

Drink and Drive Prohibitor System With Biometric Authentication And Accident Alerting System Using IOT

Dhananjay H. Koli¹, Prasad S. Dhorje², Nikita V. Alawane³, Prof. P. A. Upadhye⁴

Students, Department of Electronics and Telecommunication Engineering^{1,2,3}

Faculty, Department of Electronics and Telecommunication Engineering⁴

Zeal College of Engineering and Research, Pune, India

Abstract: *Drinking and driving is already a serious public health problem, which is likely to emerge as one of the most significant problems in near future. The system implemented by us aims at reducing the road accident in the near future due to drunk and drive. This project presents the progress in using the alcohol detector, a device that senses a change in the alcoholic gas content of the surrounding air. This device is more commonly referred to as a breath analysis, as it analyzes the alcohol content from a person's breath. The system detects the presence of alcohol in the vehicle and immediately locks the engine of the vehicle. The system starts on fingerprint authentication and also tracks the vehicle with the help of GSM/GPS module in case of an accident.*

Keywords: Microcontroller, IoT Module, Alcohol Sensors, SIM 800C Module, fingerprint sensor.

I. INTRODUCTION

Drink and drive issue became solemnly that needs immediate attention. This is often thanks to drivers' ignorance towards road rules and regulations and their selfish attitude that caused loss of innocent lives. Although previously there's a drunk detecting mechanism using a breathalyzer but it isn't suitable for current fast-paced lifestyle. Therefore, to beat these issues, this technique is proposed. This technique is fixed on vehicle's steering to live alcohol concentration reading using MQ-3 sensor from the driver's exhaled breath. If the driving force is found to be drunk beyond the edge level of 400 ppm, then lock is activated and therefore the car engine doesn't start till alcohol concentration falls to a secure level. Or, if the driving force consumes an alcoholic drink while driving, upon exceeding permissible limit, the car slows down till it stops. Then, the situation of the vehicle is tracked and sent as a Google Map integrated link via text message to the authorized unit. Simultaneously, the car buzzer pops while the car slows down in order that surrounding road users are conscious of the driver's condition and drives at a distance. The proposed detection system is very potential to be implemented for reducing drunk and drive accidents.

II. LITERATURE SURVEY

Currently reported by the World Health Organization (WHO), Malaysia lies at number 59 among 183 countries worldwide for road traffic accidents, stands with a percentage of 24.51 death rates by both male and female thanks to road accidents; stands at a medium-high level. Apparently, death rates on Malaysian roads are the third highest globally, quite China and India read the headline of a piece of writing. This data is according to the info as provided by Malaysian Institute Road Safety Research (MIROS), whereby, among eight common causes of a vehicle accident in Malaysia, drunk and driving cases are the second within the list and second highest within the world with the highest amount of lives lost. Consistent with MIROS report in year 2012, 23.3% contribute to drunk and driving whereby 13 times more likely to cause an accident. Supported these statistics motivates the requirements to scale back and stop such road accidents. The old-fashioned method employed by officers to detect alcohol within the driver is by using a breathalyzer. Albeit it's proved its function, however this method isn't efficient. Nevertheless, it's impossible to try to road block all the time and check driver of every car using a breathalyzer.

Breathalyzer may be a device to see alcohol presence within the driver’s breath by making them blow into it. This method isn't as practical because it can cause congestion and traffic during peak days. additionally , there are chances of the driving force to bribe officers just to avoid being summoned. If they escape this road block, and still drive during a drunken state, they're risking every other road users. This project has overcome previous paper limitations as a neighborhood and parcel of the system. As proposed in the system uses MQ-2 sensors to detect the presence of alcohol within the driver’s breath. MQ-2 is meant to check for combustible gases like LPG . It are often tested for alcohol too, but MQ-3 sensor is specially made to check for alcohol vapor during which it's a more accurate reading and better sensitivity than MQ-2. Then, another method that was wont to detect presence of alcohol is from driver’s sweat using the IR sensor whereby neither using the air-conditioner nor opening the window will crash the system functionality totally. And besides, every human’s perspiration rate differs when consuming alcohol. a scarcity of accuracy will cause poor or no results of the presence of alcohol in driver’s sweat.

