

Intelligent System for Vehicle Controlling with Alcohol Detection Using Smart Technology

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Abstract - In this paper, an attempt will be made to develop a locking system for vehicles with help of alcohol checking mechanism. In this system we use pre-existing alcohol sensor with arduino along with 16*2 LCD display to show the level of alcohol and alcohol is detected & it automatically lock the vehicle motor. The proposed system takes advantages of two smart technologies which are location services GPS based for tracking the location of vehicles & basic telephony services mainly GSM based by which we send alert messages to driver's relatives & police station. Thus, the system provides alcohol detection using engine locking through arduino, thereby minimizing the chances of drink & drive accidents that could have happened. Therefore, loss of life & property is avoided.

Key words: -Alcohol Detection System, GSM, GPS, Arduino, LCD Display.

1. INTRODUCTION

According to World Health Organization, most of the peoples in the world die every year because of transportation-related accidents. The drunk & driven accident could be a major public drawback in most countries around the world, mostly in India. In order to face this situation, the alcohol detection system draws the first step to solve this problem that threatens the safety & health of peoples. Alcohol detection system uses two smart technologies that are Global system for mobile communication (GSM) & Global Positioning system (GPS). The system is developed for observing and avoiding the accidents. This uses the concept of IOT.

2. LITERATURE SURVEY

The mobile phones are adapted with networks like 2G/3G & that's the reason they provide communication platform. The number of drunk and drive accidents are increasing day-by-day because of drunkenness of driver, drowsiness of driver, sometimes the neighbouring car behaviour are also responsible to enforce accident. There are some systems that have been implemented to avoid such accidents but they are not able to give proper solution to implement the system in car. Thus, to avoid such accidents that normally takes place.

2.1 Existing System

In the existing system, alcohol detectors are not proposed inbuilt in a car. Traffic police/police uses alcohol detectors (device) to avoid drink & drive accidents. The driver has to blow in the device & police gets to know whether driver is drunk or not with the help of the same. The limitation of this device is that the police are not able to check each & every car & even if they stop some suspects there are chances that the police can be easily bribed. Therefore, there is a need for an effective system to check drunken drivers.

2.2 Proposed System

The proposed system has an efficient alcohol detector in vehicle. The proposed system uses smart technologies like GPS & GSM modules along with the alcohol sensor (MQ-3). GPS is used to know the exact location of driver. GSM is used to send message to the controller and relatives of the drunk driver.

3. HARDWARE MODULES

The system is adopted with the Arduino UNO in the hardware as shown in fig.-1, the core functions modules are Alcohol Sensor module(MQ-3),GPS Module, GSM Module, 16x2 LCD Display, Buzzer & LED.

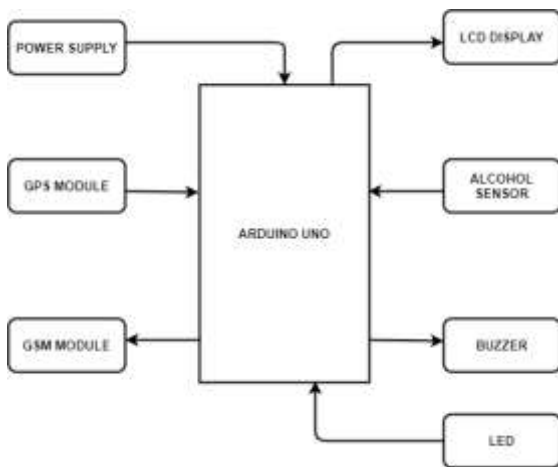


Fig.-1. System Design

3.1 Arduino UNO

Arduino UNO is an open-source electronics platform based on easy to use hardware & software. Arduino is a microcontroller based on the ATmega328P. It has 20 digital input and output pins of which 6 can be used as PWM o/p and 6 can be used as analog i/p. Arduino is inexpensive, cross-platform & simple, easy to use.

3.2 GSM Module

GSM (Global System for Mobile Communications), is a standard developed by the ETSI. We are using SIM900A GSM module. A GSM module is a device which can be used to make a computer or any other processor communicate over a network. The commands are adapted to the service given by a GSM such as: - text messaging, calling a given phone number, deleting memory locations etc.

3.3 GPS Module

Global Positioning System (GPS) is a satellite based system that uses satellites & ground stations to measure & compute its position on Earth. GPS is also known as Navigation System. The GPS receiver module uses USART communication to communicate with Arduino. GPS receives information like latitude, longitude, altitude from the satellites. It contains information that we want to use. This GPS receiver is used in many applications like smartphones, Cabs, etc.

3.4 16*2 LCD Display

Liquid crystal display technology works by blocking light. The LCD is made of two pieces of glass (polarized) that have a liquid crystal material in them. A 16x2 LCD display is better and also preferred over seven segment & other multi segment devices. The reasons it is used mostly are: - LCDs are cheap, have no limitation of displaying special characters, animations. LCD technology commonly used in Television sets & computer monitors. It is also used in screens for mobile devices, such as laptops, tablets, & smartphones.

