BUS & TRUCK DRUNK DRIVING ALERT USING PIC

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ABSTRACT

Today there are many accidental cases, the main reason of which is drunk and drive. This paper is about how the security for vehicles can be improved and the drunk and drive cases can be reduced. The main purpose of this project is to create a more secure ignition system then the traditional one. In the traditional model the security is too low but in this model if the vehicle operator is trying to start the engine after taking alcohol the engine ignition system will not start resulting failure of operation by operator. Also the new system can also be controlled by the modern age of technology which is the smartphone. The controlling of the vehicle can also be done by using the smartphone.

KEYWORD: Arduino UNO, Bluetooth module   HC- 05, 4 channel relay, PIC Microcontroller.

I.   INTRODUCTION

Today the technology is the one of the most important part of life of human beings. Keeping this fact, the functions of vehicles are operated by the smartphones which is the one of the most important part of human beings. This operation and process is performed with the help of bluetooth.

Nowadays smartphones can be used to control a host of electrical and electronic devices including motors, music systems and lights. Here we present an Arduino based vehicle starter which comes in work after alcohol detection of driver which can be controlled using an Android smartphone having Arduino RC application installed in it. This bot receives commands from your smartphone with the help of a Bluetooth module. The engine will fail to work if the person has taken alcohol means the first operation is to verify whether the person has taken alcohol or not After the verification of this step then the smartphone operations are ready to work. Hence it I drunk detection and smartphone operated vehicle.

II.   LITERATURE SURVEY

Literature survey is the method which makes the system efficient. These are various systems that is based on the development of the project works related to the blind people. These literature survey help to overcome various types of new design and program related improvement.

Now, a day's vehicles are running in a very large number and probability of accidents is also increased. Therefore much new advancement is implemented to the project to minimize the accidents caused by drink and drive cases.

Generally, this system is helpful to prevent people from this type of accidents using MQ3 alcohol sensor.

III.   SCOPE

At present time, many accidents caused by driver mistakes, mostly heavy vehicle drivers drive after drinking alcohol which results in losing control over vehicle and caused accidents. Thus, by using our project we can minimize the loss of life and property by implementing this project into all vehicles which allows the driver to drive the vehicle only and only if they are not drunken above the mentioned value. And therefore it has a very great and big scope in present and future life.

IV.   HARDWARE REQUIREMENTS

- Arduino UNO Board
- Bluetooth module

- 4 channel relay
- PIC Microcontroller
- Power supply cable
- Jumper Wires
- Alcohol sensor

These are the components which are required for the project development.

Arduino UNO Board

Arduino is an one of the best open-source electronics proto typing platform based on microchip Atmega328p, easy-to-use hardware and software.it consists of 14 I/O pins and 6 analog pins. Arduino allows users to develop different working electronic projects and various prototypes.

Fig-1: Arduino UNO board

Bluetooth module hc-05

The Bluetooth module used for the functions performed by the smartphone is HC-05 this Is very efficient module for full duplex communication.it can be used to communicate between two devices one microcontroller and other like smartphone. It consists of 6 pins a given below.

1:- Enable

2:- VCC

3:- Ground

4:- Transmitter

5:- Receiver

6:- State

Fig-2: Bluetooth module hc-05

Channel relay

The 5v relay works for the purpose of switching. It can be used to control high load the ports which are used are generally a given below,

1:- com

2:-NO

3:-NC

Common, normally open and normally closed

Fig-3: relay

PIC microcontroller

Fig-4: PIC microcontroller

The PIC microcontroller stands for the peripheral interface controller. It is the world's smallest microcontroller that can be programmed and can be used to perform various task. Here in this project it can be used for to compare the alcohol content of the driver is less than the required value for driving or not.

If the content of alcohol is high then ignition system of vehicle will not be operated.

Power Supply Cable

Supply cable is used to provide power to the Arduino for their operation. Arduino UNO require 5V of DC supply to operate. The Arduino board is capable of operating between 5V-7V, after this the Arduino board will

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not be capable to handle this supply and it results in Arduino failure and therefore we have two ways of power supply for the Arduino:-

1. USB cable: -

The length of this type of cable is approximately 178cm. This can be used by having a computer system, it can be directly connected by the USB port to the Arduino.

Fig-5: USB cable

2. External AC to DC adapter: -

It converts AC power to DC power and gives output of 5V to the Arduino board.

Fig-6: Adapter

Jumper Wires

Jumper wires are used for making connections between items on your breadboard and your Arduino's header pins. The current and voltage rating of commonly used jumper wires for an Arduino application will not be more than 2 A and 250 V. The current and voltage ratings of the jumper wires will be purely based on the copper or aluminum content (AWG) present in the wire.
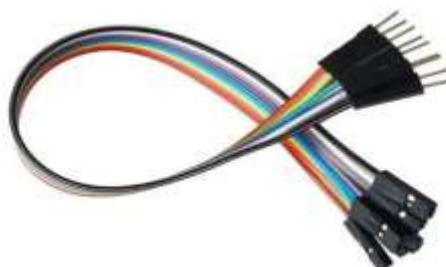

Fig-7: Jumper wire

Alcohol Sensor

In our project we use MQ3 alcohol gas sensor and is made by using SnO2 material which has less conductivity in clean air. Whenever it comes nearby alcohol gas its starts conducting highly according to the gas concentration. So user can sense the difference of output voltage using any microcontroller and can detect the presence of Alcohol. This is low cost and a suitable sensor for many applications for alcohol detection. This sensor has a long life and good sensitivity. Some of the applications that can be made by using this sensor are Alcohol gas alarm, portable alcohol detector, gas alarms, Breathalyzer etc.

