



DRIVER DROWSINESS MONITORING SYSTEM:

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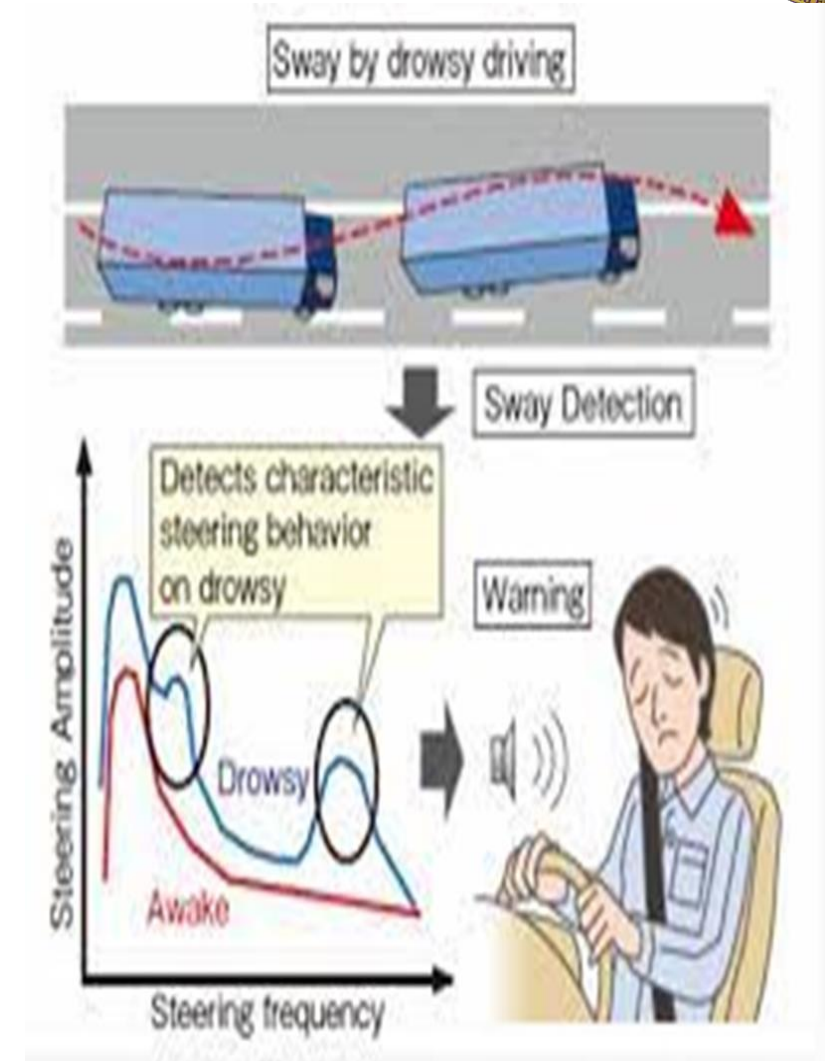


Abstract

- Drowsy driving is one of the major causes of road accidents and death. Hence, detection of driver's fatigue and its indication is an active research area. Most of the conventional methods are not so accurate and slow detectors, for detection of driver drowsiness.
- The purpose of the driver drowsiness monitoring system is **to aid in the prevention of road accidents and increasing the passenger's safety.**
- The driver drowsiness monitoring system is **based on an algorithm, which begins recording the driver's facial behavior.** It then recognizes changes over the course of long trips, and thus also the driver's level of fatigue.

Introduction

- Driver drowsiness is one of the major cause of the traffic crashes.
- Drowsiness puts all other road users in danger.
- The use of assisting systems that monitor a driver's level of vigilance is important to prevent road accidents.
- These systems should alert the driver in the case of drowsiness or inattention.



