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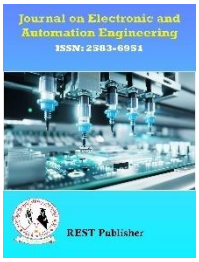

Arduino Based Alcohol Sensing & Engine Locking System

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Abstract. *Drunkenness is one of the main causes of car accidents in the world today. In every car accident case in the world, a driver who consumed excessive amounts of alcohol has been investigated. So here we have created a smart wine experience using arduino which turns off the engine and combines with gsm or gps for location transfer. The system provides automatic detection of breath alcohol and we also show that the engine is used as a tool. We also use the GSM module to send SMS to interested parties when alcohol is detected and the engine stops. There are wide range of MQ series gas sensors where as we use MQ3 gas sensor with arduino uno for this project along with GSM for messaging. If the driver is feeling well, i.e., the alcohol level is below the allowable limit, the car will usually indicate by turning the engine, but in the case of a drunk driver, the alcohol level will be higher than normal. Allowed level detected by the detector Breathalyzer and Arduino control can stop the engine to not get drunk and also send notification to the authorities or family members to help.*

1. INTRODUCTION

In today's world moving from one place to another became a regular part of every individual's day to day life. This generation people are going with the self-owned cars rather than moving in public transport for comfort. As there is a huge rise in automobiles on roads there also a huge rise in road accidents. According to recent surveys the major cause of accidents is due to consumption of alcohol by the drivers. We can observe that the drivers who consume alcohol will not be in steady state compare to normal drivers. This makes huge impact on rash driving which in terms cause road accident. Every life is important due to this road accidents not only the drivers or people travelling in automobiles get effected but also the people on roads also get effected by these types of accidents.

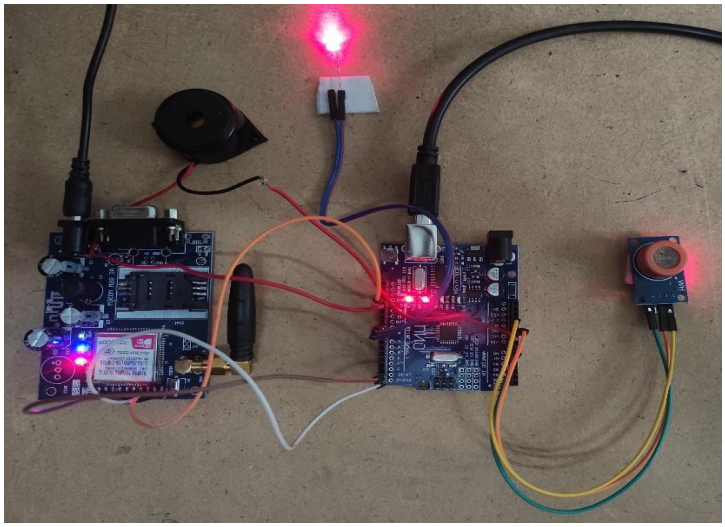

FIGURE 1. Arduino

It is difficult for the police men or to the officials to check every individual vehicle weather the driver consumed alcohol or not. According to the reports of government of India at an average rate of 15000 road accidents per year are taken place due to intake of alcohol by the driversIn 2001 1,07,236 individuals were killed due to over speeding in that drunken driving resulted above 3000 deaths. This system is capable of identifying the driver weather he is drunk or not. If the driver enters the car after consuming alcohol the vehicle will not start. So, the driver cannot go with drunk on to the roads. The limit of alcohol is also set by the government of India i.e., 30mg. Per 100 ml. Of blood.If the driver breathe doens't contains any alcohol then the vehicle moves as usual. By this system we can reduce the road accidents due to drunk and drive.