III. PROBLEM STATEMENT

This system is developed to perceive the close of alcohol percentage within the body of an individual who is driving vehicles. this technique helps to avoid accidents occurring thanks to drunk and driving. The proposed system is going to identify whether the person is in drunken state or not and it automatically control the vehicle. this will be done using Arduino board. the most purpose of this project is “Drunk and driving detection”. In present scenario several accidents are happening thanks to the alcohol consumption or the one that's driving the vehicle. So drunk and driving could also be a significant explanation for accidents everywhere the world . Alcohol Detector is automotive project meant for the protection of the people seating within the automotive. This project need to be fitted in within the vehicle. We are proposing this alcohol detection system in vehicles to eradicate Drunk and Drive system and to bring down the burden of police men. The MQ3 Alcohol Detection sensor might be implemented within the all vehicles to examine whether the driving force has consumed alcohol, and an alert message will be delivered to short distanced cop station if the person is in drunken state through things speak platform. This is that the easiest thanks to detect the alcohol consumers and with less time consumption.

IV. BLOCK DIAGRAM

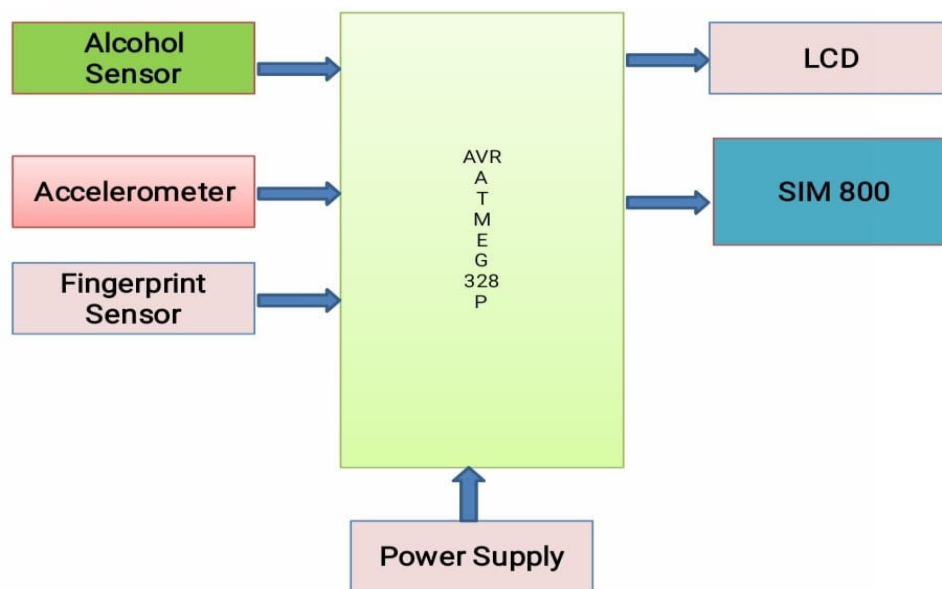


Figure 1: Block Diagram Of Proposed System

IV. IMPLEMENTATION DETAILS

4.1 Hardware Requirements

- AVR atmega328P
- Alcohol Sensor
- Fingerprint Sensor
- Accelerometer
- SIM 800C Module
- LCD Display
- Adapter

4.2 Software Requirements

- Proteus 7
- Arduino IDE
- Thingspeak

4.3 Components Details

A. Arduino UNO

Arduino Uno is a microcontroller board developed by Arduino.cc which is an open-source electronics platform mainly based on AVR microcontroller Atmega328. First Arduino project was started in Interaction Design Institute Ivrea in 2003 by David Cuartielles and Massimo Banzi with the intention of providing a cheap and flexible way to students and professional for controlling a number of devices in the real world. The current version of Arduino Uno comes with USB interface, 6 analog input pins, 14 I/O digital ports that are used to connect with external electronic circuits. Out of 14 I/O ports, 6 pins can be used for PWM output. It allows the designers to control and sense the external electronic devices in the real world.



