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AUTOMATION ENGINE LOCKING THROUGH ALCOHOL DETECTION

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Abstract: The current situation indicates that drunk driving is the primary cause of traffic accidents. Every manual effort aimed at curbing alcohol-related driving is undermined by law enforcement officials limited capabilities. Thus the requirements for an alcohol detection device that is not limited by time or space exists .This project describes the layout and focus of an Arduino UNO and ultrasonic sensor-based engine locking alcohol detector for automobiles. When the amount of alcohol in the alcohol detection sensor rises above a certain threshold, the equipment will continuously measure the alcohol content and cut off the vehicle's engine. The concept offers a practical way to reduce drink driving-related accidents.

KEYWORDS: Arduino UNO, MQ3 Sensor, Buzzer, LED, DC Motor , Relay Switch

I. INTRODUCTION

According to the current situation , alcohol driving is the primary cause of most traffic accidents. Driving alcohol causes drivers to become unstable, which increases the risk of rash driving on the highway and endangers everyone on the road, including the driver. The seriousness of the reckless driving crosses all boundaries. At the moment , India's rules forbid drivers from drinking and driving in order to deter. The seriousness of the reckless driving crosses all boundaries. At the moment, India's rules forbid drivers from drinking and driving in order to deter them from doing so with a fee. However the incapacity of the general public to be there in addition to the state at the same house and time makes it difficult for police officers and road safety officers to effectively observe drunk drivers.

II. LITERATURE SURVEY

The following literature survey provides an overview of some of the recent advances in :

The author has proposed a method that measures alcohol using GPS and GSM. This method is highly expensive, but it can significantly reduce cost. A siren, which is very affordable and can alert anyone nearby, is being used in this project.

The author suggests that wearing a smart helmet can prevent accidents, although it has significant drawbacks. First, only two wheelers are permitted to wear helmets. Second , compared to the affordable siren called hardware that is open-source ,microcontrollers are software-based mega systems.

3)The author discusses the use of infrared sensors and composite health monitoring to determine alcohol consumption, but there is always a chance of false alarms in this system due to minute changes in certain circumstances. However our projects use of the necessary technology makes the alarm more genuine.

4) Concerned about intoxicated driving, the author proposes a solution, but utilizing the Q2 alcohol sensor has proven problematic. While we have employed the extremely legitimate MQ3 alcohol sensor, the MQ2 alcohol sensor is not genuine and increases the possibility of a false alarm.

5) In order to address helmet negligence and alcohol detection , the author proposed a very complex and expensive system that uses a P89V57RD2 microcontroller and can only be installed in two-wheelers. In contrast, the Arduino UNO microcontroller is less expensive and can be installed in any kind of vehicle, making it more realistic and effective.

III.OUTCOME OF LITERATURE SURVEY

We learned from the literature review the fact that there is a solution to the issue of drunk driving-related car accidents and also save many lives with this project's vehicle repairs. We'll also deploy and reverse this project to reap further benefits and lessen mishaps.

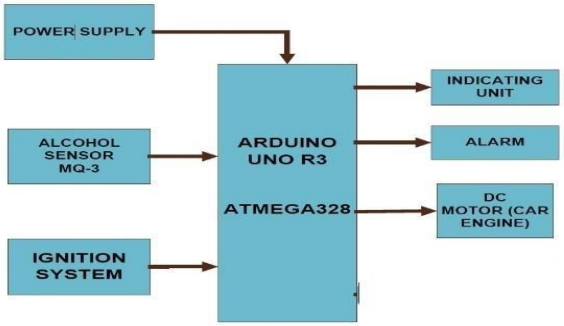
IV.PROBLEM STATEMENT

In the previous , drunk driving was thought to be the primary cause of accidents, but there was no technology in place to shut the engine of the car after it was detected. On the roads and highways, manual checks were performed after a specific distance, but they were insufficient to prevent the occurrence of misshapes. This Technology, which combines an engine locking system with alcohol detecting alarm and vehicle identification was created to prevent these issues.

