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Modified Engine Locking System Through Alcohol Detection

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Abstract
In this project, an alcohol detection system with engine locking for vehicles is set up and put into operation. It uses an ultrasonic sensor and an Arduino UNO as the MCU (Master Control Unit). The system will accurately detect the alcohol concentration in the alcohol disclosure sensor and, in the event that it is beyond the threshold level, will turn off the vehicle's engine. A reliable LCD will display the alcohol content. The model will similarly communicate the location of the car. The project gives a strong defence against disasters under control brought on by smashed driving.

Keywords: Arduino UNO, MQ-3 Sensor, Buzzer, LCD, DC Motor fan.

I.INTRODUCTION

The ongoing situation demonstrates that drunk driving is to blame for the majority of traffic accidents. Drivers under the influence of alcohol are less steady as a result, and this makes them more likely to drive recklessly and endanger other road users. The monster of reckless driving knows no bounds. The rules in India currently forbid drivers from operating vehicles while intoxicated so that the fine will prevent them from doing so. Strong views of drunk drivers could, in any case, pose a challenge to law enforcement and road safety authorities. The reasoning behind this is that it is common for people to be unavailable as well as to be in a state with ambiguous time and location. Each manual attempt aimed at cutting edge drunk driving is attacked by this bound limit of need experts. A system for alcohol consumption areas that can function without human presence is required. A staggering amount of traffic accidents are predicted to occur in 2021 by the Indian Ministry of Statistics. Despite the fact that the research said that speeding is the primary cause of these accidents, it can be fairly assumed that almost all of the incidences are a direct result of the drivers' unstable conditions, which are brought on by drinking alcohol before driving. According to a 2030 study by the World Health Organization, drink-driving is a factor in roughly 60%–65% of auto accidents. Additionally, according to WHO data on road traffic passing's, 1.3 million traffic passing's were observed globally in 2021, with low- and focus pay countries experiencing higher setback rates per 100K people (28.1% and 16.4%, respectively). Information gathered revealed that only a few financial instruments were involved in these traffic passing's. Although the method developed by the author to learn about alcohol makes extensive use of GPS and GSM, overall costs can be reduced. In this adventure, a very smart alert is being employed, one that can keep those nearby on their toes.

II. RESEARCH ELABORATIONS

The writer recommends donning a beautiful head protector to thwart any catastrophe that has obvious deficiencies. The restriction on head protection to only two wheelers is the most critical. A fascinating customization of microcontrollers based on the Uber system is also being done with open source hardware and sufficient prudence. According to the author's analysis, infrared sensors and composite prosperity checks are used to detect alcohol, but there is still a chance for fraud because even the slightest variation in a given situation can result in a false positive. However, the use of the necessary technology in our task increases its reliability.

The PIC16F877A microcontroller, which is an outdated design and an expensive one that limits its use to only a certain class of society, was used by the author to prevent the accident of crushed driving. In contrast, we are using Arduino and Uno microcontrollers, which are cutting-edge and affordable. The writer, who is preoccupied with drunk driving, suggests a technique to combat the problem utilizing a mQ2 alcohol sensor has come up flares. We utilized MQ3, which is a substantially more reliable alcohol sensor than MQ2, because the latter is unreliable and increases the likelihood of a bogus issue.

However, in order to address head defender indiscretion and alcohol ID simultaneously, the author recommended a structure that is extremely complex and expensive due to the usage of the P89V57RD2 microprocessor. Additionally, this system needs to be compatible with two-wheelers. The Arduino UNO microcontroller is reasonable since it can be installed in any type of vehicle, increasing its certification and productivity.

i. **Algorithm:** The step-by-step algorithm of the automatic engine locking system through alcohol detection is asfollows:

Step-1: First of all collect all the components that are needed to the project to establish. Step-2: Assemble all the components one by one on single PCB board as per circuit diagram.Step-3: Make the connections as per in the circuit diagram with no errors.

Step-4: Finally made the kit.

Step-5: Now give the power supply to the kit.

Step-6: It takes 30 sec to take action and run the motor.

Step-7: The motor runs and the vehicle starts moving. It absorbs the surroundings and starts moving to detectalcohol around the surroundings.

