

The background is a dark blue gradient. In the top-left corner, there are two overlapping parallelogram shapes, one blue and one light green. In the bottom-left, there is a circular inset showing a detailed image of a printed circuit board (PCB) with various electronic components. In the top-right corner, there is a faint, stylized pattern of interconnected lines and squares, resembling a circuit or a data network.


# Computer Vision Presentation



# Driver Drowsiness Detection System

Gateway to a new realm.....

# Problem Statement



How to tackle a sleeping person  
who must not sleep at that time?



# Historical Background

- 21% of fatal car crashes involve a person driving while drowsy.
- In 2017, drowsy driving led to at least 91,000 crashes, resulting in roughly 50,000 injuries and 800 deaths

Reference: <https://www.sleepfoundation.org/drowsy-driving>



# Historical Background

- 60% of adult drivers reported driving while drowsy in the past year
- One in every 25 adults had fallen asleep behind the wheel in the past month

Reference: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4623133/>

# Why to solve this problem.....

- Creating a safe space for everyone on the Road
- Less Accidents
- Improved Life Expectancy
- Less Emergencies





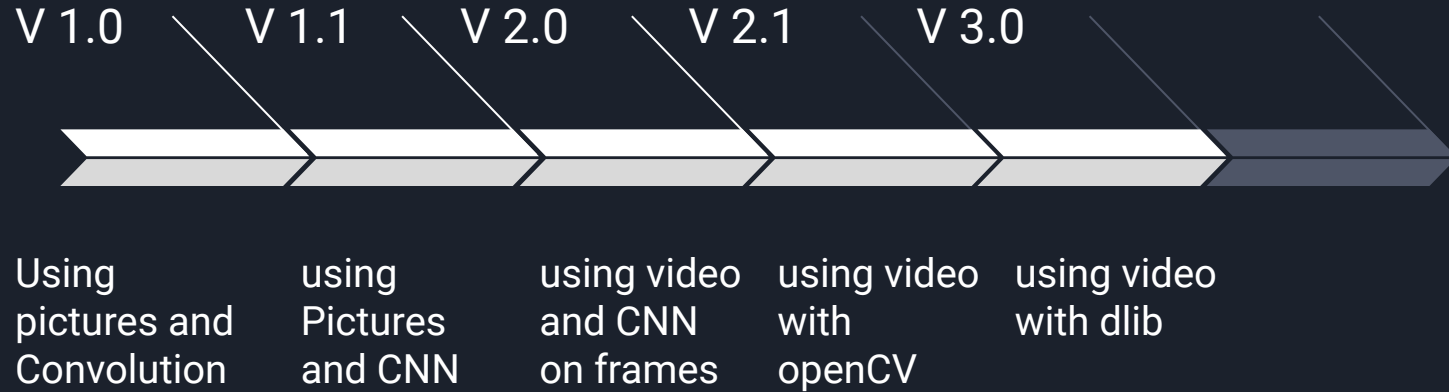
# Is this problem Worth Solving.....

- Pakistan
- Foreign Countries





# Solution Evolution







# Proposed Solution

Capture  
Video

Landmarks  
Detection

Decision Making

Detect Face

Extract  
Eye Points

Process and  
Notify





# OpenCV

01 Capture Video

02 Process frames

03 Editing frames



# DLib

## 01 Face Detection

## 02 Landmarks Detection

OpenCV can also be used in place of Dlib as we did in the previous versions. But the sole purpose of using DLib is to improve accuracy and output results.



