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Drink and Drive Detection with Ignition Lock System

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ABSTRACT: This paper presents a novel approach for detecting and preventing drink and drive cases using an ignition lock system. The system utilizes infrared sensors to detect alcohol levels in the breath of the driver and then locks the ignition of the vehicle if the alcohol level is too high. The system is designed to be implemented in both cars and trucks, and can be connected to a digital dashboard to display the alcohol level in real time. The system also utilizes a secure authentication system to ensure that only authorized drivers are allowed to operate the vehicle. This system can be used to reduce the number of drink and drive cases, as well as provide a safe, secure, and reliable way of operating vehicles. This paper also explores the potential of utilizing this system in other applications such as public transport vehicles and autonomous vehicles..

KEYWORDS: Autonomous, Arduino, GSM Module, GPS Module, STM32

I. INTRODUCTION

The Rapid growth of technology and infrastructure has made our lives easier. India had earned the large distinction of having more number of fatalities because of road accidents in the world. Road safety is emerging as a major concern around the world especially in India. The growth in technology has also increased the traffic hazards and the road accidents take place frequently which causes huge loss of life as well as property because of the poor emergency facilities. The main ambition of this paper "Accident Detection with GPS and GSM modem" is to provide prompt help to road users at the time of accidents. Drinking and driving is already a serious public health issue, which is likely to emerge as one of the most significant problems in the near future. The important role of alcohol in traffic safety has made controversies. A drunk driver may become a murderer as he cannot perform his tasks without risks and dangers of road safety. An intensive drive against drunk driving is the need of the hour to promote road safety. It important to bring about new steps for road safety. After drinking, the judgment power of the driver gets reduced which is a threat to road safety. Due to its effects, the driver takes more time to react. Our ambition is to curb drunken driving. When the car hits an object and the driver is hurt the GPS module finds the location of the car and send the location to the ambulance as well as relatives of the driver. An alcohol sensor will detect the alcohol content in the driver and switch of the vehicle. The ultrasonic sensor will find the distance of obstacles surrounding the car and help to avoid collision. The headlights of the car are automatically adjusted as per the requirement.

II. RELATED WORK

It is simple to mention that the exact location of the vehicle will be taken from GPS however much it's not possible. In spite of getting a complicated technology. It's simple to induce actual line of longitude and latitude values of the vehicle. Everyone is aware of that there are a unit many ways for following the exact location of the vehicle that had met associate in nursing accident. Once accident happens, it's terribly troublesome for the victim to send word the relations, hospitals or police. During this state of affairs associate in nursing alert message will be sent to the predefined range within the system. According to statistics, in the annual traffic accidents, the number of traffic accidents caused



by drivers' unqualified driving skills, bad driving habits, drunk driving and fatigue driving accounts for more than half of the total[1]. Traffic accident not only causes a large number of casualties, but also brings misfortune to countless families and affects social and economic development and stability. As for drunk driving, the current laws and regulations can only test the vehicles passing by at a fixed location to detect whether the driver has drunk, which can not prevent drunk driving from the source. If we test whether the driver has drunk or has reached the standard of drunk driving when the driver opens the door and gets on the vehicle, and then take corresponding measures, we can fundamentally prevent drunk driving. At the same time, fatigue driving is also a major cause of traffic accidents. In the process of driving, the insufficient rest and excessive fatigue will result in inattention and slow response. If the driver can not make the right response in time, the accident will happen easily. At present, there is no good solution for effectively controlling fatigue driving on the market. The safe driving system intends to use face recognition to record the continuous driving time of the driver to judge whether the driver is fatigued or not. When the upper limit is reached, an alarm will be given to alert the driver to be cautious and rest in time, which can prevent fatigue driving to a certain extent.

III. BLOCK DIAGRAM

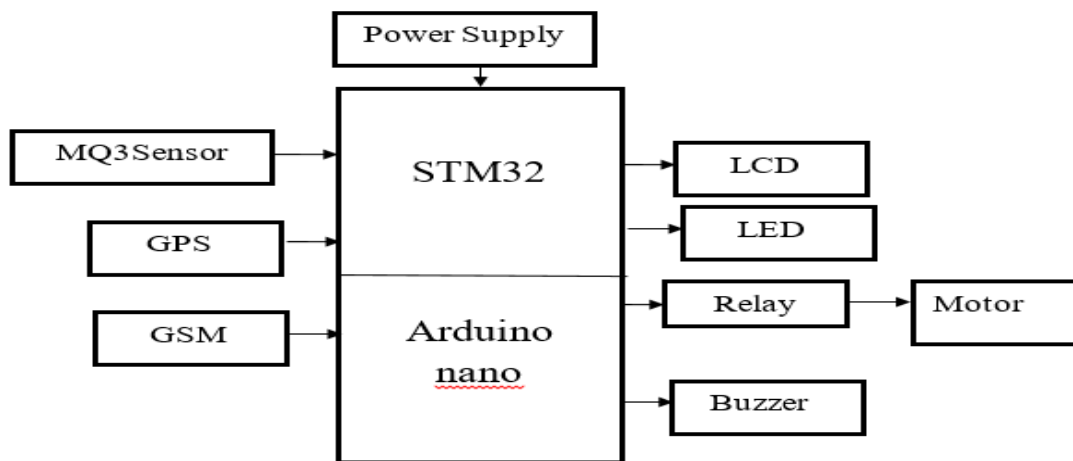


Fig.1 Based Block Diagram.