Literature Survey

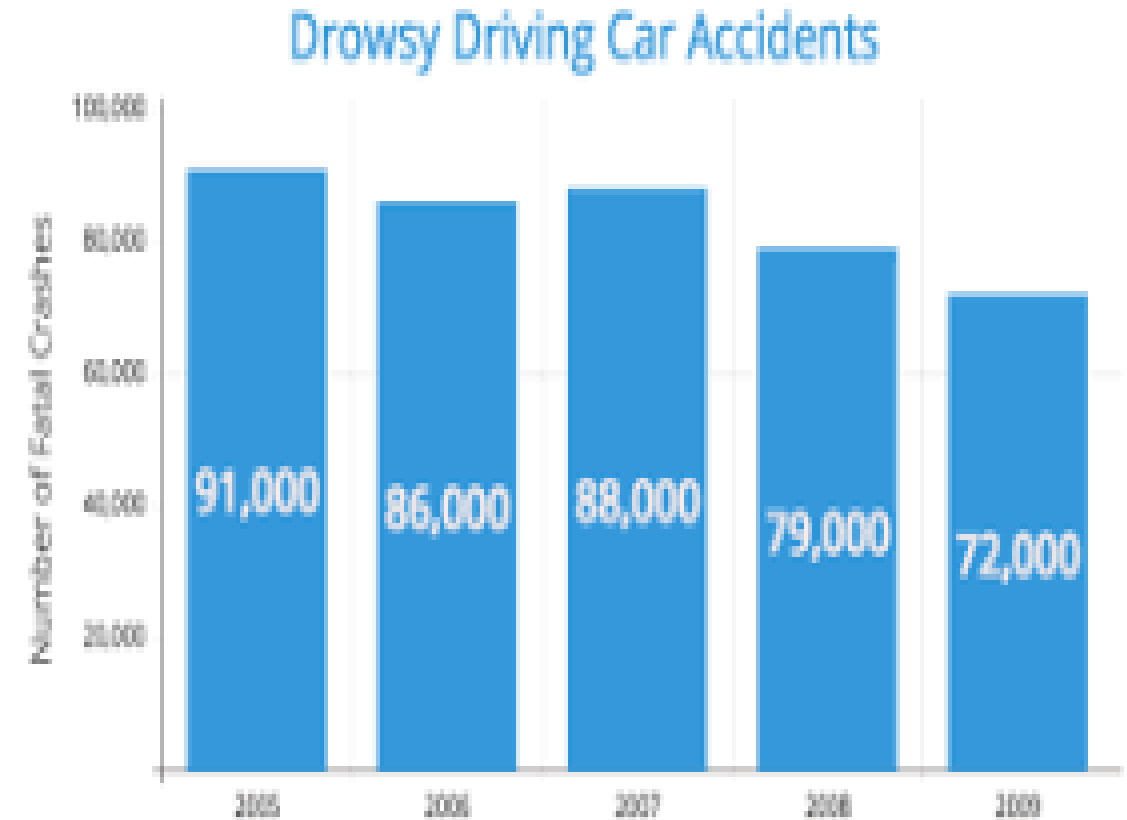
| <u>S.no</u> | <u>Title and Author</u> | <u>Technique used</u> | <u>Pros</u> | <u>Cons</u> |
|-------------|---|---|--|--|
| 1. | Real time driver's Drowsiness monitoring based on Dynamically varying Threshold -BINDU VERMA | HOG face recognition technique. | It detects the face and monitoring the driver. | It cannot recognize the head position of the driver. |
| 2. | Automatic Driver Drowsiness alert -BHAVANA T.PETKAR | The buzzer is used to alert the driver. | Focus on the drivers face and eye blink | using the SVM system only for video segment. |
| 3. | Intelligent Fatigue Detection and automatic Vehicle Control system -MONALI GULHANE | The image processing method of capturing the frames in the video | focus on the modes of the person when driving the train | It cannot monitor the face in real time |
| 4. | Drowsiness Detection and Monitoring System -UZAIR GHOLE | This method uses the USB camera for detection of driver's Face and eyes | Cautions the driver through an alarm to ensure the vigilance | Some times driver cannot get alerted by the alarm sound. |
| 5. | 'Driver's Drowsiness Detection with Alarm Buzzer -ALIENI EENAJA | Drowsiness is detected by the face detection camera. | Alerting driver with unstoppable alarm buzzer. | micro sleep can't be detected. |