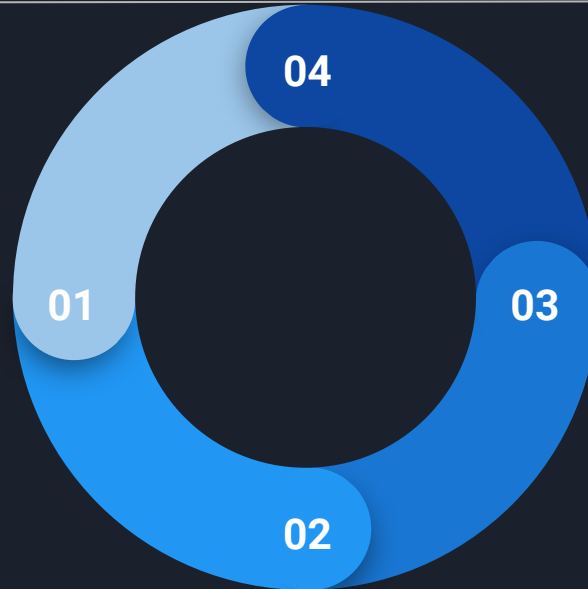
# Solution Cycle

Capture Video

Notify/Update

Identify  
Landmarks

Result

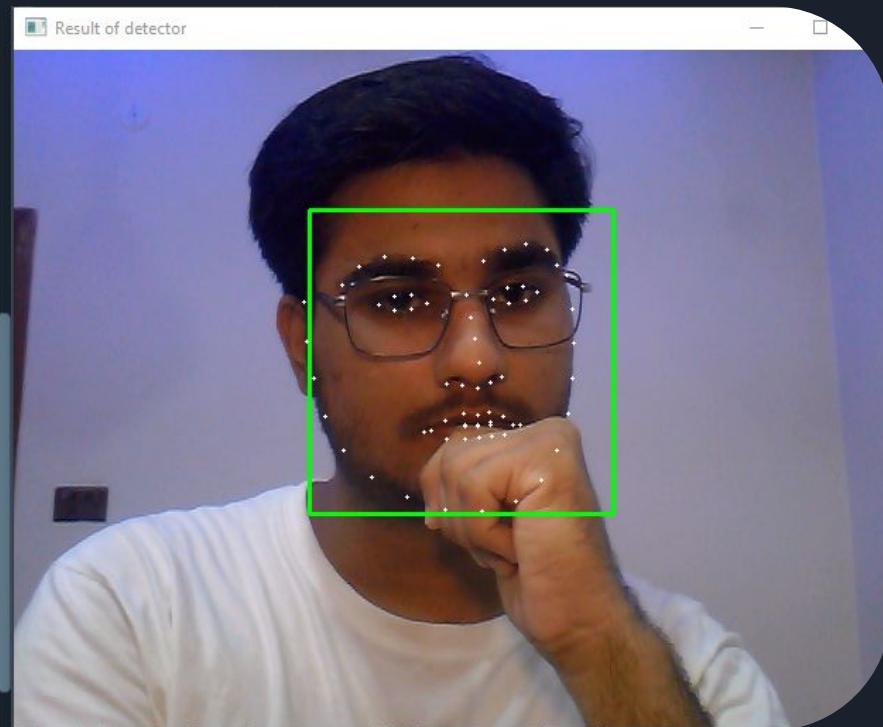
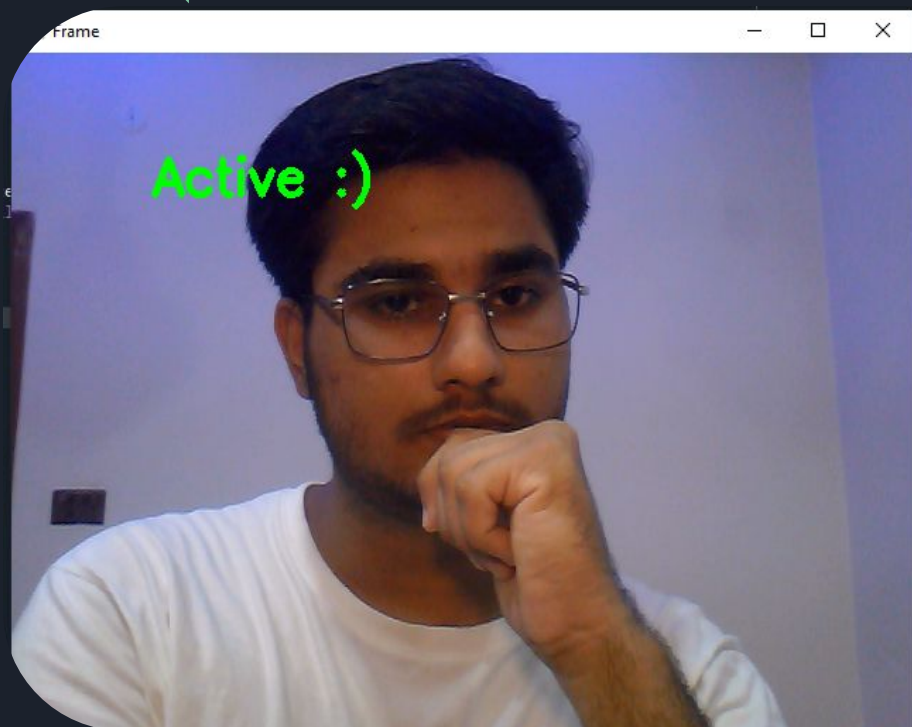