V.METHODOLOGY

1) The power supply unit, the alcohol detection unit, the engine locking unit, the ignition system unit, the display unit, the alarm unit, and the signaling unit are the numerous units that comprise the system in our suggested work. The car will have an LCD display installed inside to serve as a warning system for both the driver and other occupants. To illustrate the idea of engine locking, a DC motor serves as the vehicle's engine. The Arduino Uno microcontroller, which is branded as an ATmega328, will be utilized to continuously search for the alcohol sensor's output. Writing code, compiling it, generating a hex file, and loading it into the microcontroller all happen within the Arduino Uno sketch, which serves as the programming environment.

Figure displays the proposed system's block diagram .The components include a MQ-3 alcohol sensor, a DC motor, an LCD, a microprocessor, an alarm, and LEDs. Each of the units underwent independent design and testing.
The Arduino Uno board has an 8-channel, 10-bit microcontroller that converts analog voltage on a pin to a digital number. The microcontroller reads the detected analog voltage values. In order to produce 5V for every 1024 units, the system will link input voltages between 0 and 5V with values between 0 and 1023V. After processing the analog signal, the system will convert it to a digital value of either 0 or 1. Additionally, the alcohol sensor's analog values will be scaled to a percentage, and this % corresponds to the analog voltage values.



The initial phase is the awareness stage, followed by the moderate impairment stage, and ultimately, the severe impairment stage. At the awareness stage, the system activates only the LED indicator, keeping the alarm off while allowing the car engine to run. Moving to the moderate impairment stage, both the alarm and the green LED indicator illuminate, alongside the running car engine. Finally, at the severe impairment stage, the driver's faculties are significantly impaired, prompting the system to turn off the engine for safety, while

activating the alarm and the red LED indicator. Consequently, if the system detects severe impairment, the vehicle automatically halts, enabling the driver to safely park by the roadside

VI. ADVANTAGES

1. The installation of an engine locking alcohol detecting system is viable across various four-wheeled vehicles.
2. The integration of an Alcohol detection with engine locking system aids in mitigating accidents stemming from intoxicated driving incidents.
3. Law enforcement agencies stand to gain significantly from implementing an alcohol detection system with engine locking capabilities. This technology offers an automated safety feature for vehicles and other forms of transportation, providing a unique solution to prevent alcohol-related accidents.
4. The incorporation of an Alcohol detection with engine locking system furnishes an automated safety mechanism for automobiles and similar modes of transportation.