Fig-8: MQ3 Alcohol sensor

V.   WORKING

Using Arduino UNO microcontroller, we design a system consisting of an alcohol sensor MQ3, to detect the presence of alcohol by analyzing the person's breath and shutting down the vehicle's engine when a specific amount of alcohol is detected to prevent any kind of accidents that occur due to the driver taking control over the vehicle. Hence, drunken driving is controlled, and minimizing the loss of life and property.

The system consists of an Arduino microcontroller, which acts as a controller for every component which is used. The microcontroller is connected to an alcohol sensor, a DC motor and is powered by a DC power supply of 5 volts. When the driver wants to drive the vehicle then before switching the engine on he/she must be check his alcohol level and when the alcohol level is minimum as required, only then the engine of vehicle will start. Arduino UNO can be programmed using a computer on Arduino IDE by which it can compare the alcohol level using MQ3 sensor and then allow the engine to start or not.
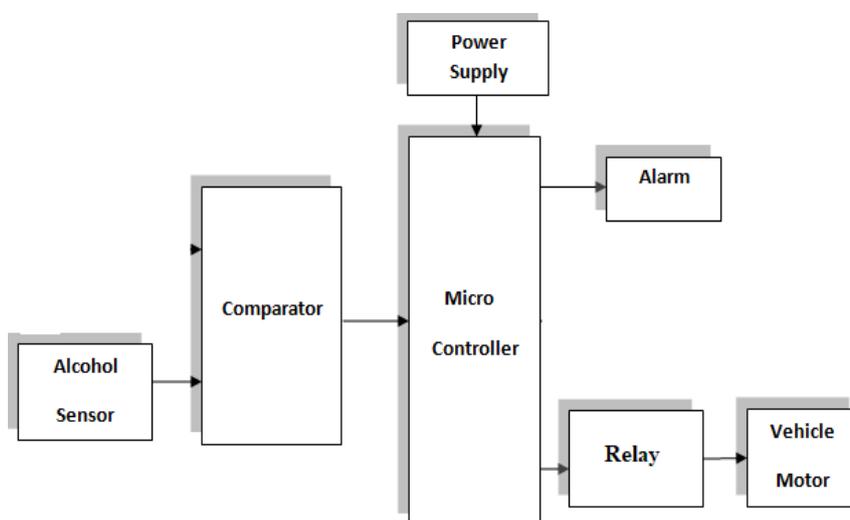

Fig-9: Block Diagram

VI.   CONCLUSION

Our project is based on the 'bus and truck drunk driving alert' that is successful in process of developing a more secured features installed in vehicles apart from the existing once to reduce accidents. This project was just a prototype. The means of prototype is the original idea of the related process which is the theme of our project which is to be presented in the form of project basis.

The alcohol detection in vehicle is used in wider scale and must be implemented in all vehicles as it do not allow the driver to drive while taking more alcohol than the limit. Our main aim is to minimize the loss of lives and property which happen due to drunken driving

As we know that in present world most of the drivers of trucks and buses will drive having alcohol mostly in large amount which loses their control over driving and causes big accidents. Thus our project is a perfect equipment used to minimize this and it does not cost high as it uses small and cheap parts. Therefore it is cost effective and bearable for all drivers and easily implemented on all vehicles with a low cost. If we talk about its installing price then it does not cost more than 3000Rs.

This concept relates the product and the normal people due to which if any devices or product contains the higher price than its demand decreases. Hence, it contains the inverse relation. Keeping in mind all these things we have to co-relate the both demand as well as need of the people.

VII.   REFERENCES

[1]   Lea Angelica Navarro, Mark Anthony Diño, Exechiel Joson, Rommel Anacan, Roberto Dela Cruz Electronics Engineering Department, Technological Institute of the Philippines- Manila [2016, 7th International Conference on Intelligent Systems, Modelling and Simulation] - "Design of Alcohol Detection System for Car Users thru Iris Recognition Pattern"

[2]   Mugila J., Muthulakshmi.M, Santhiya K, Prof. Dhivya. P [International Journal of Innovative Research in Science Engineering and Technology (IJIRTSE) ISSN: 2395-5619, Volume – 2, Issue – 7. July 2016] - "Smart helmet system using alcohol detection for vehicle protection"

[3]   Dhivya M and Kathiravan S, Dept. of ECE, Kalaignar Karunanidhi Institute of Technology [Smart Computing Review, vol. 5, no. 1, February 2015] - "Driver Authentication and Accident Avoidance System for Vehicles"

[4]   Nimmy James, Aparna C, Tenna P John, International Journal of Research in Computer and Communication Technology, Vol 3, Issue 1, January- 2014 – "Alcohol Detection System"

[5]   Prashanth K P1, Kishen Padiyar2, Naveen Kumar P H3, K Santhosh Kumar, Dept. of Mechanical Engineering, East West Institute of Technology, Bangalore, India [International Journal of Engineering Research & Technology (IJERT) ISSN: 2278-0181, IJERTV3IS100754, Vol. 3 Issue 10, October- 2014] - "Road Accident Avoiding System using Drunken Sensing Technique"

[6]   Ms. Subia Sayeed, Department of Electronics and communication, VVIET, Mysore, India [International Journal of Scientific & Engineering Research Volume 2, Issue 12, December-2011 1, ISSN 2229-5518] - "Drunken drive protection system"