

Automatic Engine Locking System for Drunken Driver

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Abstract: This system is aimed to prevent the road safety due to the alcohol consumption in driving. The driver condition is analysed by using alcohol sensor. If the driver is having the alcohol consumption during the driving the indicating system would intimate to them and then the vehicle speed limit is to be activated. The vehicle speed will be reduced by using L293d motor driver shield and the vehicle ignition system will turn off. After the stoppage of vehicle the system will send the vehicle latitude and longitude to the corresponding persons and nearby police station. By applying this method the road traffic should be safer than before.

Keywords—Alcohol detection system; Vehicle control; L293d driver module; MQ3 sensor; DC motor; GSM; GPS; Arduino Uno.

I. INTRODUCTION

Road safety have always been in the center of attention. The signboards, direction arrows and lanes have made following rules much easier and served as an excellent guide, nevertheless, uncontrollable factors such as drunken drivers exits and thus accidents still happen. In the united states of America alone and through 2014 nearly “9,967 people died of alcohol-impaired-driving”, that is one alcohol-impaired-driving fatality every 53 minutes. The list goes on and on for other countries too, therefore it is necessary to enhance and improvise new techniques.

This project pushes towards the public safety in general and roads safety in particular. The idea is characterized by being deliberately dependent on personal contribution. The system should make a big leap in terms of public awareness in addition to the reduction of accidents caused by drunken driver

II. LITERATURE REVIEW

The author has proposed a method to detect alcohol and uses GPS and GSM module. In our project, we are using a siren which will be more cost efficient. Use of siren will alert the people nearby and hence any kind of necessary action can be taken.

The authors propose to use a smart helmet to avoid accidents. There are many flaws with their design. A major short coming is the limitation of the its application to only vehicles which use helmets, wheelers which is not a feasible idea while driving, especially for short distances. Another drawback being, the system when implemented makes the helmet too

heavy which is not favorable for driving. Also, they have used an expensive microcontroller whereas we are using open source hardware, which is very cheap.

The authors discuss about complex health monitoring systems and infrared sensor to detect the presence of alcohol. A major drawback of this system is the possibility of a false alarm. The system is designed in a manner that even a slight change in some particular condition can result in ringing false alarms even though everything was normal. In our project, we are using only the required technology thereby making the system more reliable and cost effective when implemented.

The authors have proposed a system to prevent the accidents due to drunken driving. Major drawback of this system is that they have used PIC16F877A microcontroller which is not as useful as Arduino Uno microcontroller that we are using. Also, they have used an old design system which is not useful and increases the overall cost of the system which makes it expensive and somewhat unaffordable to certain segments of society thereby limiting its scope to be used. Hence, our system is more cost effective and can be easily afforded.

The authors discuss the problem of drunken driving and propose to solve it by suggesting a system. However, the major drawback of their system is that they are using MQ2 alcohol sensor which is not accurate and is not specifically sensitive to alcohol. In our project, we are using a MQ3 sensor which is designed to be accurate towards alcohol detection which gives more accurate results and saves from raising false alarms. Also, they have used a PIC microcontroller which is expensive when compared to Arduino Uno which is open sourced.

The author has tried to design a system to tackle the problem of helmet negligence and alcohol detection at the same time. The system is overly complex. Also, the author has used P89V51RD2 microcontroller, which is expensive when compared to Arduino Uno.

Also, this system has a limited scope is usage because it can work only with 2 wheelers and not with any other segment of vehicle. However, our system can be integrated to not only 2 wheelers, but also with any kind of vehicle thereby preventing more accidents and saving more people.



Arduino Uno is based on ATmega 328P microcontroller. It consists of 20 pins out of which 14 are digital pins and the rest 6 are PWM. It can be programmed using a computer on Arduino IDE. Arduino being open sourced, has a really good community which makes development very convenient and any kind of problems are taken care of by the community. We are using it because it is

Open sourced and hence very cheap as compared to conventional microcontrollers. It can handle a large number of operations making it very convenient to use.



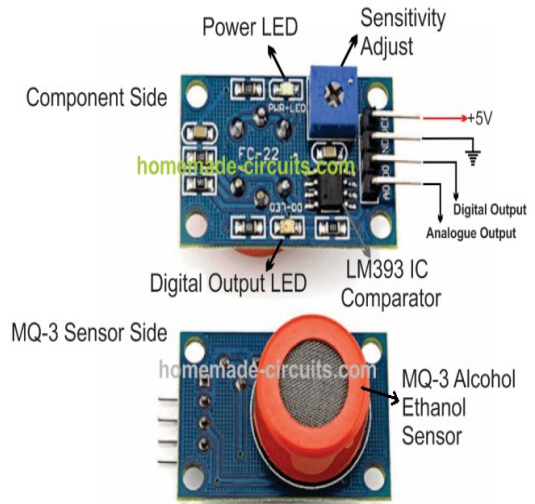
III. MQ3 ALCOHOL SENSOR

MQ-3 module is suitable for detecting Alcohol, Benzene, CH₄, Hexane, LPG, CO. Sensitive material of MQ-3 gas sensor is SnO₂, which with lower conductivity in clean air. When the target alcohol gas exist, the sensor's conductivity is higher alongside the gas concentration rising. MQ-3 gas sensor has high sensitivity to Alcohol, and has good resistance to disturb of gasoline, smoke and vapor.