Working of Drink and drive detection with ignition lock system Drink and drive detection with ignition lock system is a system designed to prevent drunk drivers from operating a vehicle. The system works by using sensors to detect the amount of alcohol present in a person's breathe. If the sensor detects a certain level of alcohol present, the ignition lock will not allow the vehicle to start. This helps to reduce the risk of accidents caused by drunk drivers. The system is comprised of several components, including an alcohol detector, an ignition lock, and a control unit. The alcohol detector is placed near the driver's seat, and is designed to detect the amount of alcohol in the driver's breath. When the sensor detects a certain level of alcohol, it sends a signal to the control unit. The control unit then activates the ignition lock, preventing the vehicle from starting. The ignition lock is a device that is installed on the vehicle's ignition switch. The lock prevents the vehicle from starting until the driver has successfully passed a breath test. If the driver fails the test, the lock remains in place and the vehicle will not start. The system also includes a timer, which allows the driver to wait for a predetermined amount of time before attempting to start the vehicle again. This helps to ensure that the driver has had enough time to sober up before getting back behind the wheel. The system is designed to be user-friendly and easy to install. It can be used in any type of vehicle, and requires minimal maintenance. The system is also designed to be tamper-proof, so that it cannot be bypassed or deactivated. This helps to ensure the safety of the driver and other motorists on the road.

A) FLOWCHART

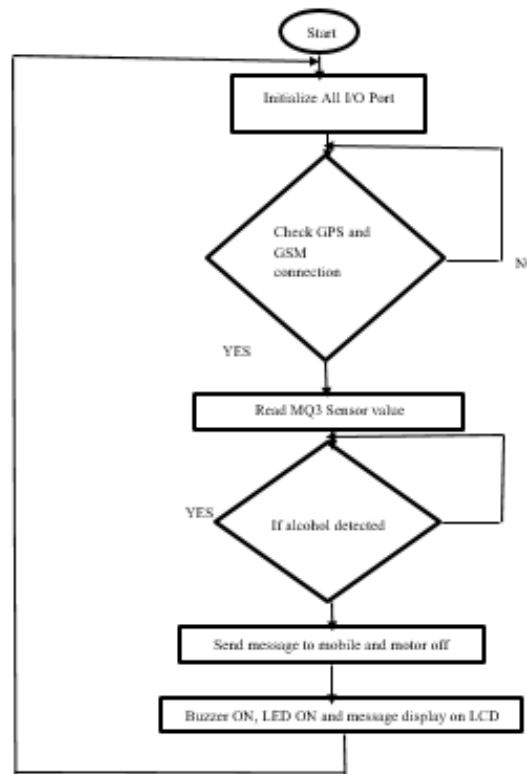


Fig. 2 Flow Chart

IV. EXPERIMENTAL RESULTS

A) SYSTEM HARDWARE DESIGN

Four-way relay, ultrasonic sensor, alcohol sensor, OLED display, LED light and buzzer are controlled by STM32F103C8T6 of the STM32 microcontroller and alcohol sensor.