Figure 2: Arduino UNO Board

B. Alcohol Sensor



Figure 3: Alcohol Sensor

MQ3 is a heater-driven sensor. That's why it is enclosed in two layers of fine stainless steel mesh called an **Anti-explosion network**. It ensures that heater element inside the sensor will not cause an explosion, as we are sensing

flammable gas (alcohol). It also provides protection for the sensor and filters out suspended particles so that only gaseous elements are able to pass inside the chamber

C. Fingerprint Sensor

This is often the R307 Optical Fingerprint Reader Sensor Module. R307 fingerprint module may be a fingerprint sensor with a TTL UART interface for direct connections to microcontroller UART or to PC through MAX232 / USB-Serial adapter. The user can store the fingerprint data within the module and may configure it in 1:1 or 1: N mode for identifying the person.

Integrated image collecting and algorithm chip together, ALL-in-One Fingerprint reader can conduct secondary development, are often embedded into a spread of end products. Users can conduct secondary development, are often embedded into a spread of end products, like access control, attendance, safety safe-deposit, door locks. Low power consumption, low cost, small size, excellent performance, Professional optical technology, precise module manufacturing technics. Good image processing capabilities can successfully capture a picture up to resolution 500 dpi Finger detection function.



Figure 4: Fingerprint sensor

D. Accelerometer

ADXL345 Tripple Axis Accelerometer Board may be a small, thin, low power, 3-axis accelerometer with high resolution (13-bit) measurement at up to $\pm 16g$. Digital output data is format as 16-bit twos complement and is accessible through either an SPI (3- or 4-wire) or I2C digital interface.

The ADXL345 Tripple Axis Accelerometer Board is compatible for mobile device applications. It measures the static acceleration of gravity in tilt-sensing applications, also as dynamic acceleration resulting from motion or shock. Its high resolution (4 mg/LSB) enables measurement of inclination changes but 1.0° .



Figure 5: Accelerometer

E. SIM 800C

SIM 800C Module could also be an entire Quad-band GSM/GPRS solution during a SMT type, which can be embedded within the customer applications. These modules are sub-system of the Internet-of-everything hardware. SIM800C supports Quad-band 850/900/1800/1900MHz, it can transmit Voice, SMS and data information with low power consumption. With tiny size of $17.6 \times 15.7 \times 2.3$ mm, it can smoothly fit into slim and compact demands of customer design.



Figure 6: SIM 800C

F. LCD Display

The term LCD stands for liquid display. it's one quite electronic display module utilized in an thorough range of applications like various circuits & devices like mobile phones, calculators, computers, TV sets, etc. These displays are mainly preferred for multi-segment light-emitting diodes and seven segments. the foremost benefits of using this module are inexpensive; simply programmable, animations, and there aren't any limitations for displaying custom characters, special and even animations, etc.

