

ALCOHOL DETECTION TO REDUCE ROAD ACCIDENTS

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Abstract—

Consumption of Alcohol is considered bad for our health, as it effects our body parts like liver, in addition to that, driving after alcohol consumption is effecting so many things in the world, a drunk driver who is effecting his/her body by taking alcohol also become a problem for other people and property. A drunk driver does not have enough control over mind to control the vehicle, which leads to accidents causing many deaths, damage of vehicles, damage of properties, in addition to that there can be traffic jams which waste time of millions more people in whole world.

I. Introduction:

The main purpose behind this project is “**Detect Drunk Driving and prevent Road Accidents**”. Currently , most of the road accidents are happening because of drink and drive. From the figures, the more number of accidents was mainly occurred due to drunk drivers, driving under the influence of alcohol, which is responsible for about one-third of all road accidents. As a drunk person is not able to focus on driving , so he/she drive wrong side of the road , or hit the other vehicles because they don't have any control on themselves which lead to threatening of the lives of innocent people on the road which will effect the work force of the nation. So drunk driving is a major reason of accidents in the majority countries everywhere the globe.

Alcohol Detector in automotive project is meant for the protection of the folks seating within the automotive as well as the people outside the vehicle. This project ought to be fitted / put in within the vehicle. Drivers have the responsibility to reach their destination without endangering the lives of others as well as theirs too.