Literature Survey

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|-------------|--|--|---|---|
| 6. | Driver drowsiness detection system. -DEEPA MALIMATH | The system will records image of driver then face and eyes will be detected. | When driver is sleepy, then alarm will sound. | This requires expensive equipment |
| 7. | Driver monitoring system using ML -R.KUMARAN | This system uses image processing technique. | It monitor's the real time drivers drowsiness. | It takes some time to process the images. |
| 8. | Driver drowsiness detection system. -SMITHA P S | This system uses non-intrusive machine vision | It alert the driver on the basis of continuous eye closures | It only detect the eyes but not facial behaviour. |
| 9 | Driver drowsiness detection system and techniques. -HUSAM AI -AMEEN | In this approach driver's face is continuously captured by using camera. | The driver is alerted if any of the drowsiness symptoms are detected. | It alerts the driver in causal activities |
| 10. | Driver drowsiness detection system. -ABDULLAH SALEM | This system deals with automatic driver drowsiness detection based visual information and AL | This systems reduces the accidents | Sometimes automation fails to detected face. |

Motivation

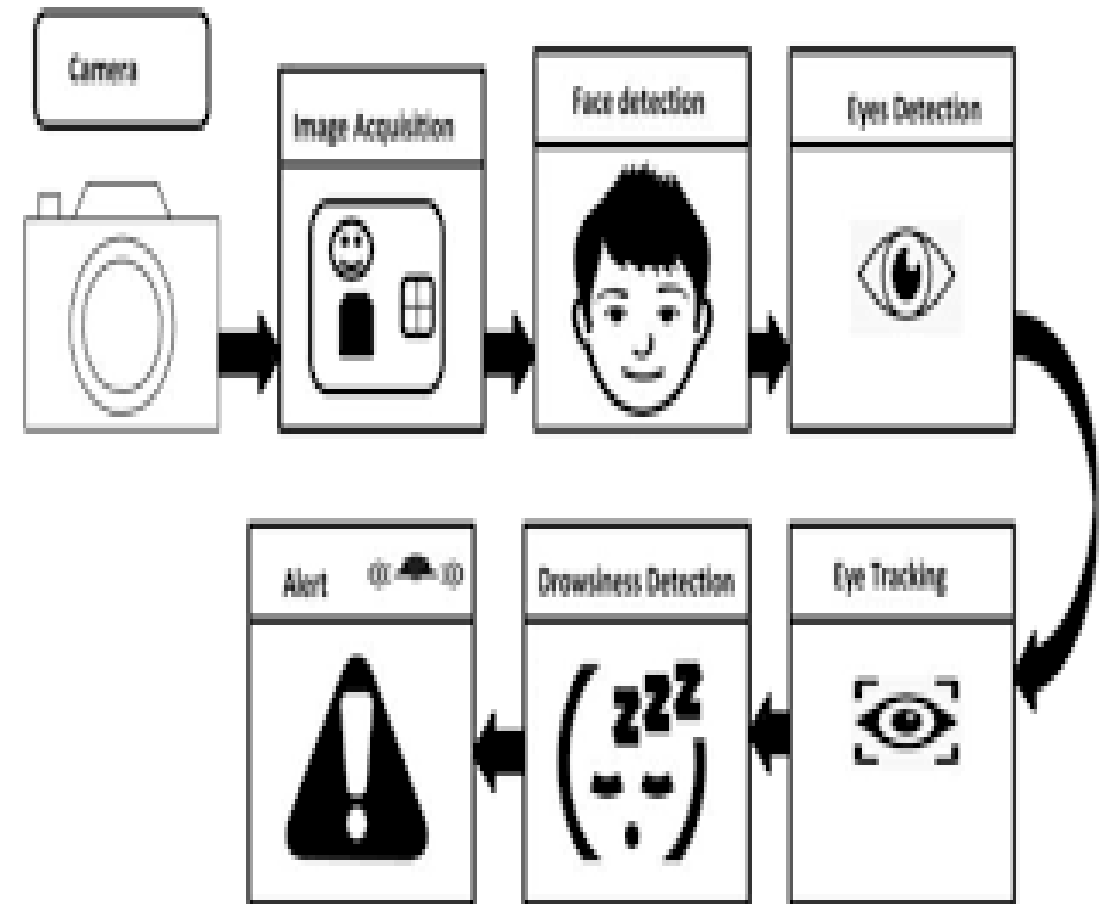
- Sleep –deprived drivers remain responsible for about 40% of the accidents.
- Drowsy-driving crashes results in nearly 800 fatalities and about 50,000 injuries among 1,00,000accidents.
- 426 die in each day in road accidents ; 18 per hour in India.
- ❖ **MIND ON THE DRIVE ,
HANDS ON THE WHEEL'
EYES ON THE ROAD.**