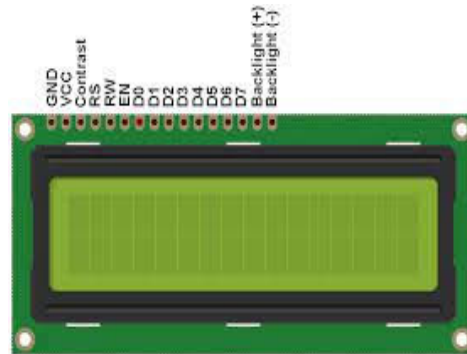


Figure 7: LCD Display

V. ACTUAL IMPLEMENTATION

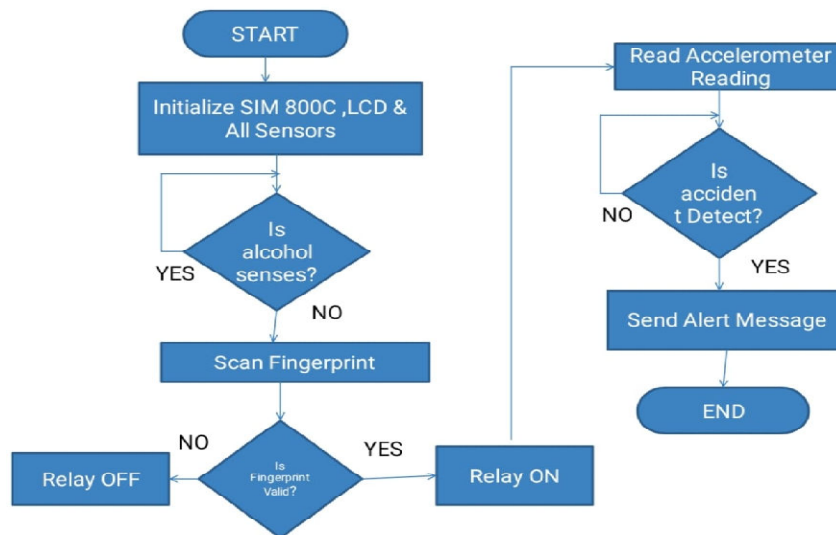


Figure 8: Flowchart

VI. HARDWARE SNAPSHOT

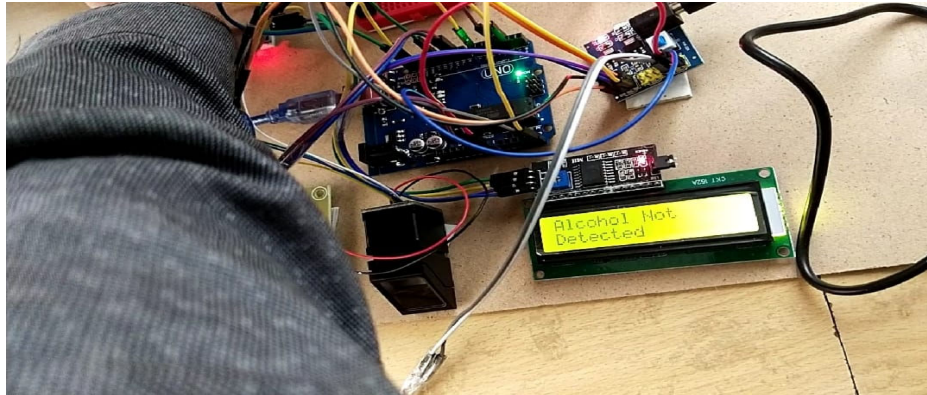


Figure 9 (A)

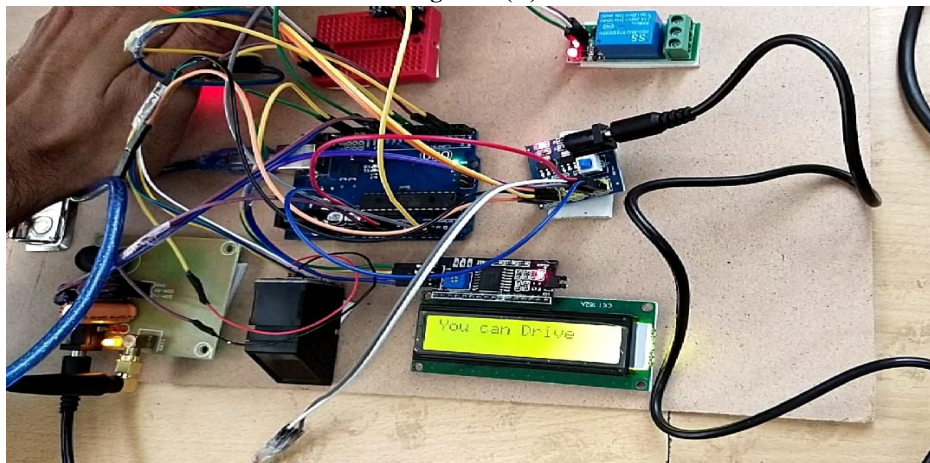


Figure 9 (B)

(Figure 9:A and 9:B : when alcohol is not detected)