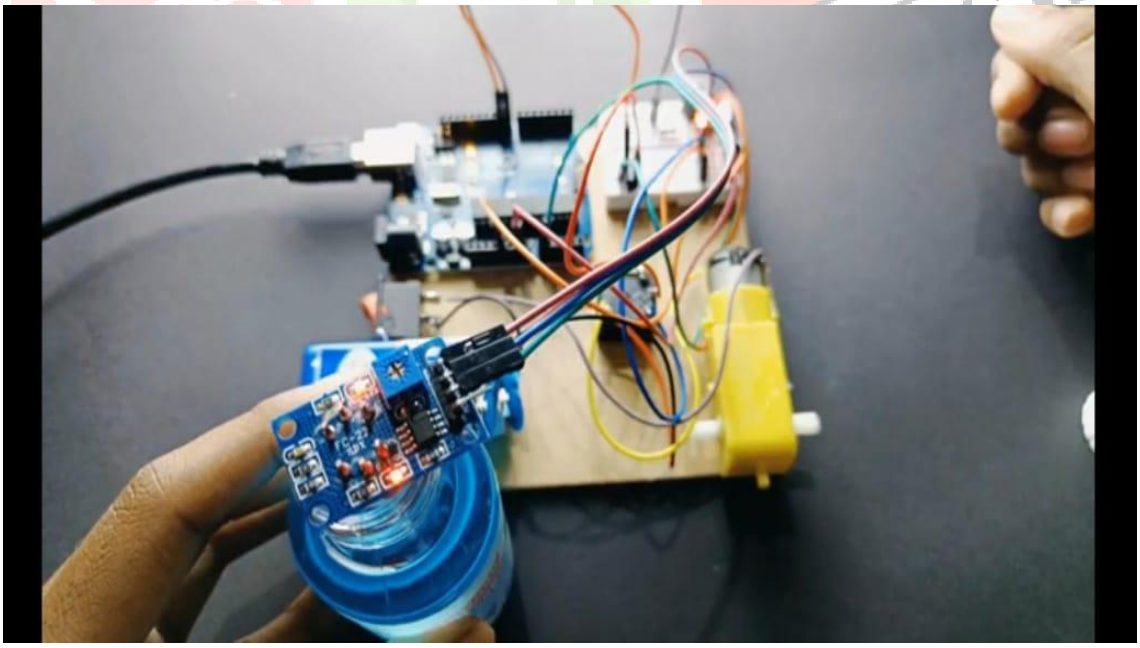
VII. DISADVANTAGES

1. More resources are required for execution. While challenging, integration can be achieved using existing tools or features.
2. A determined drunk driver might try to tamper with the sensor or find ways to fool it.
3. Installing and maintaining this technology in all vehicles could be expensive.

VIII.APPLICATIONS

1. Used in automobiles
2. It can be incredibly beneficial to cops
3. Rental cars

IX. RESULT



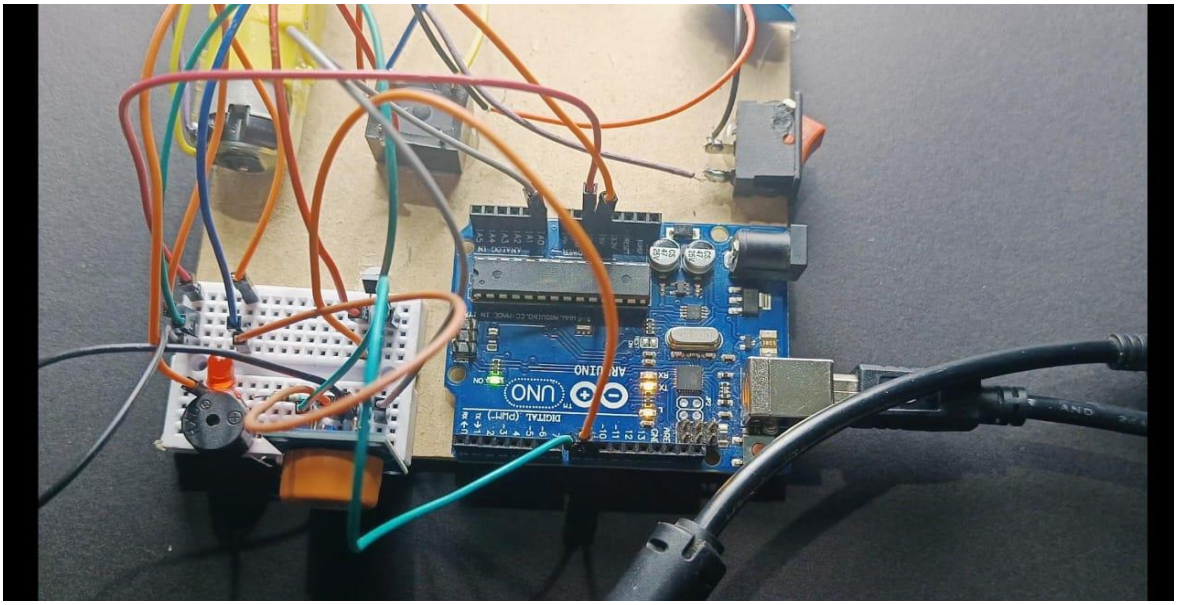


Fig 9.1 shows the experimental setup of the system

X. CONCLUSION

In this project, we have created a real-time model that, in the event that an inebriated driver attempts to operate a vehicle, can automatically lock the engine. We can protect both the driver's life and the lives of the other occupants of the vehicle by installing an alcohol sensor. This application is really basic. The project has a long lifespan, requires little maintenance, and uses little electricity.

The goal of this research is to effectively prevent drunk driving. We can lower the number of alcohol-related accidents by putting this project into action.

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