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## IMPLEMENTATION OF DRIVER DROWSINESS ALERT AND AUTOMATIC VEHICLE CONTROL SYSTEM WITH SMS ALERT USING ARDUINO

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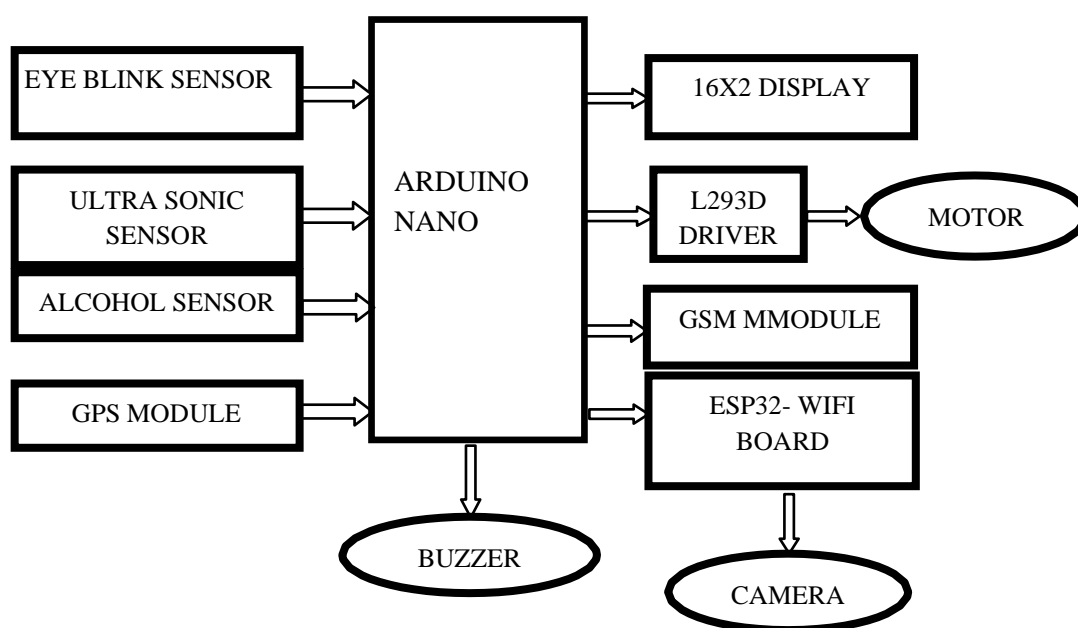
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**ABSTRACT:** In many cases, drivers who're drowsy make no attempt to use brake. So, a gadget is designed which senses the circumstance of the driver (his/her health) and gradual down speed and prevents the car if an odd circumstance of the motive force is sensed. This gadget will experience whether or not the driver in drowsiness kingdom is because of alcohol intake or sleepiness because of exhaust with the assist of alcohol sensor and eye blink sensor. For motive forces' express, the framework found the eyes' blinking rate and flickering span and a MQ3 alcohol sensor which detects ethanol within side the air. Fatigue drivers have the ones traits higher than regular levels. The Ultra sonic sensor is used to degree the gap among car and obstacle. The buzzer is activated while there's an odd circumstance and the car slowly stops. In the suggest time SMS alert could be ship to legal character to understand the drivers circumstance.

The first signal of drowsiness is the incapability to maintain one's eyes open. Next, one's head has a tendency to be shaken again and forth whilst they're drowsy. Yawning is likewise a sign of drowsiness. Driving whilst one is sleep- disadvantaged is much like inebriated using. As person feels sleepier, the response time increases, and the sturdiness of interest lower. Driving and not using a sleep for greater than 20 hours is equal to using with a blood alcohol degree of 0.08%. Micro sleeps (quick duration of unconscious inattention) can also be additionally arise in a some people. The driver's kingdom is associated with various psychological, physical and logical factors. Particularly, fatigue and monotony are taken into consideration to lower interest and arousal levels, ensuring in drowsiness. Drowsiness can cause injuries at any time of the day or night.

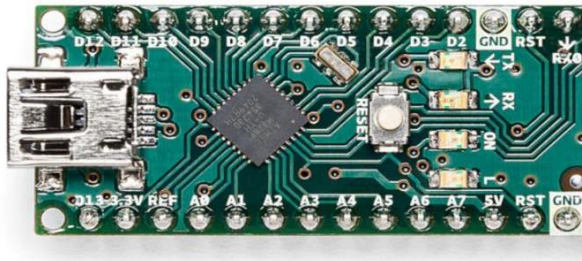
**INTRODUCTION:** Drowsiness is taken into consideration as a transition from arousal to sleep.