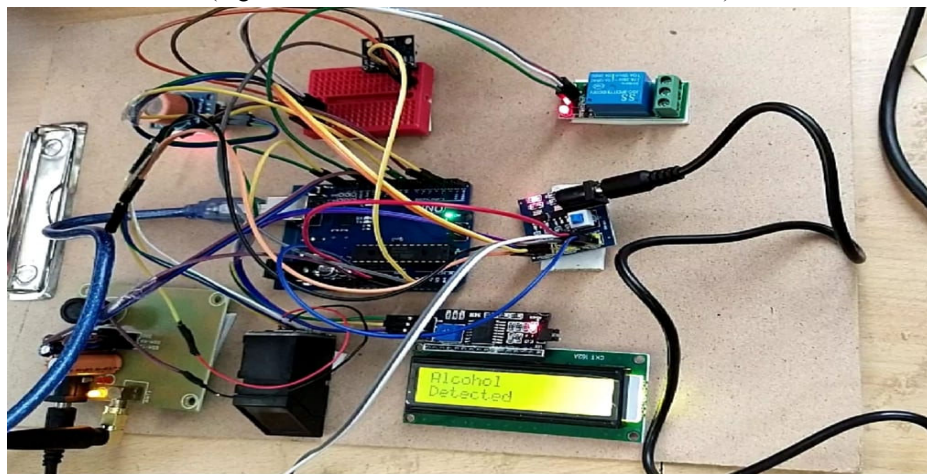


Figure 10 (A)

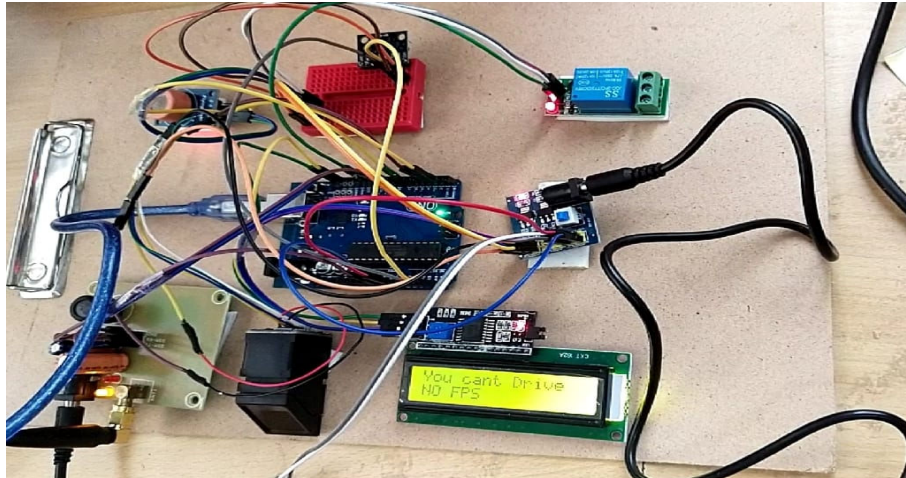


Figure 10 (B)

(Fig 10:A and 10:B : when alcohol is detected)

VII. ADVANTAGES

1. To prevent accident due to drunk and driving.
2. Easy and efficient to test the alcohol content in the body.
3. Quick and accurate results.
4. Helpful for police and provides automatic safety systems for cars and other vehicles as well.

VIII. APPLICATIONS

1. This propose system can be used in the various vehicle. For detecting whether the driver has consumed alcohol or not.
2. This project can also be used in various companies or organizations to detect alcohol consumptions of employees.
3. Public transport company.
4. Private transport companies.
5. Public Buses.
6. Government buses.
7. School, college

IX. CONCLUSION

We have provided a very effective solution to develop an intelligent system for vehicles for alcohol detection, accident detection and proper authentication whose core is Arduino. Since sensor has fine sensitivity range around 2 meters, it can suit to any vehicle and can easily be hidden front the suspects. The whole system has also an advantage of small volume and more reliability. As the growing public perception is that vehicle safety is more important, advances in public safety is gaining acceptance than in the past.

Future scope of this system is to control the accidents causes due to alcohol consumption. This system improves the safety of human being. And hence providing the effective development in the automobile industry regarding to reduce the accidents cause due to alcohol.

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