Source: NHTSA - Drowsy Driving

Objective

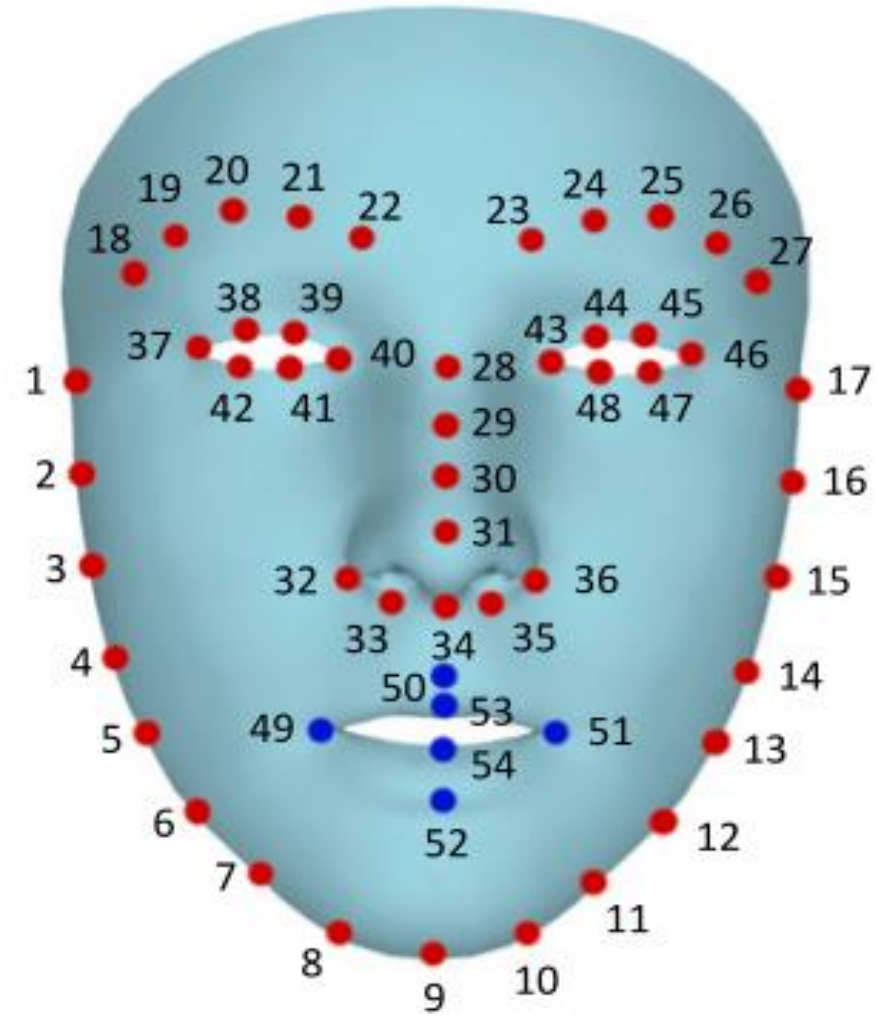
- Utilising a camera to spot drowsy driving.
- Alarming the driver
- Enhancing road safety
- Lowering the rate of fatality from accidents



Existing Methodology



- First the video is recorded using a web cam
- From the video, the frames are extracted to obtain 2-d images.
- Face is detected in the frames using Histogram or Oriented, gradients (HOG) and linear Support Vector machine(SVM) for object detection.
- From the facial land marks, Eye Aspect Ratio(EAR), Mouth Opening Ratio(MOR) and position of the head are quantified and using these features and machine learning approach.

