

SMART GSM BASED ANTI-DRUNK CAR ALERT SYSTEM

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Abstract—Drunk driving deaths are becoming more common by the day, accounting for about 60% to 65% of all accidents. Every year, almost 50,000 people die as a result of drinking and driving. To prevent such mishaps, precautionary steps using a variety of technologies are implemented. To avoid such accidents, precautionary measures exploitation totally different technologies square measure taken. Anti-Drunk driving detection is method of police investigation whether or not someone is drunk or not. To prevent such mishaps, precautionary steps using a variety of technologies are implemented. Anti-Drunk Driving Identification is a criminal investigation technique that determines whether or not anyone is inebriated. It uses sensor data to determine whether or not the individual is inebriated. It detects mq3 alcohol interface exploitation and sends an SMS to the nearest RTO exploitation SIM800L. Since the gadget has a fine sensitivity range of about two metres, it can fit in any car and can be easily shielded from suspects. This project has been integrated into the car. The aim of the project is to ensure the safety of passengers in the vehicle.

Keywords: Arduino UNO, MQ3-Sensor and Sim800L Gsm Module.

I. Introduction

Accidents due to drunk driving are a typical prevalence in metropolitan cities. Albeit useful, constructing checkpoints at completely different locations could be a cumbersome job and takes heaps of the temporal arrangement, as will have stopped and checking each potential drunk driver. To combat this we've got determined to form an automatic anti-drunk system that checks if a driver is working his/her vehicle beneath the influence.

II. METHODOLOGY

Our project is primarily concerned with seeking a solution to the aforementioned problem. The MQ 3

sensor detects the presence of alcohol. The module's digital pin is attached to Arduino pin 11. The Sim8001 module is used to notify the RTO and police checkpoints of the driver's inebriation. The SIM 8001 uses a serial peripheral to communicate with Arduino. Power the Arduino with a 2G capable SIM in SIM8001. Wait a few moments for the sim to be registered with the operator provider. The red

LED on the SIM 8001 will begin to blink slowly when it is ready. Place any kind of alcohol near the sensor at this stage. When the alcohol is detected, the relay is turned off, and a message is sent to the specified numbers.

III. BLOCK DIAGRAM

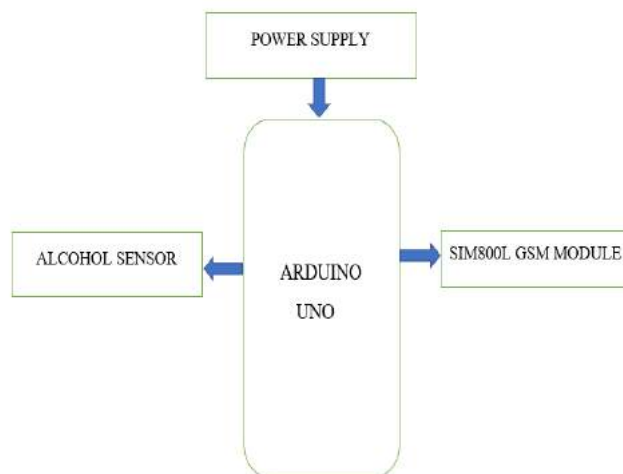


Fig1. Block Diagram

IV. COMPONENTS

| S.No | Component | Apparatus Specifications |
|------|-----------|--|
| 1 | Arduino | <ul style="list-style-type: none"> Microcontroller: Microchip |

| | | |
|---|--------------------|---|
| | UNO | <p>ATmega328P.</p> <ul style="list-style-type: none"> • Operating Voltage: 5 Volts. • Input Voltage: 7 to 20 Volts. |
| 2 | Alcohol Sensor | <ul style="list-style-type: none"> • Power requirements: 5 VDC @ ~165 mA (heater on) / ~60 mA (heater off) • Current Consumption: 150mA • DO output: TTL digital 0 and 1 (0.1 and 5V) • AO output: 0.1- 0.3 V (relative to pollution), the maximum concentration of a voltage of about 4V • Detecting Concentration: 0.05-10mg/L Alcohol |
| 3 | Sim800L GSM module | <ul style="list-style-type: none"> • Supply voltage: 3.8V - 4.2V. • Recommended supply voltage: 4V. • Power consumption: sleep mode < 2.0mA. idle mode < 7.0mA. |

Table1. Paraphernalia

common and well-documented board in the Arduino family.