This sensor provides an analog resistive output supported alcohol concentration. When the alcohol gas exist, the sensor's conductivity gets higher alongside the gas concentration rising.

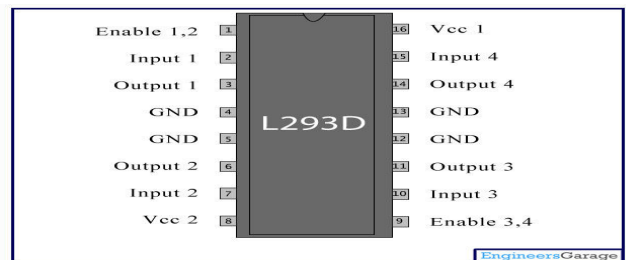
There is a resistance across an A and B inside the sensor which varies on detection of alcohol. More the alcohol, the lower the resistance. The alcohol is measured by measuring this resistance. The sensor and cargo resistor form a potential

divider, and therefore the lower the sensor resistance.

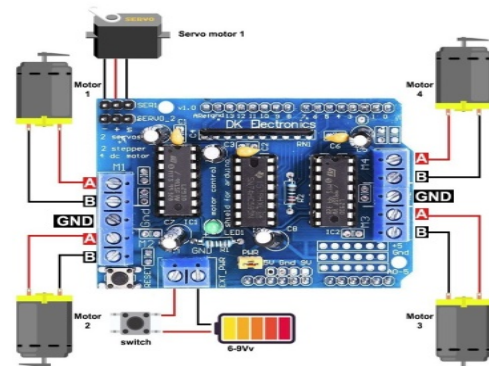


IV. L293D DRIVER MODULE

L293D could even be a typical Motor driver or Motor Driver IC which allows DC motor to drive on either direction. L293D could also be a 16-pin IC which can control a gaggle of two DC motors simultaneously in any direction. It means you'll control two DC motor with one L293D IC. Dual H-bridge Motor Driver micro circuit (IC).



Motor drivers act as an interface between the motors and thus the control circuits. Motor require high amount of current whereas the controller circuit works on low current signals. Therefore the function of motor drivers is to need a low current control signal then turn it into a higher-current signal which can drive a motor.



V. GPS

The Global Positioning System is global navigation satellite system which uses a constellation of between 24 and 32, medium Earth Orbit satellites that transmit precise microwave signals that helps GPS receivers to work out their location, speed, direction, and time. GPS has become a widely used aid to navigation worldwide, and a useful gizmo for map-making, land surveying, commerce, scientific uses, tracking and surveillance. Also, the precise time reference is employed in many applications including the scientific study of earthquakes and as a time synchronization source. A GPS receiver measures its position by carefully timing the signals sent by the constellation of GPS satellites high above the world. Each satellite continually transmits messages containing the time, a precise orbit for the satellite sending the message, and the general system health and rough orbits of all GPS satellites.



VI .GSM SIM 900A

GSM is the most popular technology in the world. The name GSM first comes from a group called Group Special Mobile (GSM), which was formed in 1982 by the European Conference of Post and Telecommunications Administrations (CEPT) to develop a pan-European cellular system. That would replace the many existing incompatible cellular systems. When GSM service started in 1991, the abbreviation "GSM" was renamed to Global System for Mobile Communications. GSM uses Frequency Division Multiplexing and Time Division Multiplexing. FDMA divides the frequency ranges for GSM, which are 890-915, 935-960. Module used here is S2-1040W-Z0936 (SIM 900A). The GSM network can be divided into three parts

- Mobile Station
- Base Station
- Network Subsystem

The mobile station consists of mobile equipment and a Subscriber Identity Module. The most common mobile equipment is the mobile phone. By inserting the SIM card into phone, the user is able to receive calls at that phone, make calls from that phone, or receive other services. The mobile equipment uniquely identifies the International Mobile

Equipment Identity. The Base Station Subsystem consists of the Base Transceiver Station and the Base Station Controller.



VII. BUZZER

A buzzer is used in the system to alert the people nearby so that they can analyze the situation and take necessary action accordingly. The buzzer is connected to pin 3 of the Arduino Uno. It gets activated whenever alcohol is detected by the MQ3 sensor. Its frequency and tone can be changed and used according to the requirements. Hence, it is an easy and cheap way to alert people and grab attention to point out that something is wrong. The motor and the buzzer are connected to BC547 transistor which acts as a driver IC. It controls the working of these components based on the voltage that they receive.



VIII. LCD DISPLAY

A 16X2 LCD may be a device which is employed for displaying any message within the sort of text and numbers. They can be easily programmed and are often used with different microcontrollers. They're preferred over seven segment display thanks to the convenience of their use and convenience.

A 16X2 LCD has 2 registers, command and data. Command registers store the command instructions given to the LCD. A command instruction is given to LCD display to try to to a predefined task like initializing it, clearing its screen, setting the cursor position, controlling display etc. Data registers store the info to be displayed on the LCD. The info is that the ASCII value of the character to be displayed within the Liquid crystal display. In our project, LCD plays a really important role of

displaying information associated with the present status of the system.

IX. FUTURE WORK

In Future work, Government must authorize laws to introduce such circuit in each car and must manage all car organizations to preinstall such systems while manufacturing the car itself. If it is achieved the death rate due to drunken drivers are often brought to least level. In this kind of system, securely landing of car aside without disturbing other vehicles also can be added as a future extension.

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