iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 7 **Issue:** IV **Month of publication:** April 2019

DOI: https://doi.org/10.22214/ijraset.2019.4208

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 6.887
Volume 7 Issue IV, Apr 2019- Available at www.ijraset.com

Alcohol Detection and Alert System in Vehicles using Arduino

G. Rajesh[1], G. Gifford Augustine[2], M. Sheik Abdullah[3], Jisha Lia George[4]
[1, 2, 3, 4]*Computer science, Hindustan Institute of tectechnology and science, Chennai,India.*

Abstract: ***The aim of the research paper is to represent the project which makes human driving safer and to overcome accidents. This project is developed by integrating alcohol sensor with Arduino board. Arduino processor ATmega328 is able to handle more functions than conventional microcontrollers. The alcohol sensor used in this project is MQ7 which is used to detect the alcohol content in human breath. Since sensor has fine sensitivity range around 2 meters, it can suit to any vehicle and can easily be hidden from the suspects. The project is designed for the safety of people sitting inside the vehicle.***
Keywords: Arduino ATmega328, alcohol detector, MQ7, Buzzer, GSM.

I.INTRODUCTION

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 drunken and drive . This paper present the progress in using the alcohol detector ,a device that senses a change in the alcoholic gas content of the surrounding air these device is more commonly referred to as a breath analysis, as it analysis the alcohol content from person's breath. The system detects the presence of alcohol in the vehicle and immediately locks the engine of the vehicle.

II.METHODOLOGY &HARDWARE MODULES

The entire system adopted the Arduino uno microcontroller board (Based on ATMEGA 328), the principle of the hardware chart as shown in ARDUINO:- The arduino board is the central unit of the system. all the components are interface to the board and programmed as per their functionality to operate in synchronization .

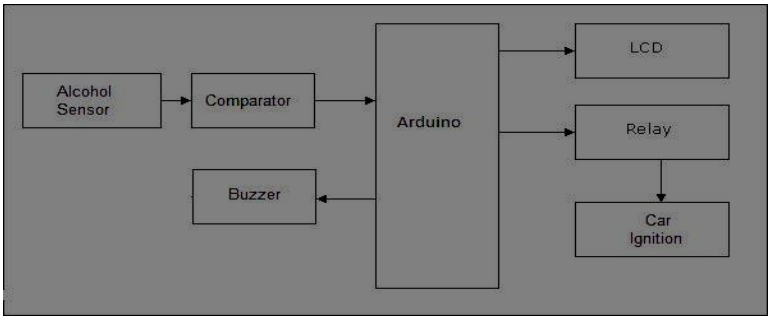


Fig.1 Hardware architecture

A. Alcohol Sensor Alcohol sensor is the sensor that measures the amount of alcohol that is present in surrounding environment. There are contact and non-contact type of sensors. As the output signal of sensor is smaller in amplitude the signal power is also low therefore amplifiers are used. The weak signals are amplified using amplifiers

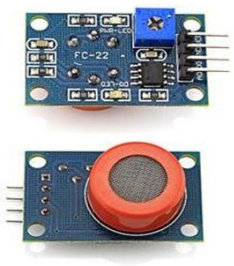


Fig.2 Alcohol Sensor MQ7

©IJRASET: All Rights are Reserved

2) Arduino Uno is a microcontroller board based on the ATmega328P (datasheet). It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz quartz crystal, a USB connection, a power jack, an ICSP header and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with an AC-to-DC adapter or battery to get started. You can tinker with your UNO without worrying too much about doing something wrong. The worst case scenario is that you would have to replace the chip and start again

B. Arduino UNO Specification

1) Microcontroller: ATmega328P
2) Operating Voltage: 5V
3) Input Voltage (recommended): 7-12V
4) Inout Voltage (limit): 6-20V
5) Digital I/O Pins: 14 (of which 6 provide PWM output)
6) PWM Digital I/O Pins: 6
7) Analog Input Pins: 6
8) DC Current per I/O Pin: 20 mA
9) DC current for 3.3V Pin: 50 mA
10) Flash Memory: 32 KB (ATmega328P) of which 0.5 KB used by bootloader
11) SRAM: 2 KB (ATmega328P)
12) EEPROM: 1 KB (ATmega328P)
13) Clock Speed: 16 MHz
14) LED_BUILTIN: 13

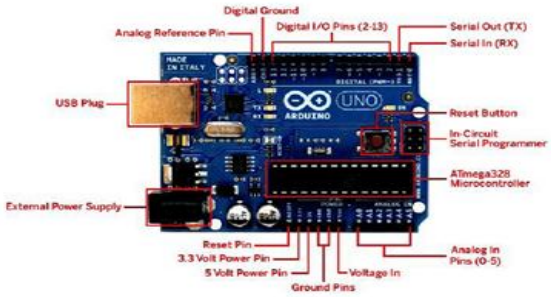


Fig.3 Arduino UNO

This GSM Modem can accept any GSM network act as SIM card and just like a mobile phone with its own unique phone number. Advantage of using this modem will be that you can use its RS232 port to communicate and develop embedded applications. The SIM900A is a complete Dual-band GSM/GPRS solution in a SMT module featuring an industry-standard interface; the SIM900A delivers GSM/GPRS 900/1800MHz performance for voice, SMS, Data, and Fax in a small form factor and with low power consumption. With a tiny configuration of 24mm x 24mm x 3 mm, SIM900A can fit almost all the space requirements in your applications, especially for slim and compact demand of design.