Step-8: When the alcohol percentage is in minimum the motor accepts the person is in good condition thevehicle did not stop running.

Step-9: When the alcohol percentage is more around the surroundings the vehicle suddenly stops movingbecause it detects the more percentage of alcohol present around the surroundings.

Step-10: When the vehicle suddenly stops and the vehicle is in off state it doesn’t provide

power supply.Step-11: This is the step by step procedure for the following project.

ii. Flow Chart:

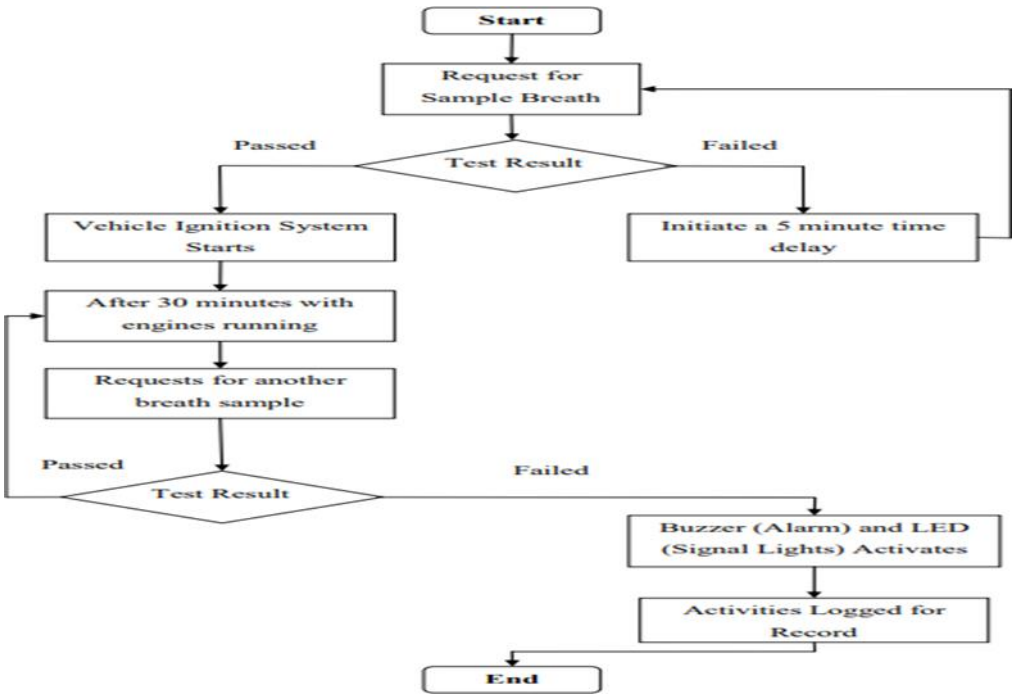

Figure 1: Flow Chart of the system iii. Block Diagram

iii. Block Diagram:

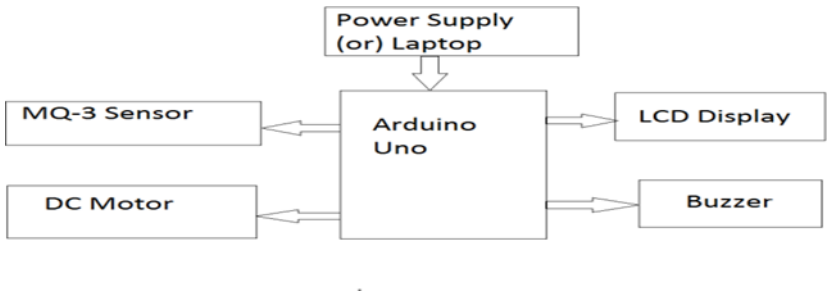

Figure 2: Block diagram of the system

iv. Methodology

ARDUINO UNO: A microcontroller board called Arduino Uno uses the ATmega328P. It contains 6 simple information sources, a 16 MHz earth resonator (CSTCE16M0V53-R0), 14 mechanical input/yield pins (of which 6 can be used as PWM yields), a USB connection, a power jack, an ICSP header, and a reset button. It includes everything needed to support the microcontroller, including a USB interface for connecting to a computer and an AC-to-DC adapter or battery for initial power. Italian for "one," "uno" was picked to properly look at the covert appearance.

