

# AUTOMATED DRIVER DROWSINESS ALERT SYSTEM USING IOT

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## ABSTRACT:

Recent days accidents are the main issues happening. In that drowsy driving becomes the main issue for traffic collision. According to survey, these leads to severe injuries and deaths. For this, we can design a system contains various sensors to detect the drowsiness of driver and to monitoring health conditions. This system contains a buzzer, whenever the sensor values are not in the range of threshold values, the engine will stops and the required information displayed in lcd. These sensors are operated by arduino and the information sends to persons in vehicles or near by vehicles through IOT(Internet of things). So by this way we alert the driver and reduce the accidents.

**INTRODUCTION:** Basically, we have many issues that causing accidents in that drowsy driving is the major problem. According to [1], 846 deaths occurred in 2014 because of this reason. Anually, the estimated amount of losses are very severe amounts. These symptoms occurs whenever, the rider is in sleepy conditions or when

he is under any medication. This work existing, that can be provided as model based movement tracking that based on optical flow by analyzing the eye state and also the head position of the driver [2]. Some times, these drowsiness occurs whenever the driver is in highly drunken. These accidents are mainly occurred at high ways when we are in high speed. Often, in this case one vehicle may change its direction it will cause accident to

another vehicle. Heart beat, respiration and the eye status of the driver are the important factors for the safe driving. These factors are to be sensed by using arduino and they compare with the sensor ranges. It alerts the driver when the crosses this limits. Through IOT the messages will send to the surrounded people to notice the driver.

**SYSTEM MODEL:** In this we are using arduino rather than 8051 microcontroller, because the advancements and also arduino is userfriendly. 8051 has many drawbacks and not preferable than arduino. So, by taking all considerations we take the controller as arduino.

The automated driver drowsiness alert system consists of the Arduino Uno, heartbeat sensor, Eyeblink sensor, Temperature sensor, lcd display, Hbridge, DC motor, buzzer, IOT module.

## A. ARDUINO



The arduino uno, is a kind of open source microcontroller platform by Arduino.cc. ATMEGA328P. This can be interfaced with the USB interface, 6 analog input pins, 14 I/O digital pins that are used to connect with the external circuits out of 14 I/O ports in that 6 pins can be used as PWM. This allows the designers to control.

## B. BUZZER



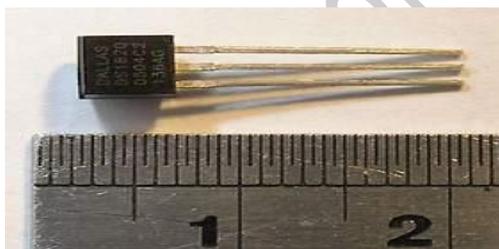
A piezo electric buzzer is an electro mechanical signalling,that are used for emergency or for normal alarms,automobiles purpose and also for home applications such as microwave oven,timers and etc.,It is just a piece of piezo material with two electrodes.In this kind of buzzer, it requires oscillators to drive and when ever a dc voltage applied,it makes a beep sound.They are used in the places wherever we need a sound indications.They are cheap and also they operated with high sound for low power.

### C.HEARTBEAT SENSOR



Heartbeat can be measured by using the optical vibration.If the drivers finger is placed on the sensor, then the sensor starts working and count the pulses and gives the output to the arduino to measure the Beats Per Minute. The figure2 shows the heartbeat sensor. It works on the principle of modulation of light by flow of blood through finger at each pulse. This sensor contains two modes of transmission. They are:1. Transmissive mode,2.Reflective mode.

### D.TEMPERATURE SENSOR



Temperature sensor usually converts temperature into electrical signals for this we used IC called LM35 for this.These series sensors are whose output voltage is linear proportional to the Celsius temperature 402.This does not requires external calibration since it is internally calibrated .The LM35 has low output impedance ,linear output amd precise inherint calibration make inter phasing to read out or control the circuit is easy. It uses the single power supply additional to the with plus or minus symbols.It draws only limited power from

its supply it has very low self heating,less than 0.1 degree centigrade in still air.

### E.EYE BLINK SENSOR



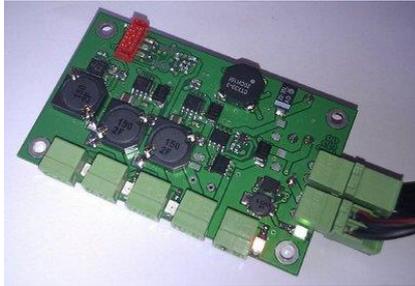
The Eye blink sensor is a kind of IR based sensor.Hence the variation across the eye will vary as per eye blink.If eye closed that means the output is high else low,this is used whether the eye is closed or open position this output will give to the logic circuit to indicate the alarm,this is used in this project to control accidents due to unconscious through eye blink.

### E.DC MOTOR



A DC motor is nothing but a rotary electrical machine that converts electrical energy into mechanical energy.The power supply that given to this is motor ic DC current.These are mainly depends on the forces produced by the magnetic field,so same poles repels and opposite poles attract each other.A coil of wire with current running through it generates electromagnetic field aligned through the center of the coil.When the current switch is on or off,its magnetic field can be on or off and the direction can be switched to 180 degrees.