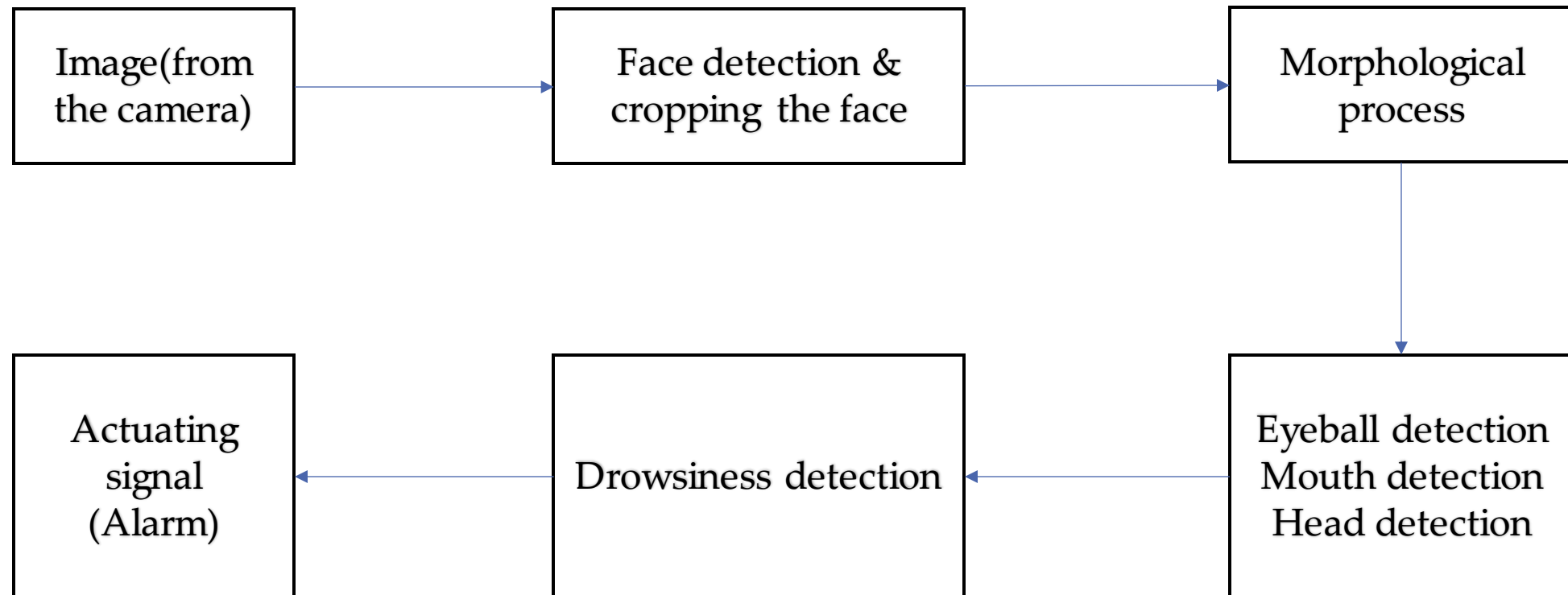


Proposed Methodology

- Using a camera to keep an eye on the driver.
- Avoiding the driver from becoming sleepy.
- Road accident reduction.
- Several techniques exist to warn drowsy drivers.
 1. Using Arduino.
 2. Eye blink sensor.
 3. EEG technique.
 4. Image processing.