MQ-3 SENSOR: Similar to a standard breath analyzer, this alcohol sensor is suitable for detecting alcohol addiction on your breath. It responds quickly and with good responsiveness.

In light of the alcohol centre, the sensor produces a plain resistive result. One resistor is all that is required for the drive circuit, which is fairly basic. A 3.3V ADC could serve as a definite association point.

LCD DISPLAY: Large numbers of pixels are present in an exhibit. The amount of pixels is consistently implied by the quality of the show. Three sub-pixels make up a pixel: a red, a green, and what are known as RGB. A picture is created when the pixels are quickly turned on and off.

DC MOTOR : The DC fans, also known as rapid current fans, are regulated by a fixed-value capacity similar to a battery's voltage. DC fans typically operate at voltages of 5, 12, 24, and 48 volts. Curiously, a varying voltage with equal positive and negative worth is used to regulate the pivoting current fans, often known as AC fans.

BUZZER: A warning device is a device that emits a perceptible, visible, or other type of warning signal to alert someone to a situation that needs careful examination.

III. RESULTS

The device for alcohol detection and engine locking aids in reducing accidents caused by drunk driving. Alcohol is distinguishable by the MQ-3 sensor in natural components. The sensor reports a result if the alcohol level is less than the cutting edge level and the LCD displays "Standard" continuously. If the alcohol obsession is more than the cutting edge level, the LCD displays "Alcohol DETECTED." The conductivity of the MQ-3 sensor improves, giving the ARDUINO the ability to scrutinize. The DC motor fan will then be turned off by the Arduino, followed by a boom sound. Make all connections exactly as shown in the circuit diagram.

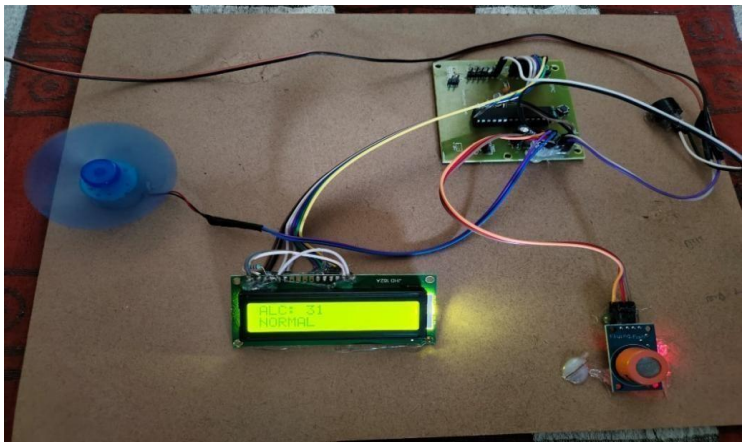

Figure 3:Experimental Setup

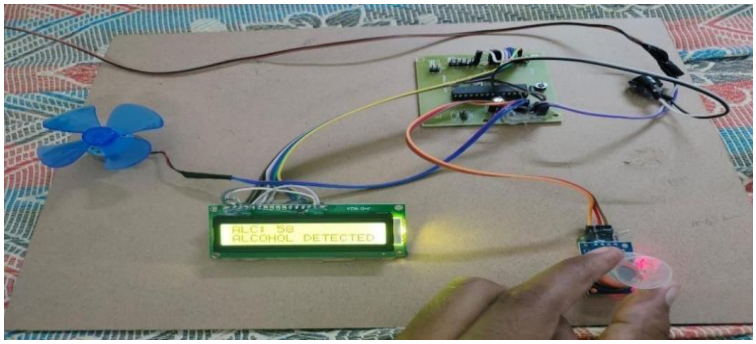

Figure 4: The MQ3 Sensor detected alcohol

IV. CONCLUSION

Before starting this assignment, appropriate goals and objectives were established, including the creation of a low-cost breath analyzers start interlock device with features and functionality comparable to those of its western counterpart. It will also address a few setup problems with the ongoing breath analyzers start interlock device search. Additionally, the cost issue prevents Malaysia from implementing, uncovering, and fully utilizing the breath analyzers start framework in the west, making a low-cost breath analyzers start interlock with comparable components and functions an appealing and sensible option.

V. ACKNOWLEDGEMENT

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