ALCOHOL DETECTION AND VEHICLE IGNITION LOCKING SYSTEM

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Abstract - In the present day's alcohol-attributable accidents are increasing rapidly where the priority as alcohol may be a think about many categories of injury. per annum it's reported about 2.3 million premature deaths thanks to harmful consumption of alcohol [1]. during this paper we proposed an improved alcohol detection to be used in an automobile ignition locking system using Arduino. A temperature sensor is employed to live the temperature of the breath sample to make sure that it's an equivalent temperature as human breath. A sensor is employed for a selected volume of the breath sample, which is employed to work out the alcohol content. A Micro Controller is employed to convert the output into a reading which represents the breath alcohol content of the breath sample. This analysis is employed as a part of an overall automobile ignition locking system which prohibits starting the car when the operator is intoxicating. The system also requires rolling retests to make sure that the driving force remains sober.

***Key Words*:** Arduino, Temperature sensor, Micro controller, Ignition locking.

1. INTRODUCTION

the expansion of automotive vehicles has been increasing gradually day to day, which successively cause the increased growth of road accidents. The numbers of those totalities that happen in India are ranked to be within the top most position within the world. the amount of road deaths is high mainly in cosmopolitan and metropolitan cities. consistent with the survey Delhi ranks first within the position, Bangalore in fourth place and Hyderabad in ninth place in these road accidents [2]. Improved alcohol detection is analyzed to be used in an automobile ignition locking system.

Internet of Things (abbreviated as IoT) has been coined by industry researchers but has emerged into mainstream public view in recent years only. IoT may be a network of devices like smartphones, vehicles, home appliances, and more, that hook up with and exchange data with computers and web connectivity-that empowers these objects to gather and exchange data.

The internet of things allows objects to be sensed and controlled remotely across existing network infrastructure [3].

The Internet of Things (IoT) are the opposite objects embedded with electronic objects, software, sensors, etc. and connectivity with which allows this stuff to attach and exchange data, creating opportunities for more direct integration of the physical world into computer-based systems, leading to efficiency improvements, economic benefits, and

reduced human exertions[4].The present invention relates generally to the alcohol detection devices and more specifically to an improved devices and sensors which are utilized in an automobile ignition locking system which prevents a car from starting when the driving force is intoxicated and which needs periodic rolling retests while the car is being operated.

A temperature sensor measures the temperature of the breath sample to make sure that it's an equivalent temperature as human breath. A sensor is employed for a selected volume of the breath sample, which is employed to work out the alcohol content. A Microcontroller is employed to convert the output into a reading which represents the breath alcohol content of the breath sample. This analysis is employed as a part of an overall automobile ignition locking system which prohibits starting the car when the operator is intoxicating. The system also requires rolling retests to make sure that the driving force remains sober [5].

Drunk driver are often prevented from starting a car at initial stage itself by employing a simple alcohol sensor. this may mandate the driving force to blow into a tool which collects breath sample of the driving force to process further to work out the output . The car alcohol sensing device will have a threshold to permit the driving force to start out the car. the driving force can start car only he consumes alcohol less than the edge level. Ignition interlock systems which meets federal standards requires test on engine start and also require a test every jiffy while driving is named as rerolling test. this is often getting to be an easy fool proof system which doesn't allow a drunk driver to start out his car, until his alcohol consumption level goes below the edge . Threshold should be adjustable, just in case government changes the permissible level, ultimately threshold could even be changed. While the normal use of the breath analyzing devices has been by enforcement officers to check a suspected intoxicated driver, the breath analyzing devices now are getting used together with an ignition locking system to stop an intoxicated driver from having the ability to start out the vehicle [5].

The further sections of this paper are organized as follows – Section 2 gives brief description about sensors utilized in the proposed framework. Section 3 and 4 describes about working of Arduino and DC Motors respectively. Section 5 gives the working design of the framework. Section 6 presents the results and section 7 discuss about future work to be done.

2. SENSORS

2.1. Sensor Modules

Sensor senses the future trouble and helps in not being the victim of accident

2.2. Smell Sensor Module

The MQ3 is that the alcohol detection sensor. they're sensitive towards alcohol and benzene they need special quality of sensitivity adjustment. Sensitivity is that if that gases within the air is approximately to 0.4mg/L the alarm point and therefore the vibration sensor are going to be activated.