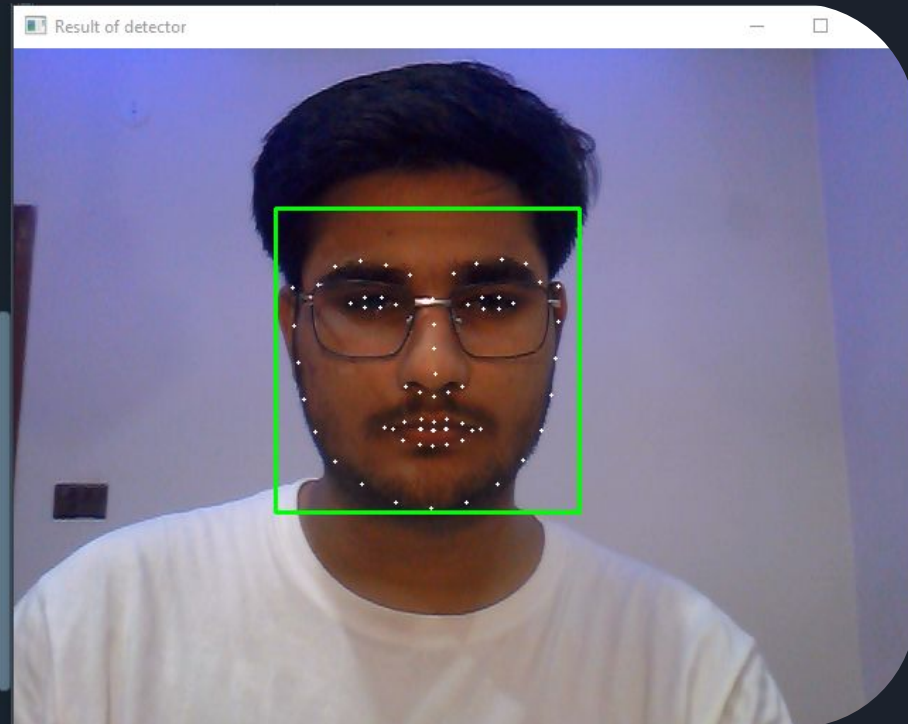
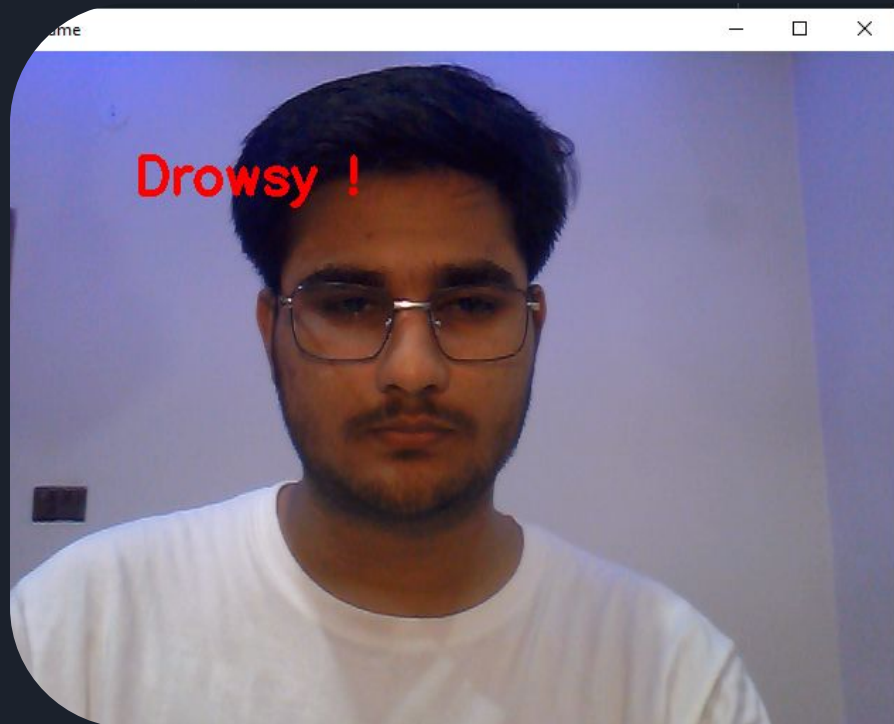
# Results (Quantitative)

