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AUTOMATIC ENGINE LOCKING SYSTEM THROUGH ALCOHOL DETECTION

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ABSTRACT

Most of the road accidents are occur due to drunken driving. This project is introduced to reduce this kind of accidents. This system is designed to implement in four wheelers using Arduino uno , MQ-3 sensor and Ultrasonic sensor as a Master control unit. This model is used to send the location by using GPS module and also sends the message by using GSM. This system will continuously monitor the ethanol concentration using MQ-3 sensor and turns off the engine if the ethanol concentration is above the threshold value.

Keywords: Arduino Uno, MQ—Sensor ,Ultrasonic Sensor ,Buzzer, LED, GSM, GPS ,DC Motor, LCD.

I. INTRODUCTION

Nowadays most road accidents are caused due to drunken driving. To reduce these accidents Government of India introduced laws prohibiting drivers from drunk so that the fine can stop them from drunk and driving. The drivers who drink alcohol are not in a stable state and also rash driving occurs on highways which will be risky to the people lives who are on the road The effective observation of drunken drivers could be a challenge to the police and road safety officers. The restricted ability of enforcement agents undermines each manual effort geared toward edge drink-driving. Therefore there is a need for an alcohol detection system that can function without the restriction of space and time.

Nowadays automated systems have fewer manual operations, flexible and accurate. In this system, we used an Arduino Uno interface with an alcohol sensor. In case, if the driver starts drinking alcohol after the engine starts then the MQ-3 sensor detects the concentration from the driver's breath and if it exceeds the threshold level then the system displays an alcohol detection note on the LCD screen, the engine stops and the car does not accelerate further. In another case, if the driver is in a drunk state before the engine starts then the engine does not accelerate anymore. After locking the engine the system sends the message to the vehicle owner using GSM and also sends the location using the GPS module. According to the survey , every day more than 50 people die because of road accidents among these people 70% die due to drunken driving. Nearly every 30 seconds one person dies because of a road accident.

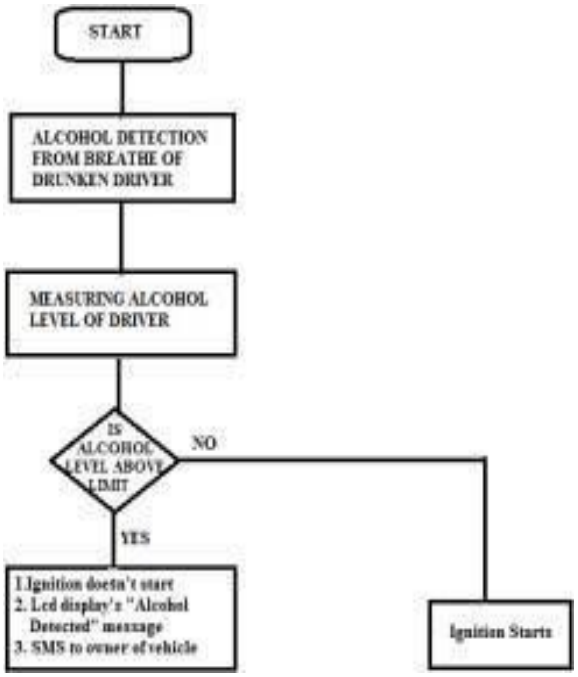

Fig: Flow chart of Alcohol Detection

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II. LITERATURE SURVEY

A. The author has put forward a procedure that utilizes GPS and GSM to find out liquor but this strategy is exceptionally costly, but the costs can be cut off to a extraordinary degree. In this extend, a siren is being utilized which is profoundly temperate and can keep individuals in near vicinity careful. [1]

B. Wearing a savvy head protector to anticipate any mishap is recommended by the author which have certain insufficiencies. Firstly limitations on the utilize of head protectors to as it were 2 wheelers. Furthermore, microcontrollers are software-based mega frameworks in comparison to the conservative siren that are open source equipment. [2]

C. Composite wellbeing observing and sensors based on infrared are utilized to find out liquor as talked almost by the author but the chance of untrue caution can't be dodged in this framework, since miniature changes in a few circumstances can result in wrong caution but in our extend utilize of required innovation makes it more true. [3]