### BLOCK DIAGRAM



## HARDWARE REQUIREMENTS:

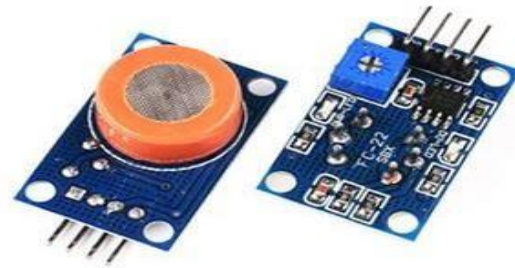
**Arduino Nano:** Arduino nano is one form of micro controller board, and it's far designed with the aid of using Arduino.cc. It is most likely be constructed with a microcontroller like Atmega328. This microcontroller is similarly utilized in Arduino UNO. It is a small length board and additionally bendy with an extensive form of applications. The ATmega328 on the Arduino nano comes preburned with a bootloader that allows you to upload new code to it without the use of an external hardware programmer. It communicates using the original STK500 protocol.



**16x2 LCD Display:** In LCD 16X2, the term LCD stands for Liquid Crystal Display that makes use of a aircraft panel show technology, utilized in monitors of laptop monitors and TVs, Smartphone's, tablets, cellular devices etc. Both the presentations like LCD & CRTs appearance the identical however their operation is different. This is a 16x2 LCD show display screen with I2C interface.



**Alcohol sensor:** The alcohol sensor is appropriate for detecting alcohol attention to your breath, similar to your not unusual place breathalyzer. It has a excessive sensitivity and speedy reaction time. Sensor affords an analog resistive output primarily based on alcohol attention. An easy interface can be a 0-3.3V ADC.



**Ultrasonic Sensor:** An ultrasonic sensor is a digital tool that measures the space of a goal item via way of means if emitting ultrasonic sound waves, and converts the meditated sound into an electrical signal. Ultrasonic waves journey brisker than the rate of audible sound (i.e. the sound that people can hear). Ultrasonic sensors have supreme components: the transmitter (which emits the sound with the use of piezoelectric crystals) and the receiver (which comes across the sound after it has travelled to and from the goal). There are most effective four pins VCC (Power), trig (Trigger), Echo (Receive), and GND (Ground).



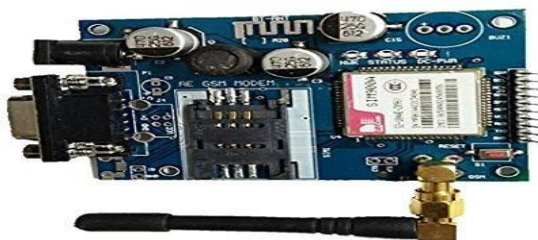
**Eye blink sensor:** The eye blink sensor illumines the attention with infrared spark and records the changes in the reflected spark. The infrared spark mediated from the eye is used to decide the results. The sensor output is brisk high for eye close and can be head on to microcontroller. The eye blink sensor continuously sends infrared waves which can be mediated and observed with the aid of using the receiver. As quickly as attention blinks, the output of the sensor is going excessive. The output is sipped to the arduino.



**GPS Module:** Global Positioning System (GPS) makes use of signals sent by satellites in space and ground stations on the Earth to precisely determine its position on Earth. The NEO-6M GPS receiver module uses UART communication to commune with microcontroller or PC terminal. GPS works via a approach called trilateration. It is used to assess location, velocity and elevation. Trilateration collects signals from satellites to output location information.

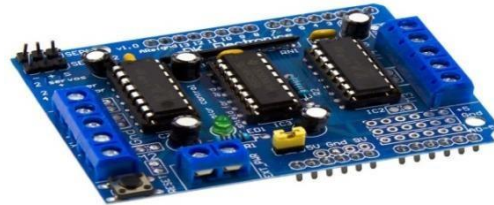


**GSM Module:** A custom built Global System for Mobile communication (GSM) module is designed for Wi-Fi radiation tracking through short Messaging Service (SMS). This module is capable of acquire serial statistics from radiation tracking gadgets including survey meter and vicinity display and transmit the statistics as textual content SMS to a bunch server. The SIM800A Quad-Band GSM/GPRS Module with PS232 Interface is an entire Quad-Band GSM/GPRS answer in an LGA (Land grid array) kind which may be embedded within side the purchaser applications. SIM800A assist Quad-band 850/900/1800/1900 MHz, it may transmit Voice, SMS and statistics records with low electricity consumption.