2. LITERATURESURVEY

Marwan Hannon and colleagues developed a system that detects the blood alcohol content of a driver by sampling the alcohol content in the air within a specific area of the vehicle. A control module is connected to the detector module and responds to the electrical signal from the detector module by controlling certain vehicle functions. In another version, the detector module is integrated into a cellphone and wirelessly connected to the control module. Some versions of the system also include a vehicle status module. Lambert and others examined the collection of ethanol vapors at a specific temperature using a sensing machine. The device is designed to delay the activation of the heating device for a sufficient period of time, allowing the collecting device to absorb ethanol vapor from the air in the confined environment. This invention specifically focuses on an ethanol sensor that operates passively to determine a person's level of intoxication in a confined space. B. Praveen Kumar and colleagues studied accidents caused by drowsiness. Drowsiness is identified by monitoring eye blink closures and blinking frequency using an infrared sensor integrated into the driver's spectacles frame. Alcohol consumption is also verified during the vehicle's startup process using an alcohol detector. If the driver is intoxicated, a buzzer sounds and the vehicle prevents the driver from starting it. If the driver is drowsy, the system alerts with a buzzer and reduces the vehicle's speed.

3. PROPOSED METHOD

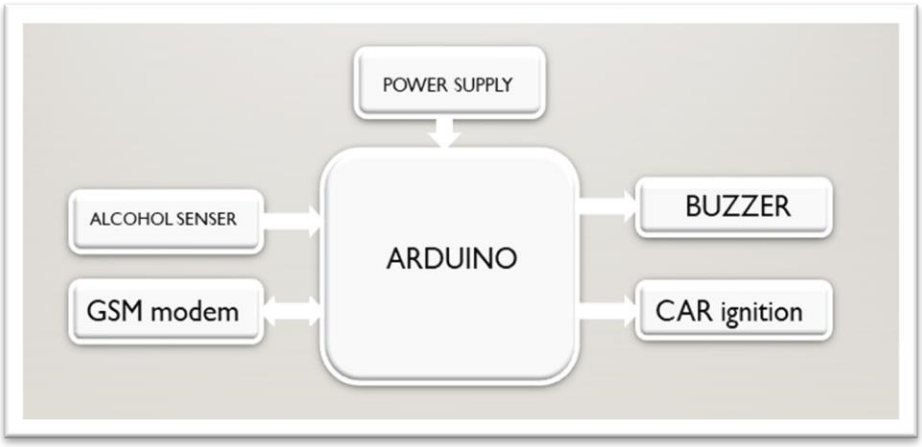

FIGURE 2. Block Diagram Arduino Based Alcohol Sensing & Engine Locking System

When the output of the MQ3 alcohol sensor exceeds the threshold value. when it comes to Arduino it senses the value and multiplies it with 5 because of internally we used MCP6001 Op-Amp to avoid noise and to get a good effective output by this the heart rate is multiplied by 5. So the threshold value should be 5 times of the threshold output of the MQ3 sensor.As we know that the output of the input_pullup will be appeared at 13 pin ,we connected the buzzer at the 13 pin. Then the arduino triggers the buzzer through pin 13 by which the buzzer gets activated. At the same time the DC motor gets stopped through 8,9 pins, as the driver consumed alcohol. Now due the alcohol rate is more than the threshold value the GSM module which is connected as per the configuration shown above in table, we are using GSM module 900a in the name it given it has a frequency of 900/1800mhz. It can operate in the baud rate of 1200 – 11520. The transmitter pin of gsm module is connected to receiver pin Arduino uno and vice versa, the vcc pin of gsm module is connected to 5 volts of Arduino and ground to ground. Now signal > threshold value, then by sending a pulse from Arduino to gsm module to get the gsm module active. “AT+CMGF=1” this is the command which we given in the program if the condition is satisfied then by command = 1 it gets active. The command sends by transmitter pin of Arduino to receiver pin of gsm module. Based on the

command and message which we given in the program of Arduino in Arduino IDE the message will be sent to the register mobile number in the code. This is the brief explanation of our project how it works.