- Approx 80-90%
- Depends on Camera Quality
- And Light conditions
- Developed by US 🤝 (At your own risk)

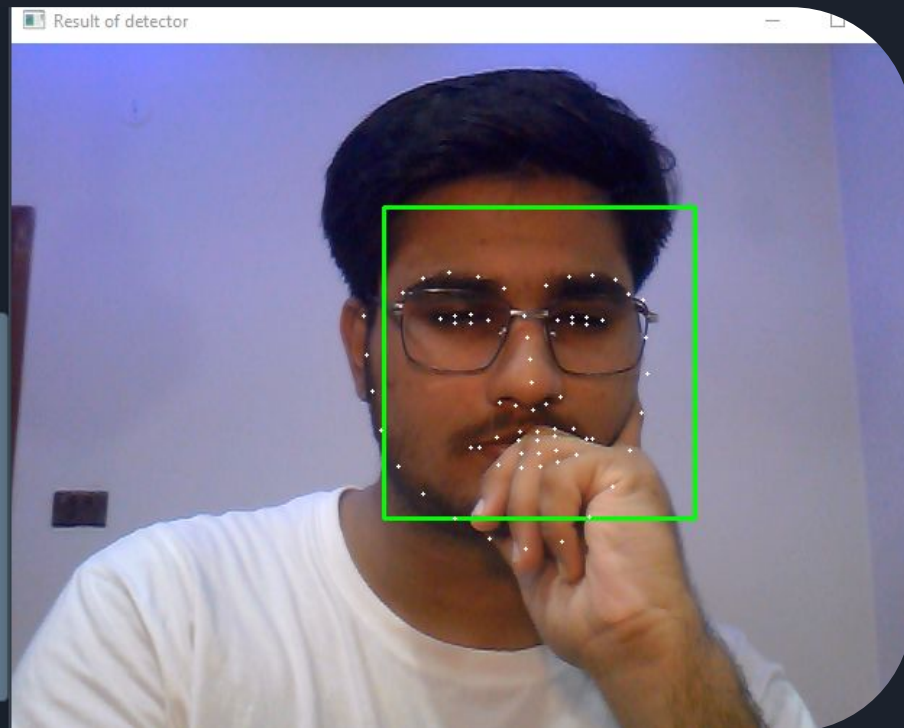
# Results (Person wearing Glasses )