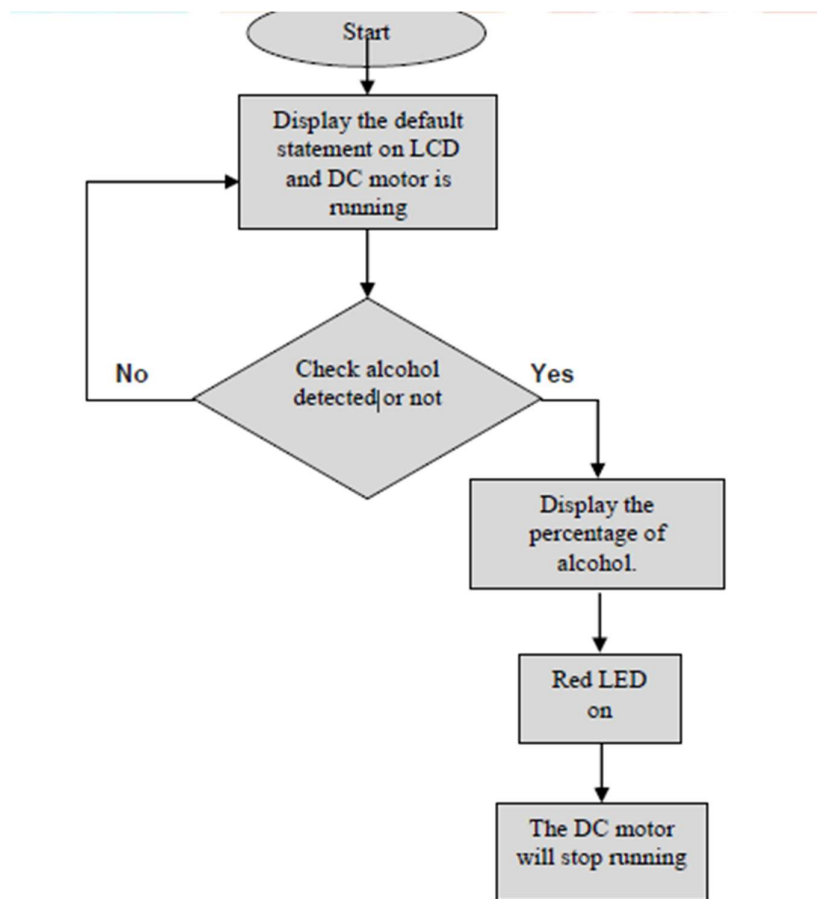
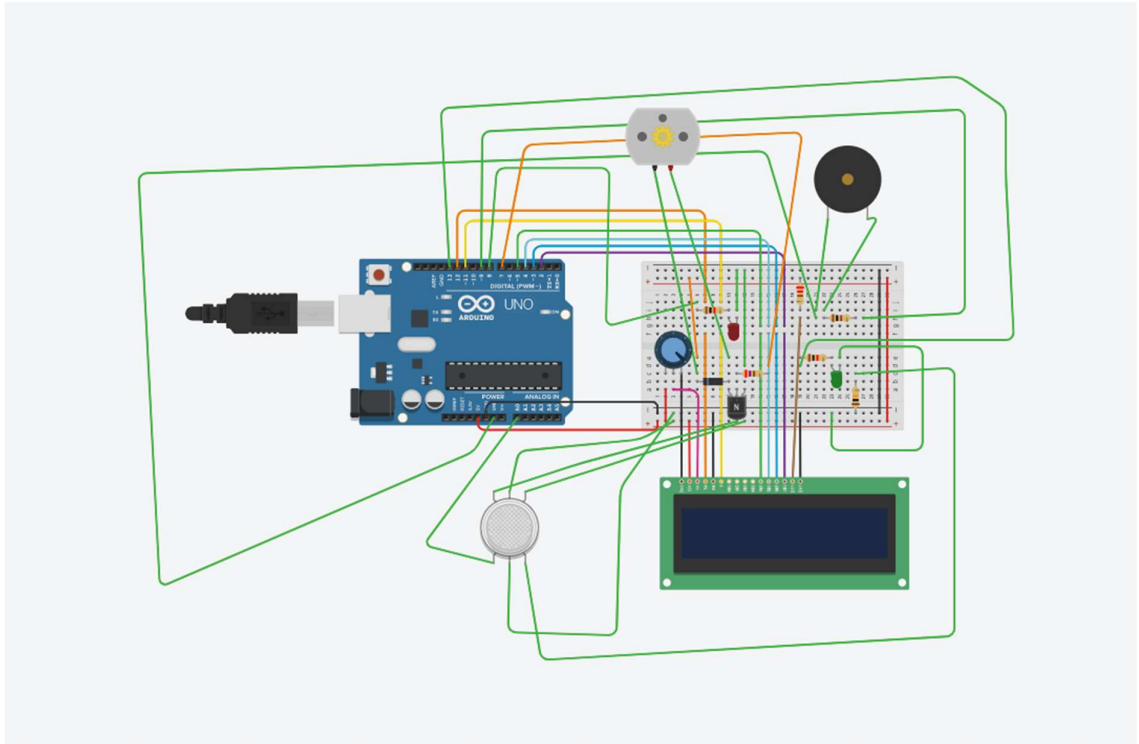
Our Project is based on detecting the alcohol and perform action according to the level of alcohol. The sensor will detect the alcohol level and check if the person can drive the vehicle or not. The

result will be displayed on the display attached to the device and respective action like if allowing the person to drive the vehicle or inform someone else with their location so they can reach to them. It will save lives of both drunk ones and innocent ones.

II. Related Work

The proposed solution to this problem is to develop a device which will detect the Alcohol consumption of the driver and if the limits are crossed in terms of alcohol content, then the device will turn off the vehicle to prevent road accidents happening due to alcohol consumption.in case there are other members in the vehicle who are not drunk , so he/she can drive the vehicle. if drunk driver is alone , driver can use a website for help where details of his close ones will be there and that will be maintained by an organization or a company which will provide a helper/driver to that drunk one in case there is no one from his provided list to help like if the person is in different city or state

III. Proposed Model



IV. Future Work:

As we all are expecting the future of Self driving Cars, so in future it might be not used by each and everyone , but we can expect this to be auto installed in all the vehicles so that people will not have to go somewhere else for this. As driving feature will also be there so it will be useful in those conditions.

So we can say that in future we can expect this to be automatically installed feature in future vehicles.