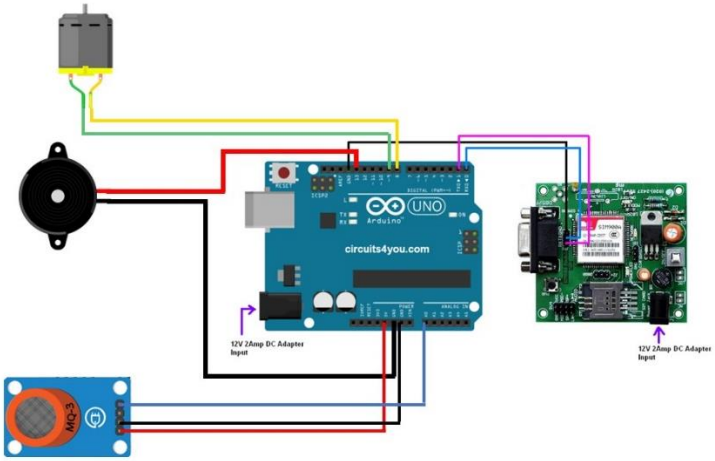

FIGURE 3. Circuit Diagram

4. RESULT

When a normal person attempts to command the vehicle as he/she didn't consumed the alcohol the sensor value doesnot exceeds the threshold value . So the vehicle will be normal and accepts the commands of the person . If a character who struggles with alcoholism tries to take control of a vehicle, a sensor designed to detect alcohol content will activate. This sensor is capable of determining the level of alcohol in the person's system. As a safety measure, it will automatically shut down the car's engine. Additionally, an alarm will sound, and a message will be transmitted to the authorities or a designated person through the GSM (Global System for Mobile Communications) network.

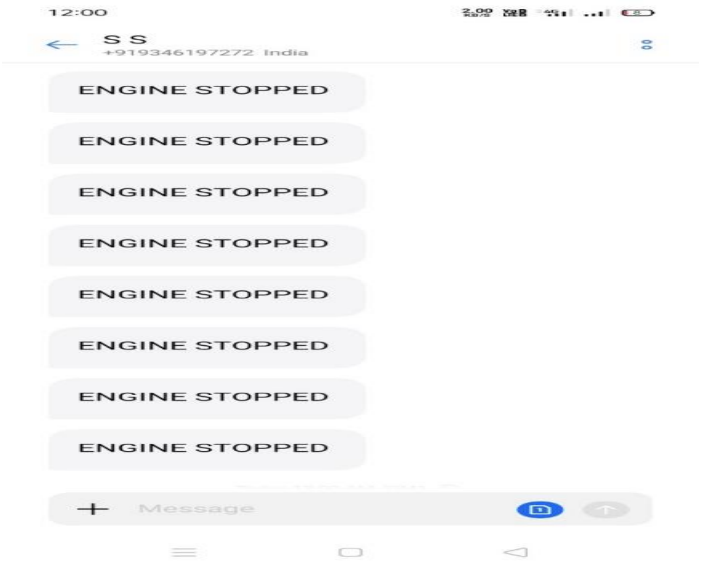

FIGURE 5. Result Output

5. CONCLUSION

Various processes and methods are being utilized to address the issue of accidents caused by drivers who consume excessive amounts of alcohol. Multiple techniques are employed, such as steering lock, ignition interlock, and vehicle interlock systems, among others. These techniques involve several factors to consider, including cost, appearance, and practical application. In this project, our objective was to determine an optimal solution that would restrict impaired drivers and prevent accidents resulting from alcohol-induced impairment.

By implementing such techniques, we can significantly reduce the occurrence of drink and drive-related accidents on a daily basis. The program has effectively demonstrated its capability to detect and identify high levels of alcohol concentration, thereby taking appropriate action to control the ignition. However, it should be noted that this program serves as a foundation and can be further developed to incorporate additional functionalities, resulting in advanced systems that cater to specific market demands and allow for customization.

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