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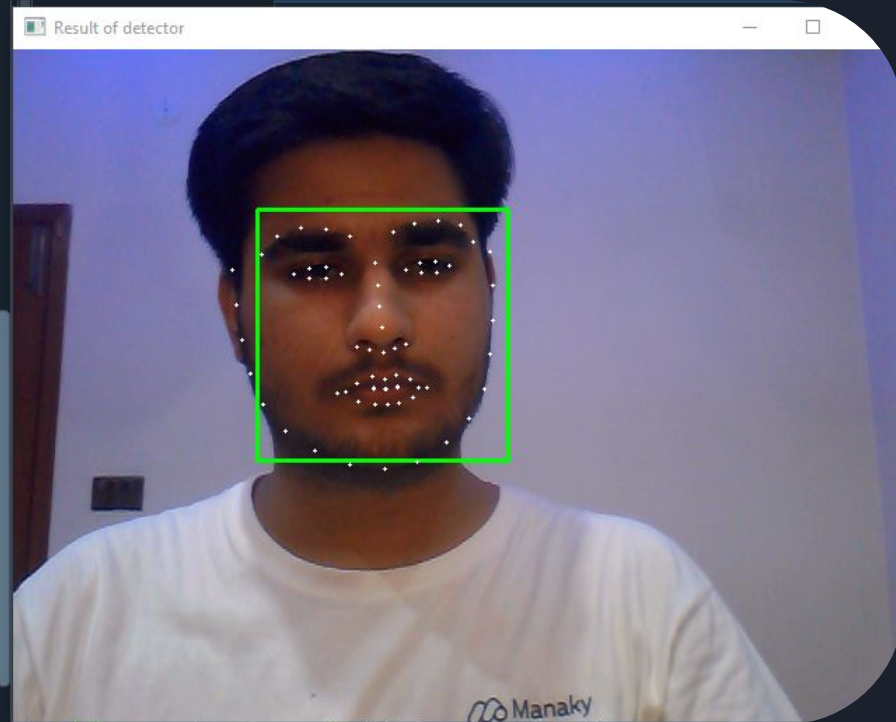
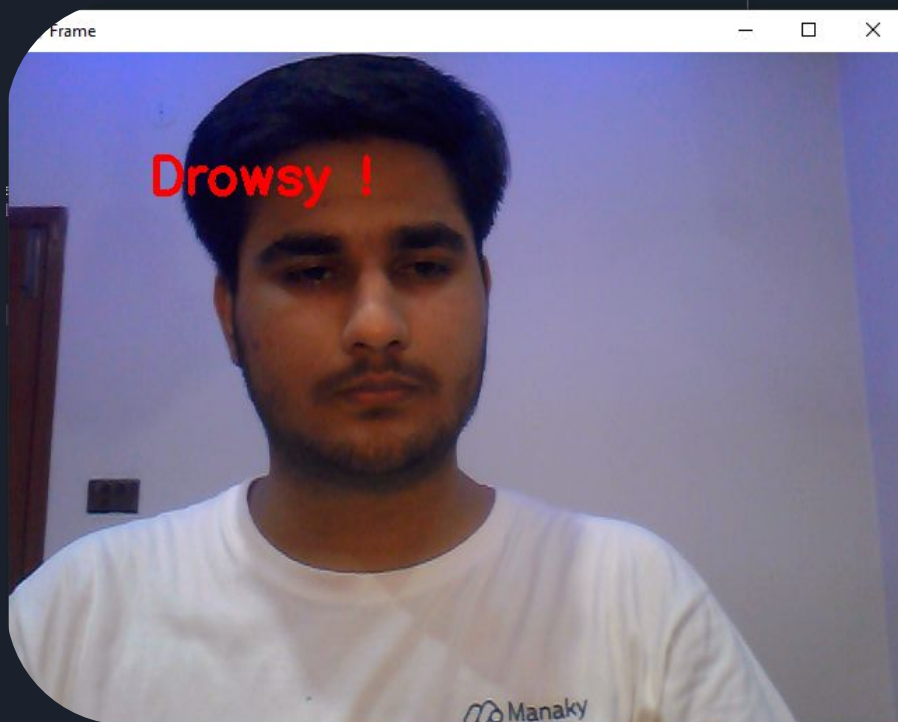