D. To avoid the incident of tanked driving essayist have utilized the PIC16F877A microcontroller which is an obsolete framework and costly one too which limits its utilize to as it were certain lesson of society while we are utilizing Arduino and Uno microcontroller which is progressed as well as temperate. [4]

E. Stressing approximately the intoxicated driving the author proposes the framework to overcome the issue but utilizing mQ2 liquor sensor has come flames.MQ2 liquor sensor isn't bona fide and raises the chance of untrue caution whereas we have utilized MQ3 which is exceedingly bona fide. [5]

1. ARDUINO UNO

Arduino Uno is a microcontroller board that works on the Atmega-328P chip. Arduino is an open-source platform based on hardware and software. The operating voltage is around 5V and it consists of a total of 14 Digital I/O pins and 6 Analog input pins. The memory of this Atmega-328p microcontroller includes memory-32KB for storing code, SRAM-2 KB, and EEPROM-1 KB. Its clock speed is 16MHz and the length of the board is around 68mm, the width is 54mm and weight is about 25g. Arduino is programmed with a C/C++ language. The advantage of this Arduino is that not much knowledge is required to get started and no external or power supply is needed.

Fig: Arduino uno

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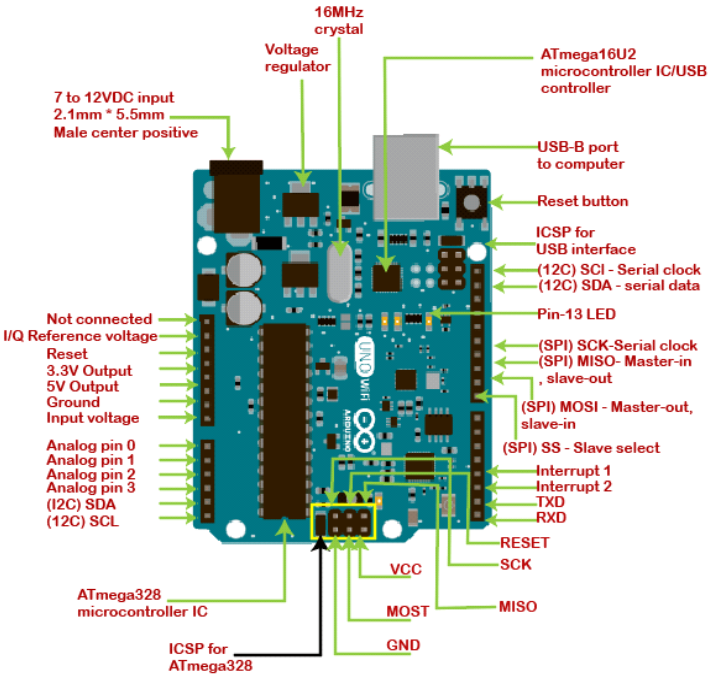

Fig: Pin diagram

2. MQ-3 Sensor

The MQ-3(Gas Grove Sensor) module is useful for gas leakage detection. Due to high sensitivity and fast response time measurements can be taken easily.MQ-3 sensor is suitable for detecting alcohol, Benzine, CH4, Hexane, LPG, CO. The sensor sensitivity is adjusted by using Potentiometer.. MQ-3 sensor is an analog output sensor so it is to be connected to any one analog socket in Grove Base Shield.

Fig: MQ-3 Sensor

When a drunk person breathes near the sensor it detects the ethanol concentration in his breathe and provides an output corresponding to the threshold values. The sensor can be operate at temperature ranging from -10 to 50 degree celcius .The level of drunknesss of this alcohol sensor is:

- 0-200 ppm: Intoxicated
- 200-400 ppm: Slightly drunk
- 400-500 ppm: Drunkness
- 500-1000 ppm: Over limit drunk

3. Buzzer

Buzzer is an audio signal device that can convert audio signals into sound signals. It is powered by DC voltage. When a voltage is applied across the two electrodes, the piezoelectric material mechanically deforms due to applied voltage. This movement of piezo disk within the buzzer creates sound. The Buzzer is activated when alcohol is detected. It sounds alarm that indicates the vehicle in front of us is not safe.