1) Applications

i) Short Message Service(SMS)
ii) Internet
iii) Incoming /outgoing call



Fig.4 GSM

©IJRASET: All Rights are Reserved

2) Relay for Controller The error between the reference and present value is given to the temperature controller, which responds correspondingly to the error and gives the feedback to the sensors. The temperature controlling depends on whether the temperature needs to be increased or decreased. The temperature controlling can be done through fans.
3) DC Motor A DC motor is a mechanically commutated electric motor powered from direct current (DC). In DC motor, operation is based on simple electromagnetism. A current-carrying conductor generates a magnetic field; when this is then placed in an external magnetic field, it will experience a force proportional to the current in the conductor, and to the strength of the external magnetic field. Opposite (North and South) polarities of magnet attract, while like polarities (North and North, South and South) repel. The internal configuration of a DC motor is designed to harness the magnetic interaction between a current-carrying conductor and an external magnetic field to generate rotational motion.

III.LITERATURE SURVEY

In recent days the technology has developed immensely, so almost everyone uses mobile phones with the access of 3G/4G networks . The major cause of accidents are drunk and drive . There are also some system have been implemented to avoid accident but that do not give proper solution to implement in car to avoid various accidents that they are normally being happen. For example when driver at speed suppose 80 km/h suddenly stop ignition system may lead to chances of dangerous accident.
Mostly used componenets to detect alcohol are Arduino Micro controller, Alcohol sensor, LCD Display And buzzer.

IV.PROPOSED SYSTEM & FEATURES

Alcohol detection in vehicle system is continuously growing over years which could resolve drunken driving accidents worldwide.

A. *Problem Statement*

Drunken driving is considered as one of the major reason of accidents in worldwide. Drivers under the influence of alcohol shows a clear failure of perception recognition and vehicle control. So, by this accident occurs.

B. *Features*

1) The PS series are high performance buzzers that employ uni-morph piezoelectric elements and are designed for easy incorporation into various circuits.
2) They feature extremely low power consumption in comparison to electromagnetic units.
3) Because these buzzers are designed for external excitation, the same part can serve as both a musical tone oscillator and a buzzer
4) They can be use with automated inserters, moisture-resistant models are also available

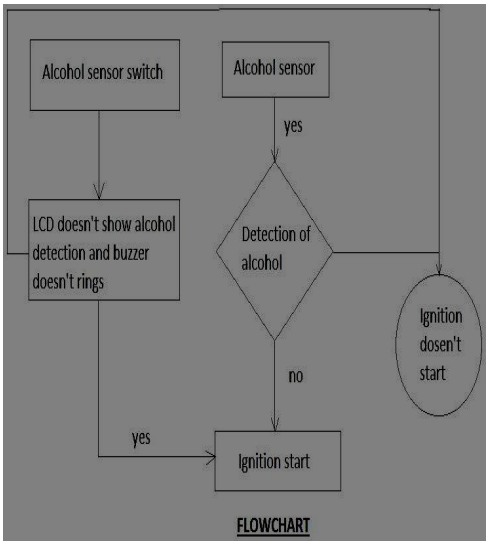


Fig.5 Flowchart

C. *Applications*

1) "Alcohol Detector project" can be used in the various vehicles for detecting whether the driver has consumed alcohol or not.
2) This project can also be used in various companies or organization to detect alcohol consumption of employees.

©IJRASET: All Rights are Reserved

V. CONCLUSIONS

We have provided a very effective solution to develop an intelligent system for vehicles for alcohol detection whose core is Arduino. Since sensor has fine sensitivity range around 2 meters, it can suit to any vehicle and can easily be hidden from 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.

REFERENCES

[1] Alcohol Detection with Vehicle Controlling, International Journal of Engineering and Management Research , Volume-6, Issue-2, March-April 2016

[2] Alcohol Detection with Vehicle Controlling, International Journal of Advanced Research in Computer and Communication Engineering, Vol. 6, Issue 3, March 2017

[3] Intelligent Safety Warning and Alert System for Car Driving , Tamkang Journal of Science and Engineering, Vol. 13, No. 4, pp. 395 404 (2010).

[4] Cahalan, D., I. Cisin, and Crossley, American Drinking Practices: A National Study of Driving Behaviour and Attitudes. 1969, Rutgers University Press: New Brunswick, NJ.