**L293D Driver:** L293D is fundamentally a motor driving force or controller. It has constructed in H-bridge circuits which might be capable of manage DC vehicles concurrently in each clockwise and counter

clockwise course. The L293D is a prominent 16-pin motor driver IC. As the call shows it's far especially used to power vehicles. A lone L293D IC is able to strolling DC vehicles on the identical time; furtherly the courseof those vehicles may be managed independently.



**ESP32-Cam:** The ESP32-Cam Development board is a module that integrates Wi-Fi 802. It features a ESP32-S chip and is derived with a "regular" 2MP OV2640 digital digicam. This board has 4MB PSRAM, that is used for buffering snap shots from the digital digicam into video streaming or different obligations and permits you to apply better high-satisfactory to your snap shot. It helps micro SD card and has 10 available GPIOs.



**Buzzer:** An arduino buzzer is likewise recognised a piezo buzzer. It is largely a tiny speaker that you could join without delay to an arduino. You could make it sound a tone at a frequency you set. The buzzer produces sound primarily based totally on opposite of the piezoelectric effect. When a voltage is carried out throughout the 2 electrodes, the piezoelectric fabric automatically deforms because of the carried out voltage. This motion of the piezo disk inside the buzzer creates sound in acomparable way because the motion of the ferromagnetic disk in a magnetic buzzer or the speaker cone stated above.



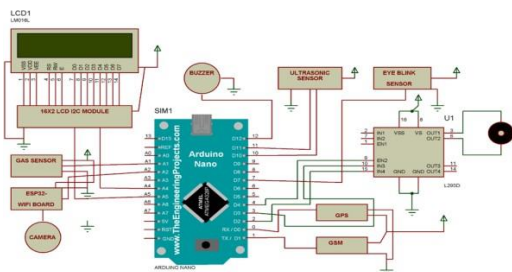
## SOFTWARE REQUIREMENTS:

**Embedded C for Programming:** Embedded C is

most approved programming language in software sector for advancing electronic gadgets. Each processor used in electronic system is kindred with embedded software. Embedded C programming plays a superior role in performing peculiar function by the processor.

**Arduino IDE:** Arduino IDE is an open-supply software program application that lets in cease customers to jot down and add code inside a real-time environment. As this code will finally be saved inside the cloud, it is often secured by those who have been searching for an extra level of redundancy. Arduino IDE may be equipped inside Windows (11, 10, 8.1, 8, 7,) Mac and Linux working systems. The lion's proportion of it's additives are written in JavaScript for clean modifying and compiling. While it's presiding purpose is primarily based totally round writing codes, there are numerous different capabilities really well worth nothing. Users can modify inner layouts and schematics whilst required.

## CIRCUIT DIAGRAM:



## WORKING PRINCIPLE:

When the driver is in fatigue or in drowsiness state and driving the vehicle then the alcohol sensor and eye blink sensor will sense and automatically alerts the buzzer. And the ultrasonic sensor is placed in front of the vehicle, when the vehicle is near to obstacle or to another vehicle (nearly 20cm) the buzzer will alert and the message is displayed in the LCD. In the meantime the message and location will be sent to the authorized person with the help of GSM and GPS module.

The L293D driver receives signals from the arduino and transmits to motor to control the speed of the vehicle. The Esp32 camera will send

the image to know the better condition of the driver. When the buzzer alerts, the speed gradually slow down and stops the vehicle.

## ADVANTAGES:

- Flexible and reliable
- Can implement for security supply
- Automatically controlled
- Can be performed in real time
- Driver's safety

**CONCLUSION:** This system detects the driver's condition with the help of sensors like alcohol and eye blink sensor. It also sends the image to get exact and better view of the driver condition. The methodology is implemented by using advanced IC's and growing technologies like GSM, and GPS. So, we will get the best outcome. The main motto of our project is to drop down speed and stop the vehicle automatically, by considering driver's as well as vehicle surrounding conditions. The system can be implemented in real time basis.

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