# Results (Person wearing Glasses )

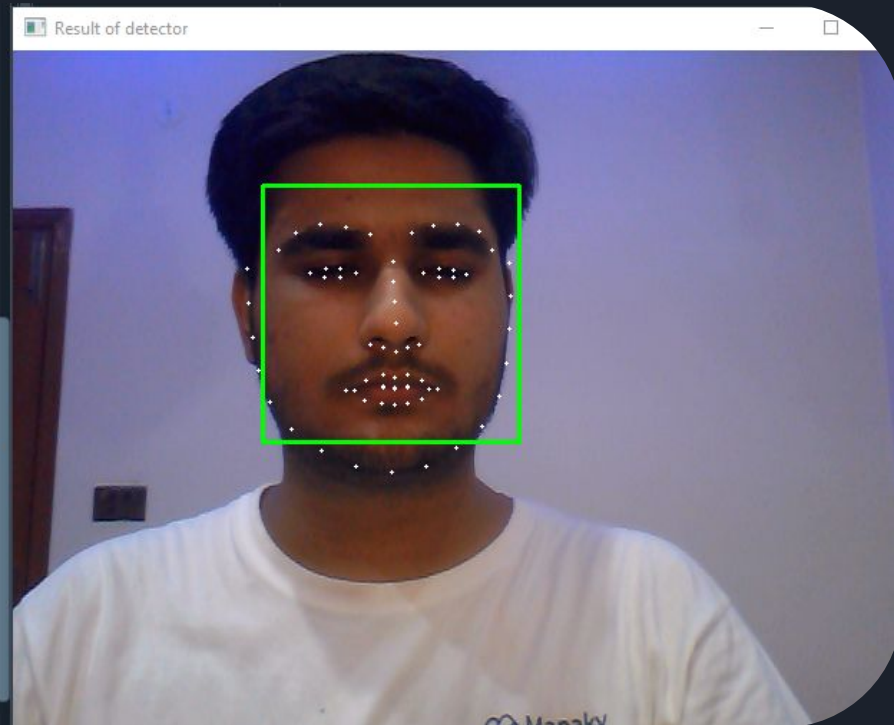
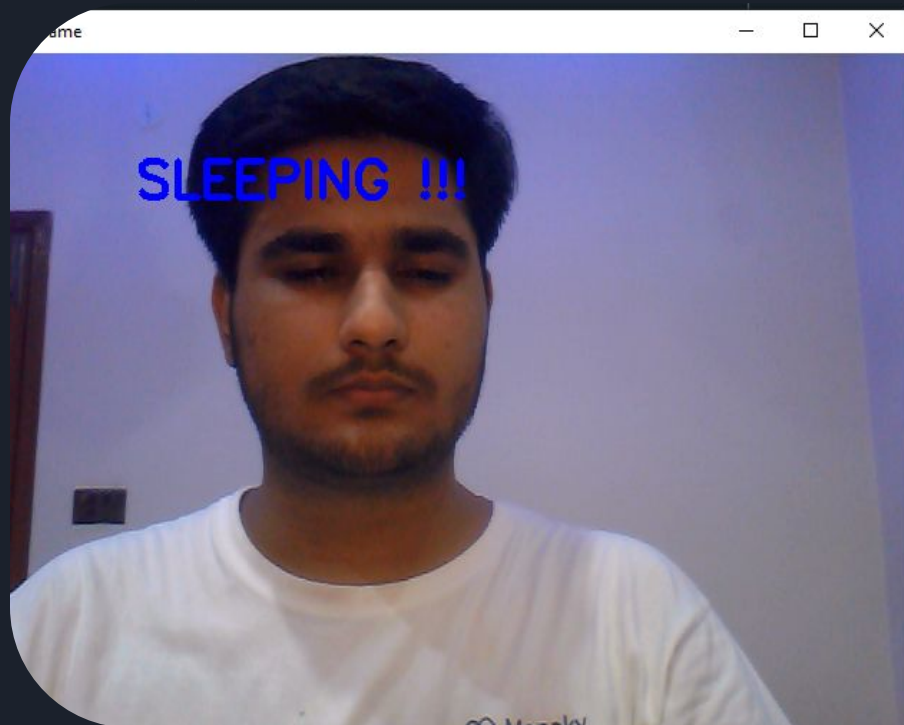