[5] Babor, AUDIT: The alcohol use disorders identification Test: Guidelines for use in primary health care. 1992, Geneva, Switzerland: World Health Organization.

[6] Global Status Report on Road Safety 2013, Executive Summary(IEEE), October 2013.

[7] P.Jyothi, G. Harish. Design and Implementation of Real time vehicle Monitering, Tracking and Controlling System, IEEE

[8] R. Kumar, H.Kumar, ‘’Availability and handling of data Recieved through GPS device; in tracking a vehicle”, Advanced Computing Conference(IACC) 2014, IEEE International

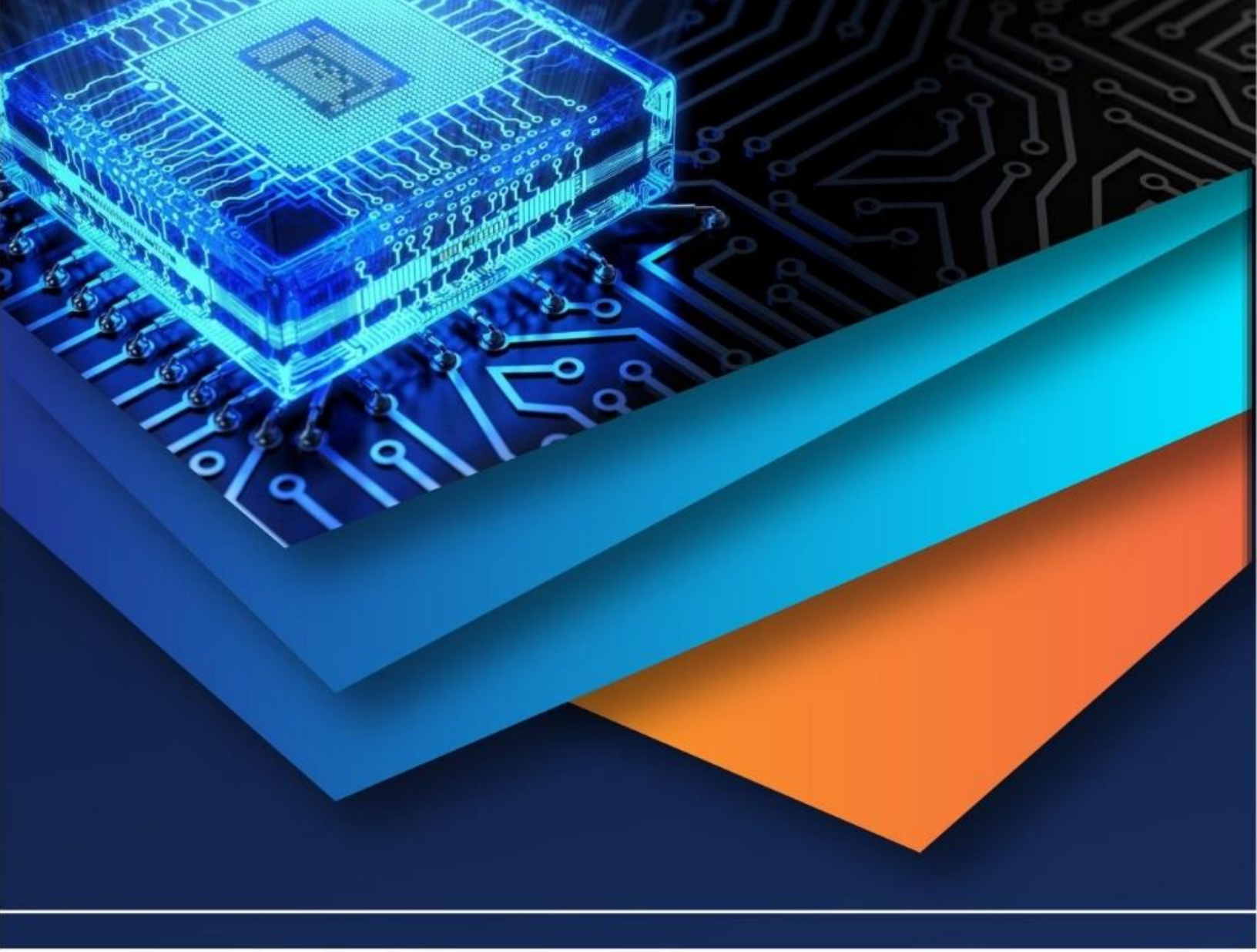
[9] Seok Lee, G. Tewolde, Jaerock Kwon, “Design and Implementation of vehicle tracking system using GPS, GSM technology and smart phone application, IoT 2014 IEEE

[10] W.R Swihart, J D Woll,Integrated collision warning and information systems for heavy vehicles

[11] M Herbert, Building and Navigation Maps of Roads scenes using an active sensor.

[12] Jamis Kluga, Ansis Kluga “Driver’s professional skills evaluation with modified GPS vehicle tracking system,” IEEE publication June 2017

©IJRASET: All Rights are Reserved



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)