

# **DRIVER DROWSINESS DETECTION USING AI AND MACHINE LEARNING WITH VISUAL BEHAVIOUR**

## **AIM:**

Design development of Driver drowsiness detection using AI and machine learning with visual behaviour.

## **PURPOSE:**

Driver drowsiness is a major contributor to road accidents, posing a significant threat to road safety and human lives. This paper presents an advanced solution for real-time driver drowsiness detection using AI and machine learning techniques, with a particular focus on analysing visual behaviour with camera vision. The proposed system utilizes computer vision algorithms to monitor and analyse the driver's facial expressions and eye movements. Deep Learning models, such as Convolutional Neural Networks (CNNs) and Recurrent Neural Networks (RNNs), are employed to process real-time video streams from an on board camera, capturing the driver's face and eye activities. By extracting relevant features from facial landmarks and eye tracking data, the system can discern signs of drowsiness, such as drooping eyelids, frequent blinking, and changes in facial expressions. This model mainly focuses on eye open and close. Also this system can detect alcohol intake. The proposed project title is driver drowsiness detection using AI and machine learning with visual behaviour.

## **DESCRIPTION:**

ESP32 camera and GSM module SIM800C interfaced with ESP32 UART port. Alcohol sensor (MQ3) connected to ESP32 controller digital pin.

## **WORKING:**

ESP32 camera detects eye open and close status. It sends eye status to ESP32 controller. If Eye open and Alcohol not detected and ignition key ON then engine (motor) will be ON. If eye close or alcohol

detected then engine (motor) will not ON. Eye status, alcohol status information will upload to IOT server. Along with IOT notification, it will send SMS to mobile number.

## TECHNICAL SPECIFICATIONS:

### HARDWARE:

Microcontroller	:	ESP32 controller
Crystal	:	16 MHz
LCD	:	16x4 LCD display
GSM module	:	SIM800C
Relay	:	12V DC electromagnetic
Alcohol Sensor	:	MQ3
Camera	:	ESP32 camera
Buzzer	:	5V DC
Power Source	:	12v 1 amp DC adaptor

### SOFTWARE:

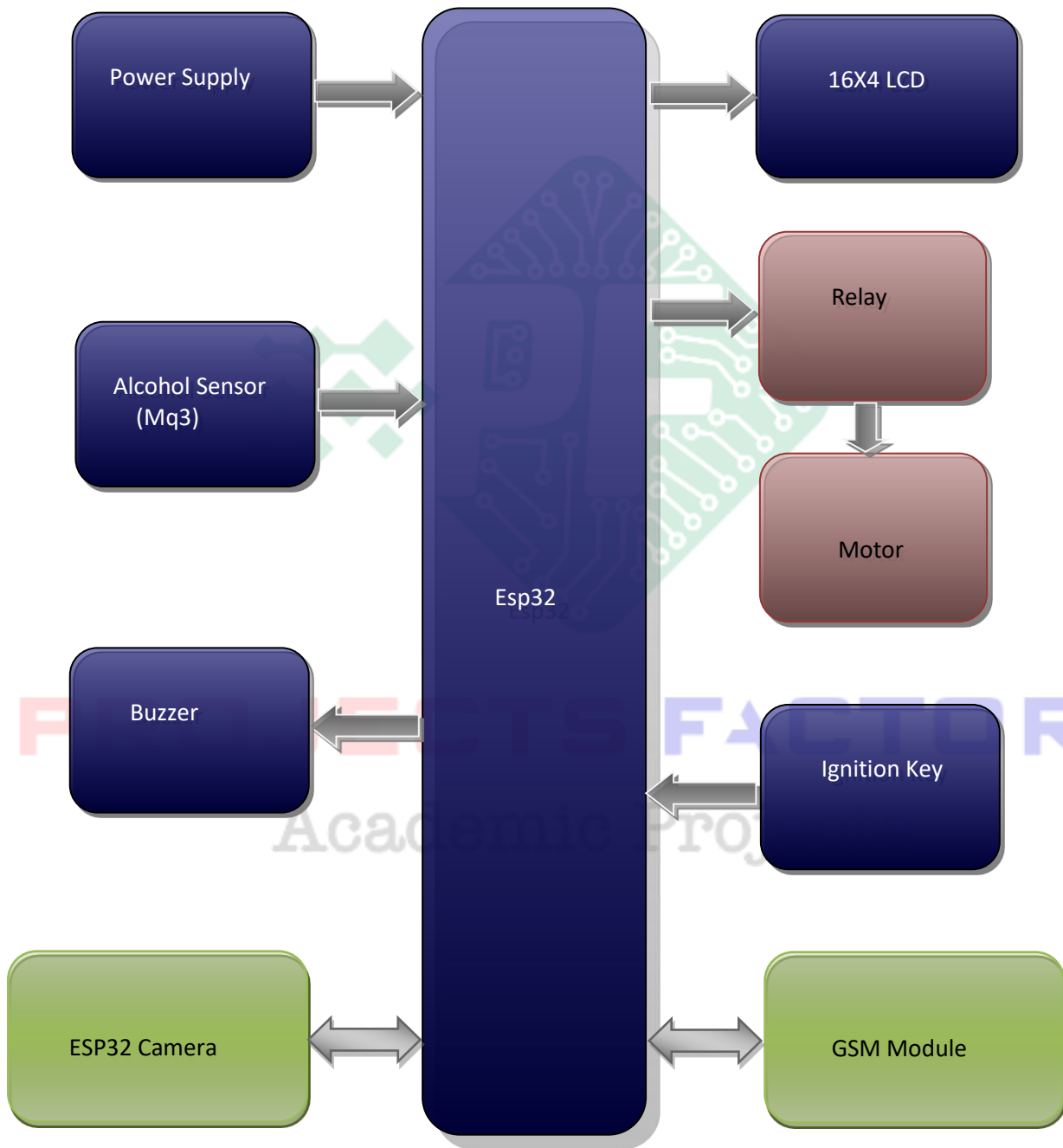
Arduino IDE

Proteus based circuit diagram

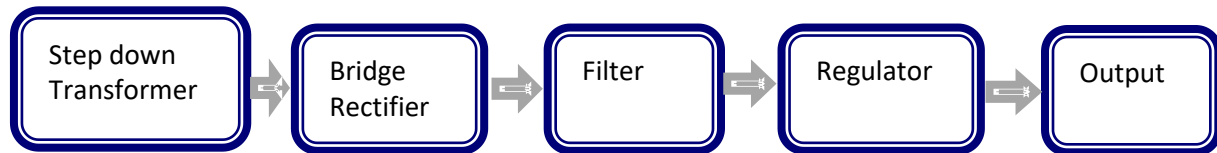
### APPLICATIONS:

- Helmet Detection project
- AI and ML projects
- Bikers safety system using visual inspection
- Deep learning projects
- CNN projects
- RNN projects

**BLOCK DIAGRAM:**



## POWER SUPPLY BLOCK DIAGRAM:



## INTERFACES COVERED:

- We have covered ESP32 controller programming and interface
- ESP32 cam and GSM interface
- IOT server protocol implementation



**PROJECTS FACTORY**  
Academic Projects