V. Hardware used



1. MQ-3 sensor

Alcohol Sensor Module - MQ3. 4753. This module is made using Alcohol Gas Sensor MQ3. It is a low cost semiconductor sensor which can detect the presence of alcohol gases at concentrations from 0.05 mg/L to 10 mg/L. The sensitive material used for this sensor is SnO₂, whose conductivity is lower in clean air.

2. MICROCONTROLLER UNIT



- The proposed system is made around ATmega328 Arduino Uno microcontroller board.
- The unit consists of 14 pins which allows inflow and outflow of feeding
- it is feasible to use 6 of these pins as Pulse Width Modulation signal outputs

- 6 continuous signal with time changing quantity,
- 16 megahertz electronic oscillator, a Universal Serial Bus port, an influence connector, an on-board transformer, ICSP header, and a push.
- The Atmega328 has 32 KB non-volatile storage, 2 KB SRAM and 1 KB EEPROM(electrically erasable programmable read-only memory).

3.display

a **16×2 LCD screen** can **display** up to 32 characters at once. It is possible to **display** more than 32 characters with scrolling though. The code in this article is written for **LCD's** that use the standard Hitachi HD44780 driver.



4. DC Motor –

- a. DC motor is used as engine starter which would be connected to crank of the engine The speed of a dc motor is directly proportional to the supply voltage, so if we reduce the supply voltage, the motor will at half speed. The speed controller work by varying the average voltage sent to the motor. This voltage is depending upon the alcohol sensor (mq3). That means when the alcohol sensor sensed the alcohol percentage less than threshold, the motor will run. But if the sensor sensed the alcohol percentage above threshold, the motor will stop.



5. Buzzer/Alarm –

- a. A buzzer is a mechanical, electromechanical, magnetic, electromagnetic, electro-acoustic or piezoelectric audio signalling device. A piezo electric buzzer can be driven by an oscillating electronic circuit or other audio signal source. A click, beep or ring can indicate that a button has been pressed. A conventional Piezo bell works between 3 – 12 volts DC.



VI. Algorithm For Hardware Part

1. When the drivers sit on its position in the vehicle i.e. Driver seat , the alcohol sensor will sense the alcohol in its surroundings and send the information to microcontroller
2. Next, the microcontroller will process the collected information from sensor and confirm if the consumed alcohol content is within limits or exceeding the limits
3. there will be display of the alcohol content on a LCD display
4. If the alcohol level is below the threshold amount of alcohol, then vehicle will function normally.
5. In case, the alcohol content is crossing the limits, then the microcontroller will take the action

and break the vehicle's ignition circuit.

6. In that condition, if there is any person from passengers eligible of driving the vehicle then that person can take the control
7. But in case there is no passenger, the driver has to either make a call to a friend, or there is another option, open a website (which will be owned by company or an organization) and there will be simple button for 'HELP', and the website will take geological coordinates of the device and information will be circulated to either the emergency contacts added by the user or in case any of the contact is not able to help then the organization will send a person for helping the drunk user.

VII. Algorithm for Website

1. The user has to register earlier or before getting help.
2. At the time of emergency, user have to open the website
3. There will be only two buttons: Sign In and Sign Up
4. If user is new, then user have to register
5. If user has already registered then user can sign IN
6. When the user is Logged In his geological location will be tracked by the website automatically.
7. When the location is detected, there will be a button for HELP
8. When user click that button then the organisation/company have to send their service

VIII. Conclusion:

This Drunk Drive Detection system is combination of an economically effective and technology. The main unit of this project is associate “Alcohol sensor”. If the person within automobile has consumed alcohol then it's detected by the sensing element. sensing element provides this signal to a comparator IC. The output of comparator is connected to the microcontroller. We can conclude that this device will be able to reduce to Road Accidents happening because of drunk driving at a large scale.

IX. Result :

- Green LED glowing when the alcohol content is less than threshold value(50%) and DC motor is also working
- Red LED glowing when the alcohol content is more than threshold value(50%) and DC motor is also stopped working

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