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Fig: Buzzer

4. DC Motor

Coordinate current engine is works on the rule of Lorentz Law. Dc engine could be a sort of electric machine that changes over electric vitality into mechanical vitality. It gives 5V supply. Dc motor's speed can be controlled over a wide run, utilizing either a variable supply voltage or by changing the quality of current in its field windings.y into mechanical vitality. It gives 5V supply. DC Motor's speed can be controlled ovate current engine is works on the rule of Lorentz Law. DC Engine could be a sort of electric machine that changes over electrical vitality into mechanical vitality. It gives 5V supply. DC Motor's speed can be controlled over a wide run, utilizing either a variable supply voltage or b.

Fig: DC Motor

5. GSM

Worldwide Framework for Versatile Communications may be a standard created by the European Media transmission Benchmarks. It is an open and advanced cellular innovation utilized for transmitting versatile voice and information administrations. It works at 850MHz, 900MHz, 1800MHz and 1900MHz recurrence groups. GSM is utilized to send message to the vehicle proprietor when the motor locks that the vehicle is unsafe. Worldwide Framework for Versatile Communications ma a standard created by the European Media transmission Benchmarks.

Fig: GSM module

6. GPS

GPS is a Global Positioning System that provides users with position, navigation and timing. GPS uses the principle of Doppler effect. When the engine locks or the vehicle undergoes theft then by using GPS we can find where the vehicle is.

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Fig: GPS Module

7. LCD

Fluid Precious stone Display(LCD) could be a sort of level board show which employments fluid gems in its essential frame of operation. LCD innovation works by blocking light. When the liquor concentration is recognized it shows a note on the screen that liquor is detected.

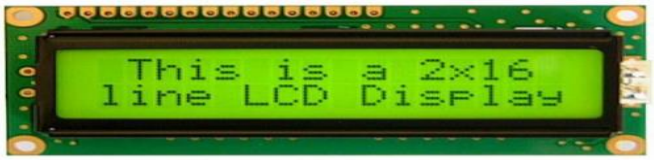

Fig: LCD Display

8. Result

On the off chance that a individual devours liquor and tries to drive a vehicle the MQ-3 sensor identifies the ethanol rate in his breathe and closed down the vehicle motor and sound caution by which individuals can be mindful additionally the "LCD Screen" shows whether he is tanked position or not which makes a difference for the adjacent individuals to be mindful from the situation. And with the assistance of GPS knowing the area of the vehicle. Subsequently able to maintain a strategic distance from and diminish the rate of tanked driving mishaps by utilizing this framework. All supplies are completely tried and associated as required .

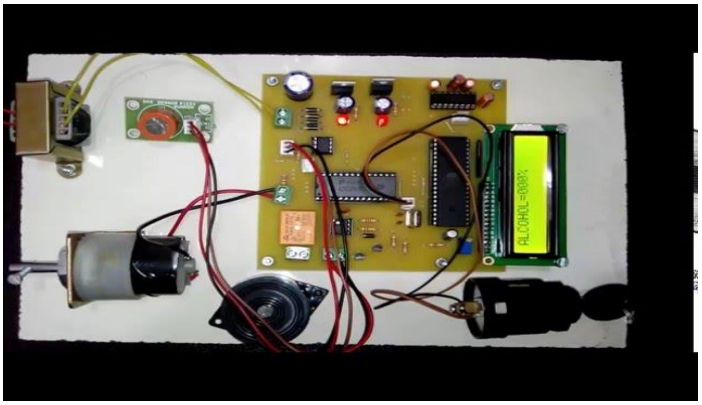

Fig: Model

III. APPLICATIONS AND ADVANTAGES

- The alcohol detection with engine locking system can be implemented in any 4-wheelers.
- The alcohol detection with engine locking system can avoid accidents due to drunk and driving.
- The alcohol detection with engine locking system can helpful for the police.

IV. CONCLUSION

This system improves the security as well as reduce the kind of road accidents due to drunk and driving This system provides the awareness of the people if the person consumes alcohol and can be aware of him form these kind of situations. Finally reduces the death rate of road accidents, provides the safe driving for vehicles and improves automatic safety for vehicles and cars.

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