### F.POWER SUPPLY



In order to work the circuit 5v ac power supply is enough, but as default the main supply gives 230v, 50hzs ac voltage. When we apply this voltage to primary winding of step down transformer it gives 12v ac at secondary winding. This 12v ac is converted into 12v pulsating dc through bridge rectifier then it is converted into 12v pure dc through filters and this 12v is regulated to 5v dc through voltage regulator 7805. But the input to led is 3.3v and it can be made by adding a resistance.

### G. LIQUID CRYSTAL DISPLAY



A LCD is a thin flat display device made of monochrome pixels which are arranged in front of source of light or the reflector. Each pixel contains liquid crystal molecules suspended between two transparent electrodes in a columnar manner, where the polarity of polarizing filters are perpendicular to one another. The most common LCDs used in controllers are 16x1 (16 characters per one line), 16x2 (16 characters per two lines) and 20x2 (20 characters per 2 lines) displays. For output visual information, smart LCDs are used in many microcontroller devices. These are very cheap and easier to use. They have ASCII values for groups of characters for mathematical symbols. As the display of the 8-bit data bus.

### H. RELAYS



These relays are just acted as a switch. It consists of a group of input terminals for controlling of signals. Some times they can be used for automatic switching operation.

**PROPOSED SYSTEM:** This system gives the indication that the driver is in drowsy or not, this process will follow by sensing the driver condition and it stops the vehicle immediately whenever the driver faces abnormal condition to avoid accidents for this we are using eyeblink sensor, heart beat sensor and temperature sensor are interface to an Arduino. If any of these sensors crosses the threshold level the vehicle will slow down and stop. A buzzer is used to alert the surroundings or the passengers inside the vehicles, at the same time an SMS alert gives to the authorized people through IOT using WiFi module the status or condition of driver is updated in local server.

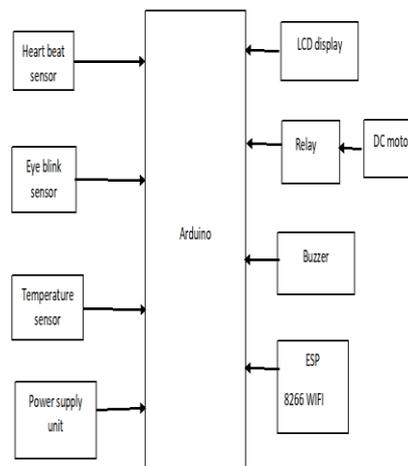
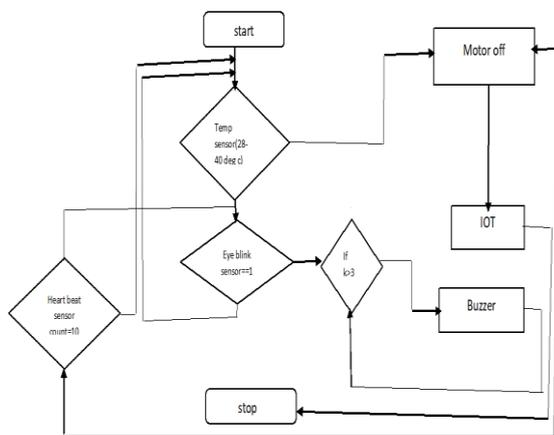


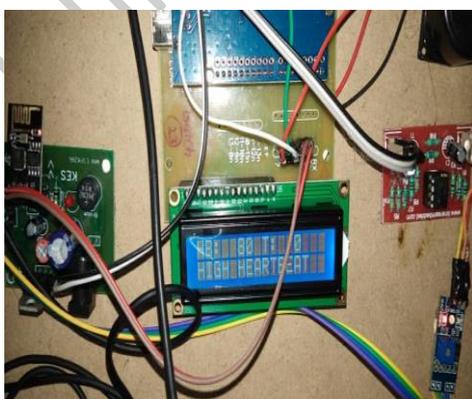
Fig: BLOCK DIAGRAM

Here the working includes that, the system will turn on whenever the power supply system will on. Then firstly the heartbeat sensor senses the heart rate where the threshold is pulse count less than or equal to ten. The temperature sensor senses the heart rate until it reaches the threshold value in between 28°C to 40°C. The eye blink sensor sense the person is awake or not here we include a factor called 'K' where K denotes the blink rate when  $k=1$  that is normal condition if  $k>3$  that may be considered as abnormal condition. In abnormal conditions the buzzer turns on and the message will be displayed on the LCD screen then the motor will turn off. And that message will be transmitted through IOT to the authorized people. In normal conditions the process will get back to the starting.



### EXPERIMENTAL RESULTS:

As all from the result of this project represents that, it gives information whenever the threshold levels crosses, the respected message will project on the LCD display as shown in the given figure.



**CONCLUSION:** The main theme of this research is all about reducing the accidents caused by the drowsiness of the driver and for any other health conditions in order to avoid the problem. For this, we resolve a system which is used to monitor the health condition and drowsiness of the driver by including different sensors to determine the health conditions. The information, which shows the status of the driver is displayed and it can be shared to the required persons.

### FUTURE SCOPE:

In future there will be a scope we can use this system in a wide transportation like aeroplanes in order to alert the pilot and also we can use water sprinklers in order to wake up the driver whenever he is feeling sleepy.

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