2.3. Smell Detector for Alcohol Consumption

Sensor used: MQ3sensor

If (alcohol consumption==0.4mg/L)

Message ("alarm gas sensor and Vibration sensor will be activated");

Else

Message ("not activated");

2.4. Alcoholic Sensor Module

The Detects the breath of the driver continuously and tracks the driver driving state and intimates through voice message.
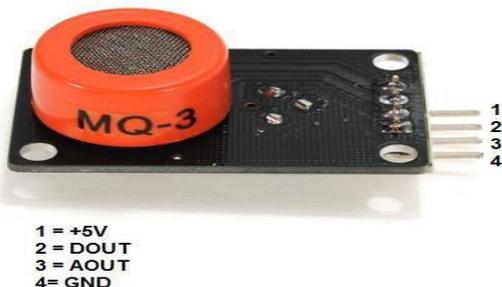
Figure 1 MQ-3 sensor for alcohol detection

Breath detector for Alcohol Consumption

Sensor used : Alcohol sensor

If(breath rate checked==alcoholic consumption) Voice message ("you have consumed alcohol"); else

Voice message(not activated);[2]

The alcohol sensor used here is that the MQ-3 sensor. MQ-3 sensor isn't only sensitive to alcohol, but also sensitive to ethanol, which is one sort of alcohol found in wine, beer, and liquor.

MQ-3sensor circuit are often used as a breath analyzer to see an individual's blood alcohol level. even as we exhale CO_2 once we exhale , we also exhale some alcohol if we've alcohol in our blood. Any alcometer device can measure this alcohol content.

The more ethanol in your blood, the more there's within the air on exhalation. This alcohol content gives a sign for if an individual is drunk and the way much percent drunk they're .

The amount of alcohol exhaled into the air is proportionate to the quantity of alcohol which can be found during a individual's blood. Alcometers use an in-built formula to guesstimate blood alcohol content from exhaled air alcohol content.

For different countries, the extent of alcohol within the blood that defines an individual as over the limit for driving varies. The range ranges from 0.01 to 0.10. Most countries have a limit of about 0.05[5].

3. ARDUINO

Arduino is an open source microcontroller which may be effortlessly programmed, erased and reprogrammed at any prompt of your time . it's also proficient of receiving and sending information over the online with the assistance of varied Arduino shields. Arduino uses a hardware referred to as the Arduino development board and software for developing the code referred to as the Arduino IDE (Integrated Development Environment). Built up with the 8-bit Atmel AVR microcontroller's that are manufactured by Atmel or a 32-bit Atmel ARM, these microcontrollers are often programmed simply using the C or C++ language within the Arduino IDE.

about at the circulating business itself. One unit which is about at tanker will screen never- endingly the reserve within the tank. The underlying unblemished reserve and flow reserve are getting to be shown on LCD at front for driver's settlement

4. DC MOTOR

The working rule of DC (Direct Current) motor is, when a conductor, is placed during a magnetic flux , it experiences a torque and features a propensity to maneuver . this is often referred to as motoring action. If the trail of current within the wire is inverted, the way of spin also reverses. When magnetic

flux and field interact, they produce a mechanical force, and supported that the working rule of DC motor established. The direction of rotation of DC motor is as defined by Fleming's left rule