Fig2. Arduino UNO

The Arduino Uno is a microcontroller board that uses the ATmega328P microcontroller. It has 14 digital input/output pins, 6 analogue inputs, a 16 MHz ceramic resonator (CSTCE16M0V53-R0), a USB link, a power jack, an ICSP header, and a reset button. It comes with everything you'll need to get started with the microcontroller; simply plug it into a device with a USB cable or power it with an AC-to-DC adapter or battery. You can try with your Uno without fear of making a mistake; in the worst-case scenario, you can replace the chip for a few dollars and start over.

In Italian, the word “uno” means “one,” and it was chosen to celebrate the release of Arduino Software (IDE) 1.0. The Uno board and Arduino Program (IDE) version 1.0 were the reference versions of Arduino, which have since been superseded by newer updates. The Arduino Uno board is the first in a series of USB Arduino boards and the platform’s reference model; for a full list of current, see the Arduino Uno page, past or outdated boards see the Arduino index of board.

A).ARDUINO UNO

The Arduino UNO is the perfect board for beginners who want to learn about electronics and programming. The UNO is the most robust board you can start with if this is your first time tinkering with the platform. The Arduino UNO is the most

B).MQ-3 ALCOHOL DETECTION SENSOR

MQ-3 is a low-cost semiconductor sensor that senses the presence of alcohol gases in a person's breath at concentrations ranging from 0.05 mg/L to 10 mg/L. The sensing material used here is SnO₂ (Tin dioxide), which has a low conductivity in clean air and increases with the concentration of

alcohol gases in the breath. It is highly sensitive to alcohol and has some resistance to disturbance caused due to gasoline, vapour and smoke. The MQ-3 sensor provides both analogue and digital outputs. Microcontrollers, Arduino boards, Raspberry Pi, and other gadgets can be used to communicate with the MQ-3 liquor sensor. Like a regular breath analyzer, the alcohol sensor measures the level of alcohol in a person's breath. The circuit is straightforward, and all that is required is a resistor. The MQ-3 alcohol sensor has four sticks, but we only use three. The heating pins A and H are used, while the other two pins are used for power input and ground. Inside the sensor is a heating framework made of aluminium oxide and tin dioxide. It is used as a heat sensor module since it has heat coils to produce heat.

The core system is cubical in shape. An Alumina tube covered by SnO₂(tin dioxide) and between them, there is a Gold(Au) anode. As alcohol molecules in the air come into contact with the electrode, i.e. between alumina and tin dioxide, a chemical reaction occurs in which acetic acid is generated by ethanol burning, and then more current is created, and the current is used to measure the voltage and determines the alcohol level and generate the analog output.



Fig3. MQ-3 Alcohol Detection Sensor

C).SIM800L GSM MODULE

Hardware Overview of SIM800L GSM/GPRS module

SimCom's SIM800L GSM cellular chip is at the heart of the module. The chip's operating voltage ranges from 3.4 to 4.4 volts, making it an outstanding candidate for direct LiPo battery control. As a result, it's a good fit for projects that don't have a lot of space.



Fig4. Hardware overview of sim800l gsm/gps module

All of the data pins on the SIM800L GSM chip have been split out into 0.1pitch headers. This includes the pins required for UART communication with a microcontroller. With Auto-Baud detection, the module supports baud rates ranging from 1200bps to 115200bps. To link to a network, the module requires an external antenna.

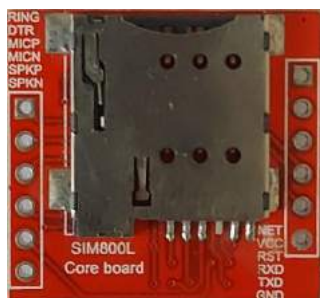


Fig5. Sim800l module

On the back, there's a SIM slot! Any 2G micro SIM card that has been activated will function perfectly. The correct direction for inserting a SIM card is usually engraved on the SIM socket's surface.