3.5 Alcohol Sensor

This alcohol sensor is suitable for detecting alcohol concentration present in your breath. It has a high level sensitivity and fast response time. Sensor mainly provides an analog resistive o/p based on alcohol concentration level. The drive circuit is simple all it just need is 1 resistor.

3.6 LED

LED stands for "Light Emitting Diode". LEDs are semiconductor devices that produce light. These were used as indicator lights but now they are mostly used for indoor and outdoor lighting.

3.7 Buzzer

A buzzer or beeper is an audio signalling device, which may be mechanical or electromechanical. The uses of buzzers include alarm devices, timers, & also user input such as a mouse click or keystroke. The electric buzzers are mainly used in doorbells until they were phased out in the early 1930's by musical chimes, which had a soft tone.

4. METHODOLOGY

As the ignition system starts alcohol sensor start to sense the alcohol. If the Alcohol level is above threshold level then ignition system gets lock (LED light blink). After system get lock the GPS tracks the location of vehicle & sends to the GSM system. Then GSM system sends the alert message to driver's relative or emergency numbers saved in SIM with location tracking link.

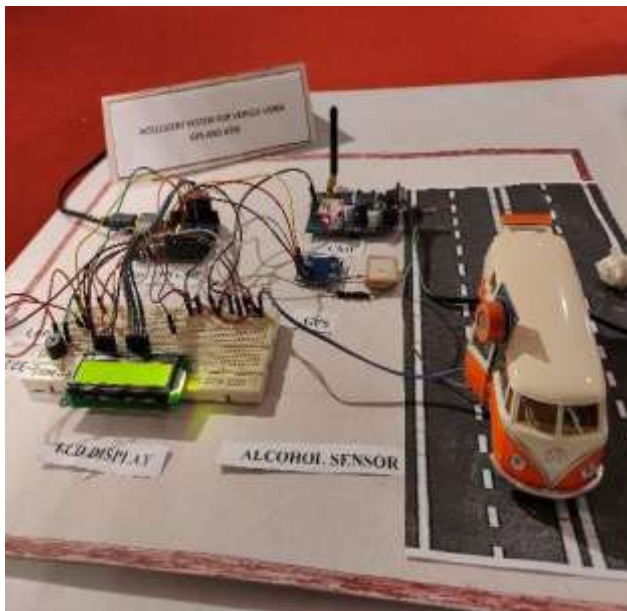


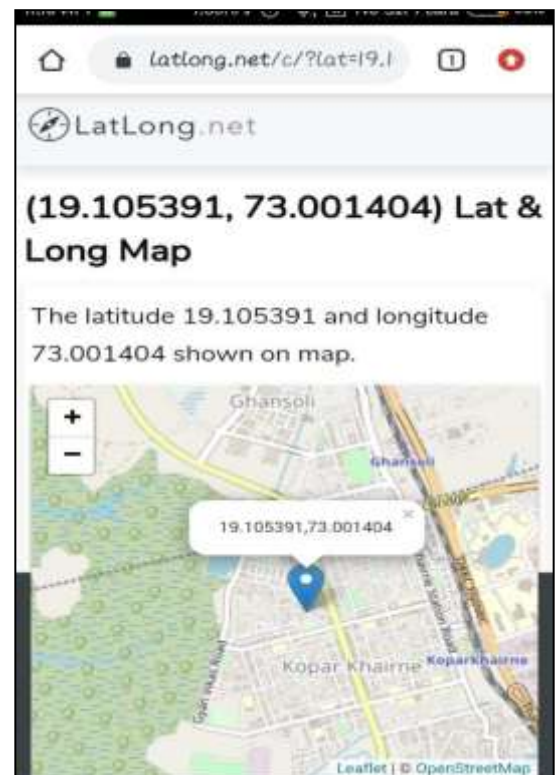
Fig.-2. Alcohol Detection System

5. RESULT

As drunk and driven happened the driver's relatives and police gets alert message with link which gives exact location of vehicle.



When click on link it shows the map as below.



6. CONCLUSION

An effective solution is provided to develop the intelligent system for vehicles which will sense the various levels of alcohol present in the breath of the driver & would respond accordingly by displaying the output. The system makes use of hardware platform whose core is alcohol sensor (MQ-3), GPS, GSM module. The communication with registered phone number in this designed system is done via GSM, GPS & control other parameters. The whole system has the advantage of small volume & high reliability. Future scope of this system is to decrease the number of accidents & providing useful details about the accidental vehicle. This system brings modern way to the existing technology in the vehicles & improves the safety features, hence proving to be an effective development in the automobile industry.

7. REFERENCES

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