Figure 2 DC Motor

5. DESIGNED STRUCTURE
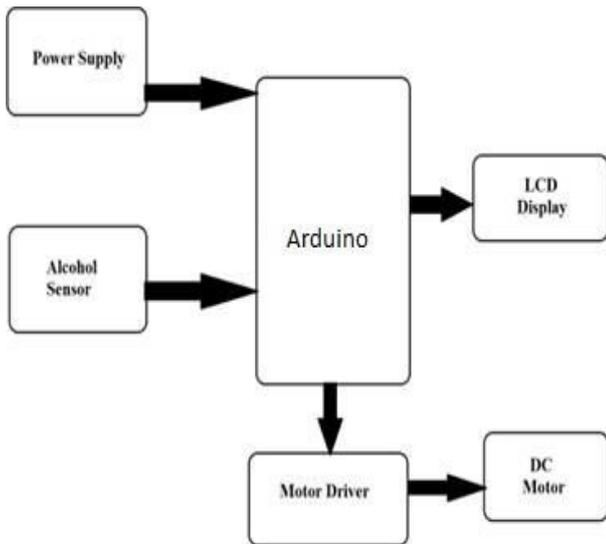
Figure 3 MQ-3 Alcohol sensor circuit schematic

Here we propose a system where the person is detected for alcohol level in his body to avoid accidents. drivers are going to be sensed before they begin their vehicle. Driver are going to be sensed by an sensor once he sited on the driving force seat by his breath. sensor is placed within the steering to watch the breath level if the alcohol content in breath is 0.08% then car engine won't ignite. during this system if the driving force isn't drunk he can drive otherwise he can't drive until the alcohol content decreases.

This is the structure where the sensor is placed within the steering. it'll sense the driver's alcohol content in his breath.

Arduino is configured and connected with the sensor also LCD display and one dc motor is connected. Once the connection is given power supply is given thereto in order that the motor will start running. Now alcohol is sprayed in it where the alcohol content is above 0.08% therefore the LCD display will show that alcohol content is overflow, dc motor will stop running and ignition also stopped.

This process is implemented same altogether vehicle where the car engine are going to be connected to the sensor. Once the sensor sensed its output are going to be sent to the motor by referring the range engine will stop its execution While implementing this proposed system we will reduce the accidents by 75% and reduce the loss of property and lives [6].

5.1. MQ-3 Alcohol Sensor Circuit Schematic

The alcohol sensor circuit we will build with an MQ-3
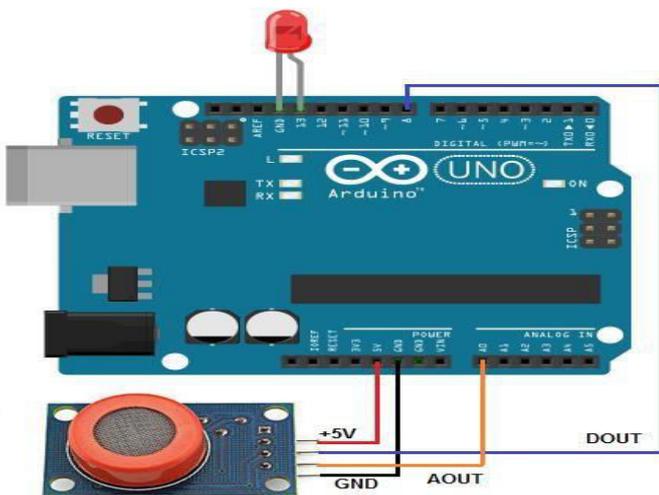
sensor integrated with an Arduino is shown below

6. RESULTS

Figure 5 MQ-3 Alcohol sensor circuit schematic

6.1. Arduino Alcohol Detector Circuit Board

When Driver is not in Drunken State the below message came on LCD in the On-Board Unit.

Figure 6.LCD Output of alcohol detection when driver in not in drunken state

When Driver is not in Drunken State the below message came on LCD in the On-Board Unit.

Figure 7 LCD Output of alcohol detection when driver in druken state

7. CONCLUSIONS

Authors of [8] proposed an answer for alcohol detection in vehicles, but it gives an aware of the driving force . An operative solution is provided to develop the smart system for vehicles which can perceive various parameters of auto in

between constant period of time and this is often done by using platforms like Arduino, alcohol sensor, dc motor, LCD display. the entire system has the advantage of small volume and high reliability. Future scope of this technique is to regulate the accidents and reducing the speed of the accidents this technique brings innovation to the prevailing technology within the vehicles and also improves the security features, hence proving to be an efficient development within the industry .

Our aim is to spot when periodical retests aren't done, then it's to research whether the vehicle is moving or met with an accident. If accident is detected then it shares the accident location to the emergency services using GSM and GPS. But, when vehicle remains moving even after alcohol detection then the situation of the vehicle is shipped to concerned authorized services.

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