This module is only 1 inch² in size, but it packs a surprising amount of functionality into its small frame. Some of them are listed below:

SELECTING ANTENNA

To use the module for voice or data communications, as well as some SIM commands, you'll need an antenna. As a result, picking an antenna could be critical. You can connect an antenna to your SIM800L module in two ways.

The first is a helical GSM antenna, which normally comes with the module and attaches to the PCB's NET pin. This antenna is ideal for projects that require minimal space but struggle to maintain connectivity, especially if the project is being carried out indoors.



Fig6. Gsm antenna

The second choice is to use any 3dBi GSM antenna with a U.FL to SMA converter, which can be found for less than \$3 on the internet. This antenna snaps into the tiny u.fl connector on the top-left corner of the module. This type of antenna works better and allows you to place your module inside a metal case as long as the antenna is outside.

Providing enough power to the SIM800L module is one of the most important aspects of getting it to work.

The SIM800L can be a power-hungry device depending on which state it's in. During transmission bursts, the module's maximum current draw is about 2A. During phone calls, it may require around 216mA, and during network transmissions, it may require around 80mA. This chart from the datasheet summarizes what you may expect:

V. CIRCUIT DIAGRAM

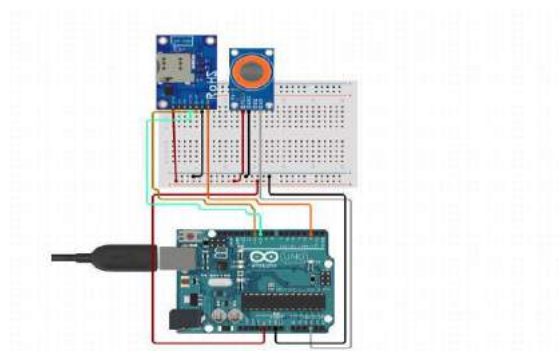


Fig7. Circuit Diagram of Smart Gsm Based Anti-Drunk Car Alert System

VI. RESULTS AND DISCUSSION:

As we know that the flow of our proposed system depend so n whether the driver is drunk or not, After we start the system, the MQ-3 sensor which is placed somewhere near steering wheel starts sensing the person's breath. If it doesn't find any percentage of alcohol in the breath then the output will be as follows and the vehicle will keep on running.

| | | | |
|-----------------------|--------------|--------------|--------------|
| Voltage Output | 1 – 1.5V | 1.5 – 2V | 2 – 2.5V |
| Alcohol Concentration | 200 – 300ppm | 300 – 400ppm | 400 – 500ppm |
| Percentage | 20 – 30% | 30 – 40% | 40 – 50% |

Table2. Output Values

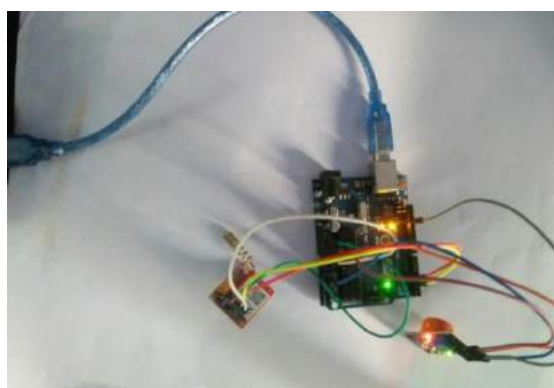


Fig8. Hardware Setup

VII. CONCLUSION

The system is a sensible gsm based anti -drunk car alert system that detects the drunk driver state of affairs of the vehicle with high level of certainty. The system detects drunk driver state of affairs at the start or throughout the driving condition and activates the alter mechanisms for native persons together with remote indication to the licensed persons. the most aim of the drunk driver detection system in sensible vehicle system project is to decrease the probabilities of loss of lives in accident occurring attributable to intoxicated state of driver and thence improve public safety.

Reference

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