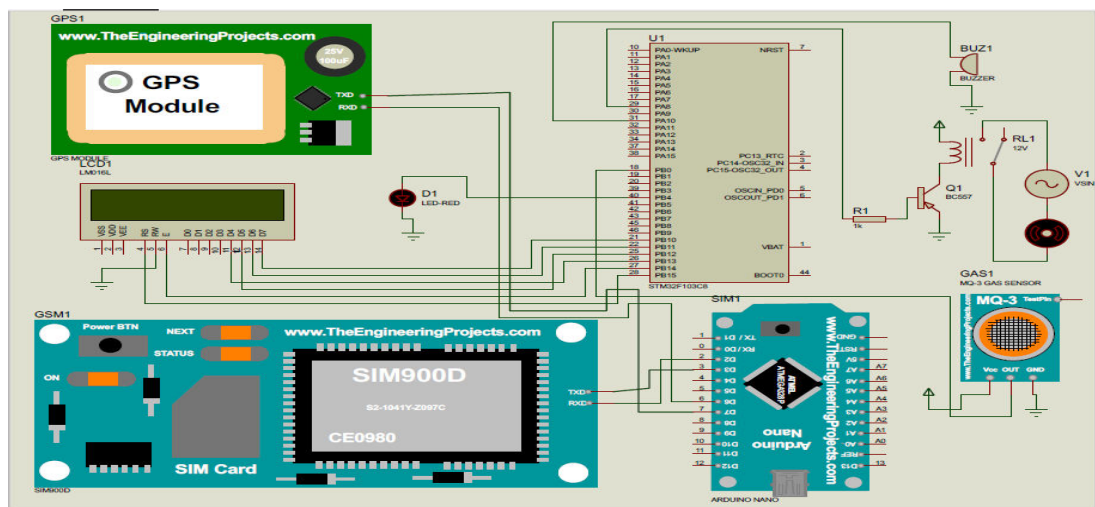


Fig. 3 Shows the control circuit diagram

B) SYSTEM SET-UP PROTOTYPE C) MESSAGE INTERFACE

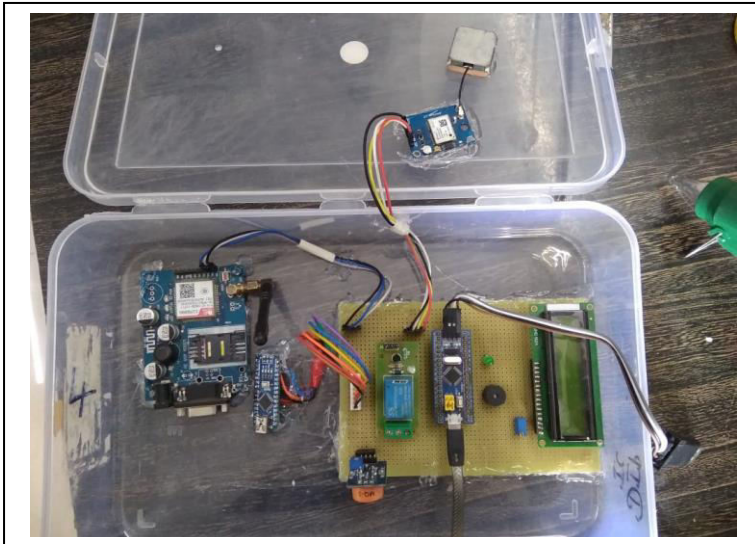


Fig. 4 Shows the Hardware Setup diagram.

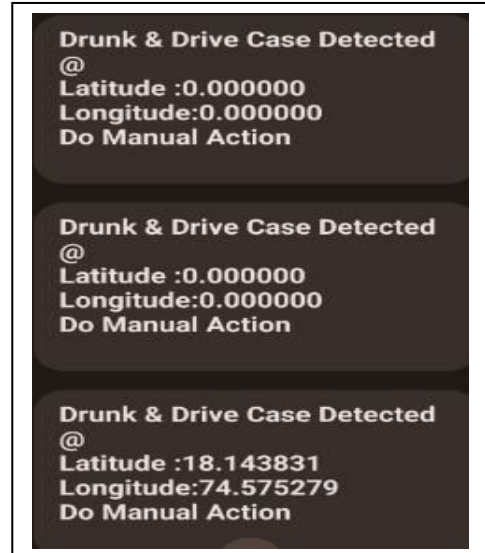


Fig. 5 Message interface of Receiver Section

V. ADVANTAGES

- The Alcohol detection with engine locking system can be implemented in any 4- wheelers.
- The Alcohol detection with engine locking system can help prevent accidents due to drunk driving. And system can be very helpful for police. Provide automatic safety system for cars and other vehicles.
- Many processes and techniques are being used for overcoming the accidents that causes due to the over drinking of alcohol by the drivers. There are usually more than one method and technique; some adopt different technique like locking of steering, ignition interlock, vehicle interlock system and many more. The technique includes many considerations; some of these considerations include cost, appearance, application of technique and many more.
- Alcohol Detection System in Cars” provides an automatic safety system for cars and other vehicles as well.

VI. CONCLUSION

In this project we have built up a real time model that can automatically lock the motor engine when a drunken driver tries to drive a car. Now a days car collisions are mostly observed. By fitting this alcohol sensor into the car, we can save the life of the driver and furthermore the rest of the travellers. The life time of the task is high. It has low or zero support cost and obviously low power utilization. This is a developed system to check drunken driving. By executing this outline a safe car travel is possible decreasing the mishap rate because of drinking. By executing this outline, drunken drivers can be controlled so are the mishaps because of drunken driving.

VII. APPLICATION

- “Alcohol Detector project” can be used in various vehicles for detecting whether the driver has consumed alcohol or not.
- Breathing analyzer projects can also be used in various companies or organizations to detect the alcohol consumption of employees. An alcohol detection system in an automobile is a must feature that every cab or bus should have.

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