# Results (Person without Glasses )

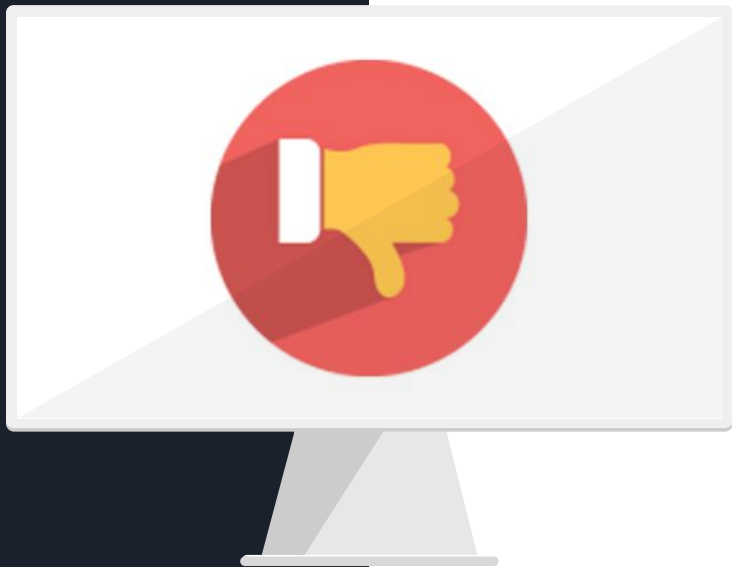


# Results (Person without Glasses )



# Drawbacks

- Less Accurate in low light
- Needs a camera



- No proper Alerts
- Does not work in darkness

# Future Directions

- Integrate with AutoCar System
- Surveillance of Guards



- Sleep Care of Patients
- Use for alerts in surrounding environment for a drunk driver



# Contributions

“It's amazing what you can accomplish when you do not care who gets the credit.”

President Truman





# Special Efforts



**BSEF19M031**

ATA UL MOHSIN



- Prepared Slides
- Trained Discarded Model

**BSEF19M033**

HASSAN AHMAD SARFRAZ



- Researched about DLib
- Executed current model

**BSEF19M047**

MUHAMMAD SALEH BUTT



- Suggested main Idea and
- initial Programming

# References

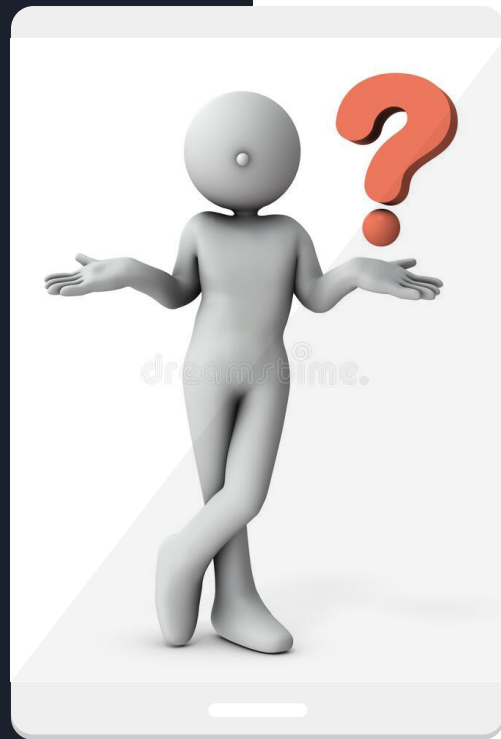
- [IoT-Based Smart Alert System for Drowsy Driver Detection](#)
- [Driver Drowsiness Detection Model Using Convolutional Neural Networks Techniques](#)



- [Drowsiness detection with OpenCV](#)
- [Driver Drowsiness Detection System with OpenCV & Keras](#)



Questions



Answers



☰



# Thank you!