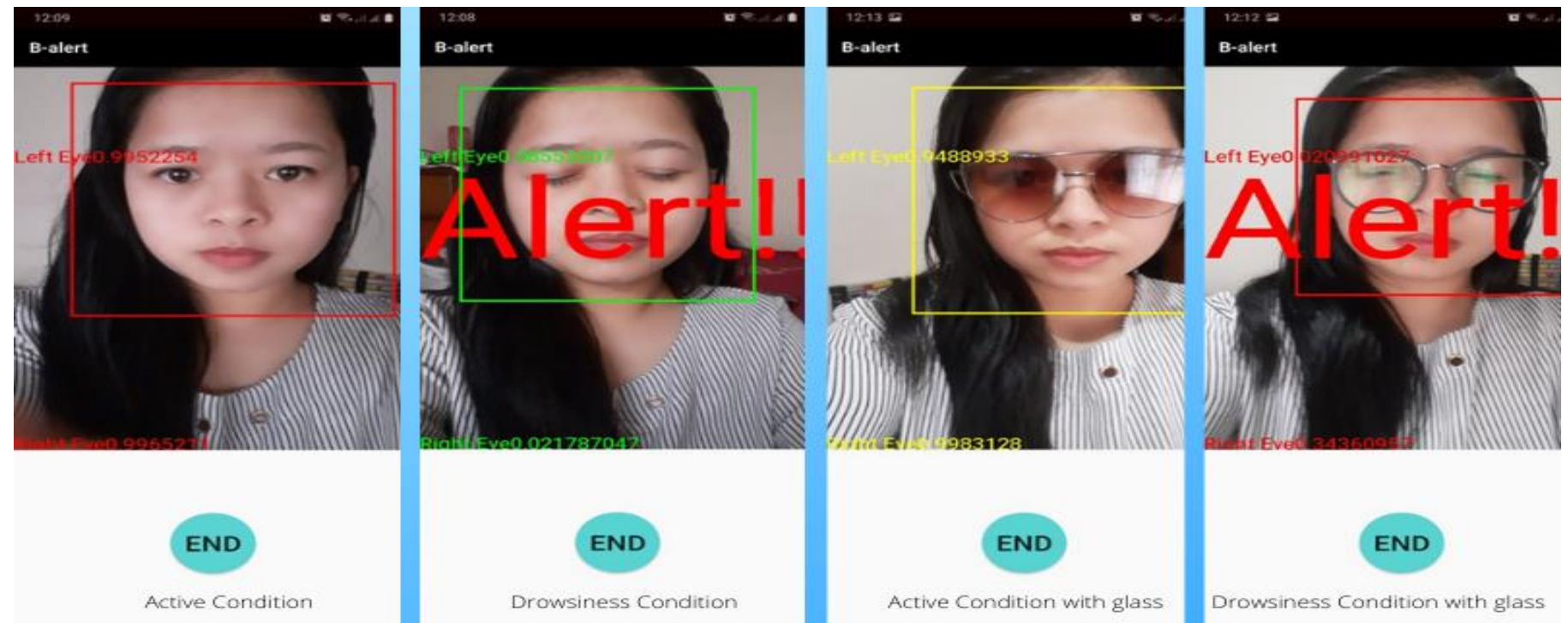
Block diagram



Proposed Methodology

- By utilising open cv technologies in computer vision.
- To promote driver safety, we wish to offer an SVM-based driver tiredness prediction system.
- Tools needed for the proposed system,

1. Python code
2. Raspberry pi
3. Camera
4. Buzzer



Proposed Work

USE:

- Making the driver aware of their drowsiness.
- Decreasing traffic collisions.

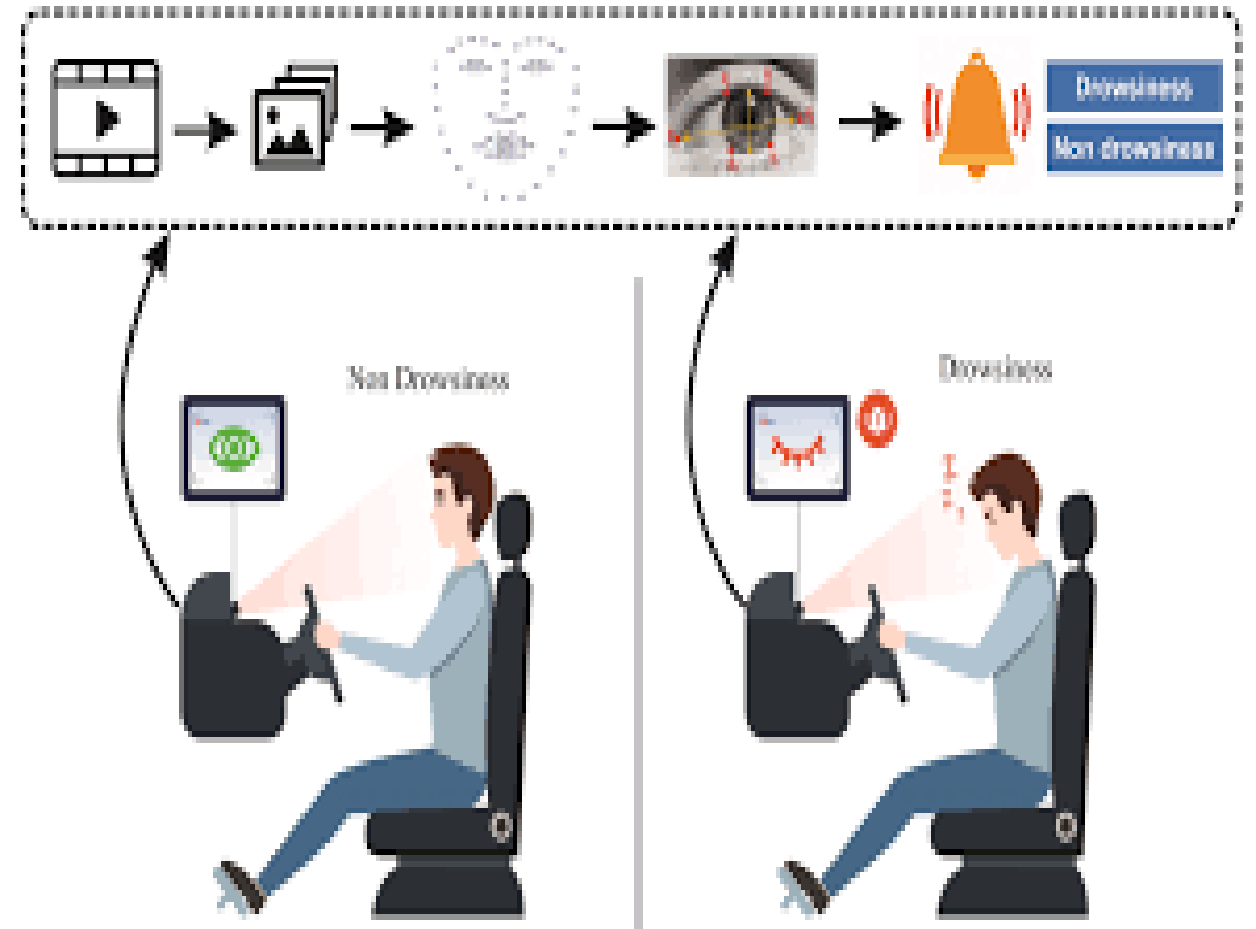
PROPOSED WORK:

- Installation of a camera.
- Real-time driver supervision.
- Installation of a Python software on a Raspberry Pi.



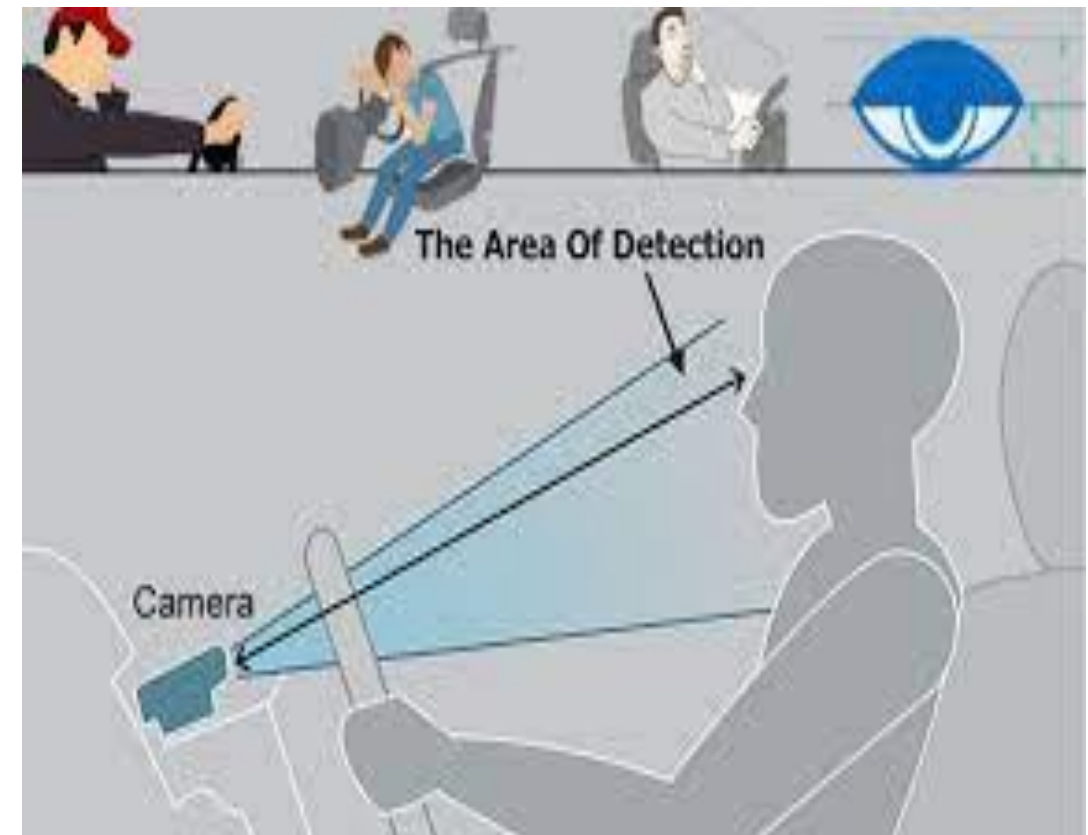
WORKING MODEL:

- Installation of a camera.
- Real-time driver supervision.
- Installation of a Python software on a Raspberry Pi.
- Supplying a data set as input to the software.
- Data set training.
- Data set testing.



WORKING MODEL:

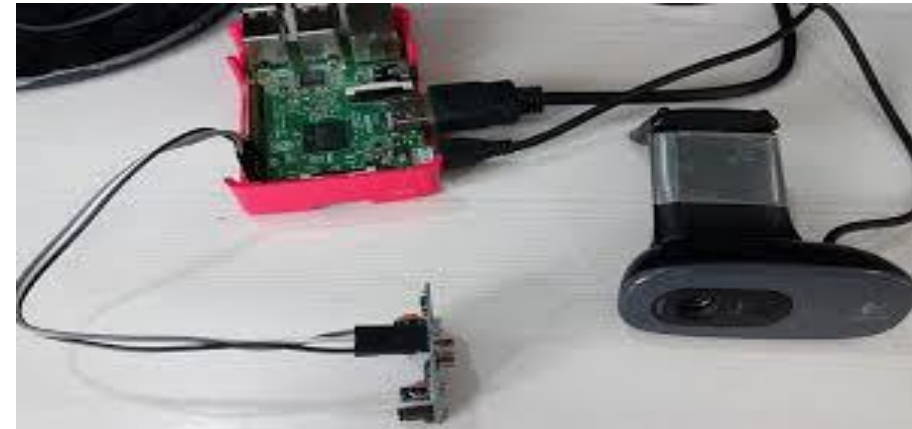
- Putting the software into practise.
- Real-time facial monitoring.
- After detecting the tiredness, the buzzer turned on.
- Making the driver alert.
- Saving lives from road accidents.



Hardware & Software Involved

- **Hardware Involved**

1. Camera
2. Raspberry pi
3. Buzzer



- **Software Involved**

1. Python code
2. Open CV technology
3. Personal Computer



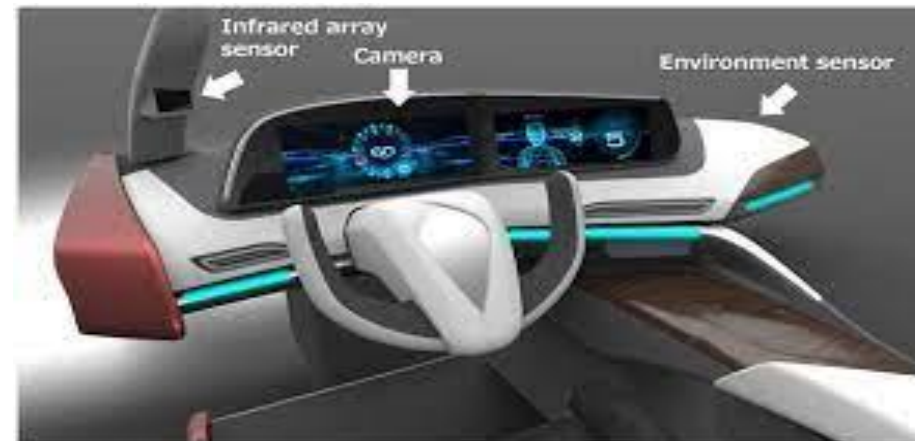
Application & Advantages

- **Applications:**

1. For the safety of the drivers journey.
2. The system alerts driver through alarm in real time.
3. To reduce the accidents numbers.

- **Advantages:**

1. Easy to design.
2. High efficiency.
3. Affordable price .



References

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THANK YOU