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Smart Helmet for Alcohol Alert

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Abstract:

As we know India is second most populated country and has a large youth population, nowadays youth are fond of bikes and because of fashion, they neglect wearing helmet. Because of these, bike accidents are increasing day by day which causes deaths. Major deaths are due to head injuries which can be prevented by wearing a helmet.
Drunk and drive cases are becoming more, which causes accidents and due to lack of negligence where an accident occurs and people are dying.In Smart Helmet An alcohol sensor detects the attentiveness of ethanol in the air when the drunk person breathes near this sensor, it discloses the alcohol gas in his breath and obtains the output based on alcohol concentration. It is placed in the helmet such a way that it can easily sense the breath of the person.

Keywords:- Smart Helmet,LCD Display, ,MQ3 Sensor,Crystal Oscillator, DPDT square Self Locking,Battery, Voltage Regulator.

1. Introduction

A smart helmet is a special idea which makes motorcycle driving safer than before. This is implemented using Adriano. The main objective of this project is to build a safety system which is integrated with the smart helmet and intelligent bike to reduce the probability of two-wheeler accidents and drunk driver cases. An effective approach is made to solve the problem by using smart helmet.

The riders of two-wheeler are among the common to be affected in road traffic accidents. Even though the safety rules made by the authority, many riders avoid following it. Furthermore, riders in India frequently avoid the key rule of wearing the helmet during driving, as a result deadly injuries during accident. There needs to be a system rather than manual checking that could enforce this rule on the riders and avert them from sidestepping it.

One of the prime reasons that leads to accidents is “drunk and drive” in which riders are drinking alcohol above government specified limit. Reducing the drinking of ethanol before or during driving may result in reduction of accident by almost 55% in India In this continues world, day by day several bikes are invented and being employed by each individual. As a result of an oversized variety of vehicles, traffic will also increase and rash driving of vehicles will also increase. In case of that scenario, chance of accident occurrence also increases swiftly.

On the front side of the helmet, there’s an alcohol

detection sensor (MQ-3) facing towards the mouth of the rider. This sensor has an alcohol detection concentration if 0.05-10mg/L, which is fairly enough range to detect emitting alcohol from a drunk person's mouth . The output signal of the sensor is sent to the processing unit inside the helmet. Processing Unit is the brain of this system. It gets both signals separately from the EEG unit and Alcohol unit, and then those signals are processed individually.

Whenever either of those signals is above habitable range (Either detection of strong alpha wave or detection of alcohol), the processing unit sends a lockdown command to the receiver built into the bike. When the receiver receives a lockdown command, the ignition is cut off, or the receiver unit will fire a high-frequency alarm. Then an SMS will be sent to a pre-saved number saying that this person is drunk and he is in a risky situation.
Alcohol sensor MQ3 is used here for detecting the alcohol concentration present in the driver's breath. Sensor provides an analog resistive output based on the alcohol concentration. MCU is the microcontroller unit, which controls all the functions of other blocks in this system. MCU takes or read data from the sensors and controls all the functions of the whole system by manipulating these data. Alcohol sensor is connected to the MCU through an interfacing circuit and the helmet sensing switch is directly connected to the MCU. MCU receives data from these sensors and it gives a digital data corresponding to the output of sensors to the encoder only if the two conditions are satisfied.

2.Principle

Alcohol sensor detects the presents of alcohol in breath. This sensor can activate at a temperature ranges from 10 to 50 degree. Power supply will be less than 150 mv to 5v. This sensor is mainly used for traffic police now days

The Structure and configuration of MQ-3 gas sensor is shown as Fig. 1 (Configuration A or B), sensor composed by micro AL2O3 ceramic tube, Tin Dioxide (SnO2) sensitive layer, measuring electrode and heater are fixed into a crust made by plastic and stainless steel net. The heater provides necessary work conditions for work of sensitive components. The enveloped MQ-3 have 6 pin ,4 of them are used to fetch signals, and other 2 are used for providing heating current.

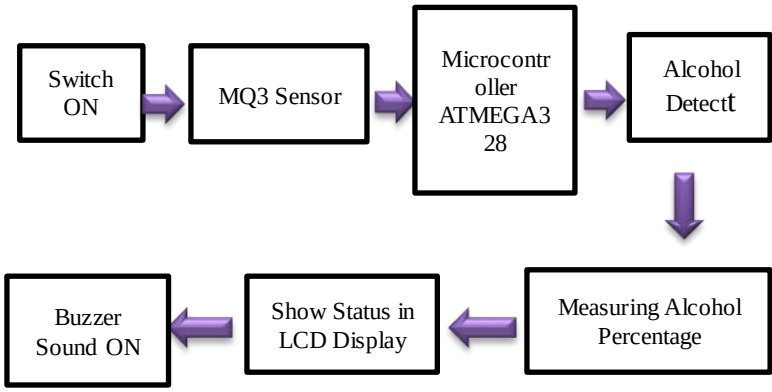

Fig:- Block Diagram Of Smart Helmet.

Objective:

- The objectives of this project are to design the circuit that can improve safety of motorcyclists, to develop a smart safety helmet for complete rider.
- The main objective of the project is to design a low-cost intelligent helmet that is capable of identifying alcohol consumption and preventing road accidents.
- This system is capable of providing security and safety of the bikers against road accidents.
- Reliable system , High accuracy, Minimal design, Exchangeable parts.

Component:

- Helmet.
- LCD Display.
- Microcontroller ATMEGA 328.
- MQ3 Alcohol Sensor.
- Voltage Regulator IC7805.
- Crystal Oscillator.
- Capacitor.

- Battery 9v.
- DPDT Square Self Locking.
- Buzzer.
- PCB Board,wires,bolts.

3. Advantage :

- Cost Required is less.
- Simple drive circuit.
- Fast response and High sensitivity.
- Low Power Consumption.

4. Application :

- It can be used in a real- time safety system**.**
- It can be designed for a less power - consuming safety system.
- It will reduce the number of accident due to the drink & drive.
- They are suitable for alcohol checker, Breathalyser.

5.Future Scope :

- Solar plate can be used in helmet for the power supply.
- We can implement various bioelectric sensors on the helmet to measure various activities.
- We can use a small camera the recording the drivers activity.

6.Conclusion :

The designed Smart helmet ensures the safety of the rider by making it necessary to wear helmet and also ensures that the rider hasn't consumed alcohol more than the permissible limit .If any of these prime safety rules are violated the proposed system will prevent the biker from starting the bike.This idea will contribute more secure and safe developing India. Just take one step forward by the society that is wearing the smart helmet while driving the bike.

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