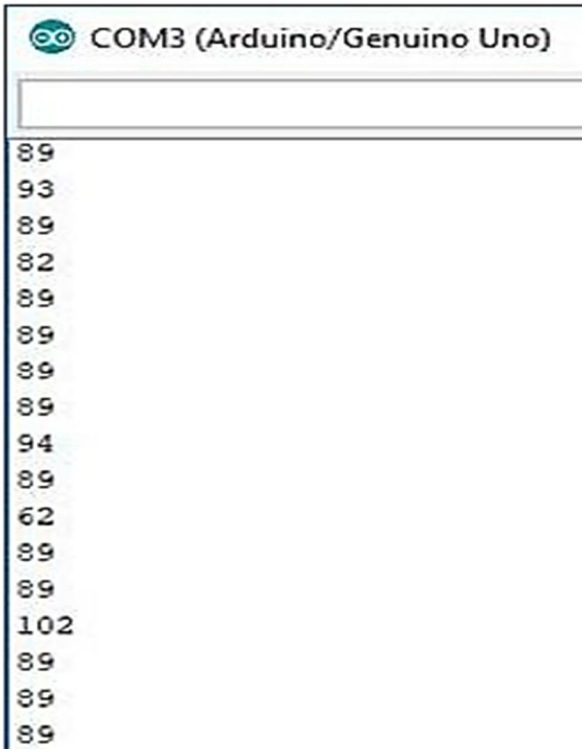


Fig. 5 Serial output that is transmitted

When the head is detected i.e when the rider wears the helmet switch gets pressed microcontroller gets a high value and after that the mq3 comes into action and checks for alcohol when there is no alcohol the output will be the values that is mapped in the program from the gyroscope. The serial monitor window shows the values mapped from the gyroscope.

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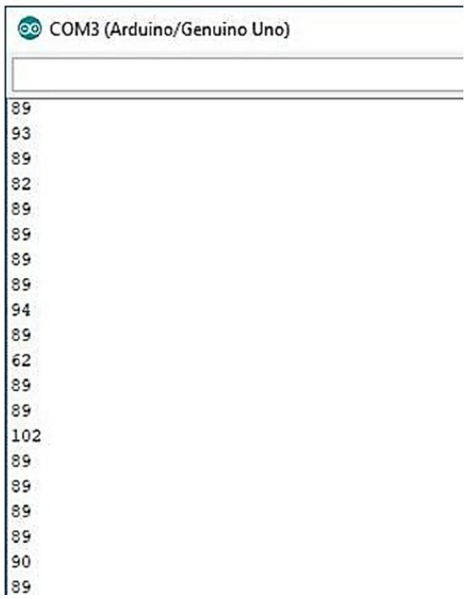


Fig. 6 Serial output that is received

The bike section receives the gyro values from the master Bluetooth module. The receiver section is programmed in a way that when it receives the values the ignition gets ON and also the received values is used to control the servo motor.

IV. CONCLUSION

Our project has the capability to prevent riders from riding without wearing a helmet. The additional facilities provided together with this system increases the safety of the user. The smart control of headlamps adopted here gets activated when conditions satisfy. By this system, a safe two wheeler journey is possible which would decrease the head injuries that occur from accidents caused from the absence of a helmet and additionally reduce the accident rate due to drunken driving and blurred vision.

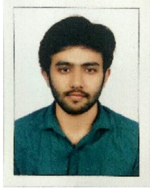
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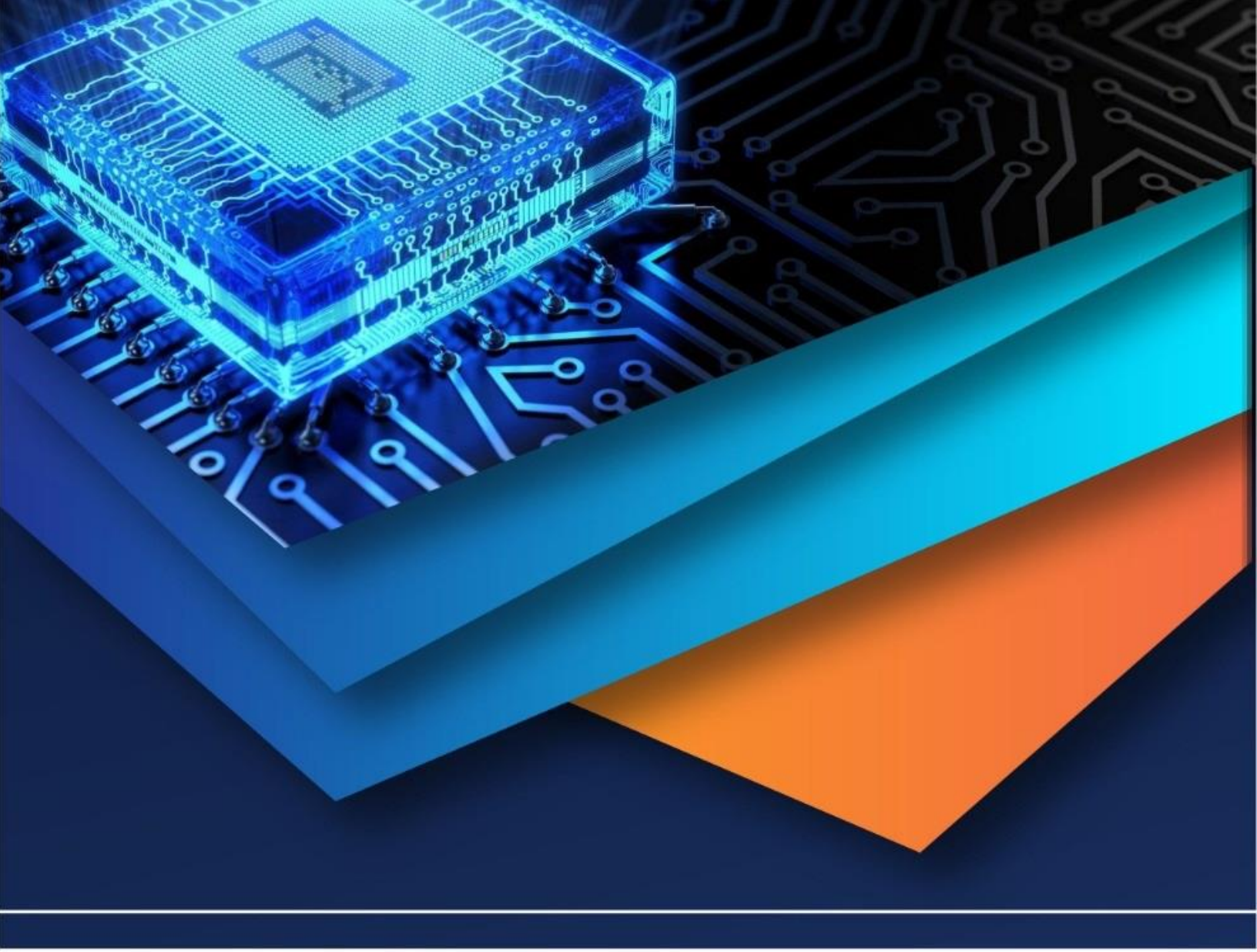


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