

# MULTIPLE FACIAL EMOTION DETECTION

Domain: Machine Learning & Image Processing

Presented by Batch-16

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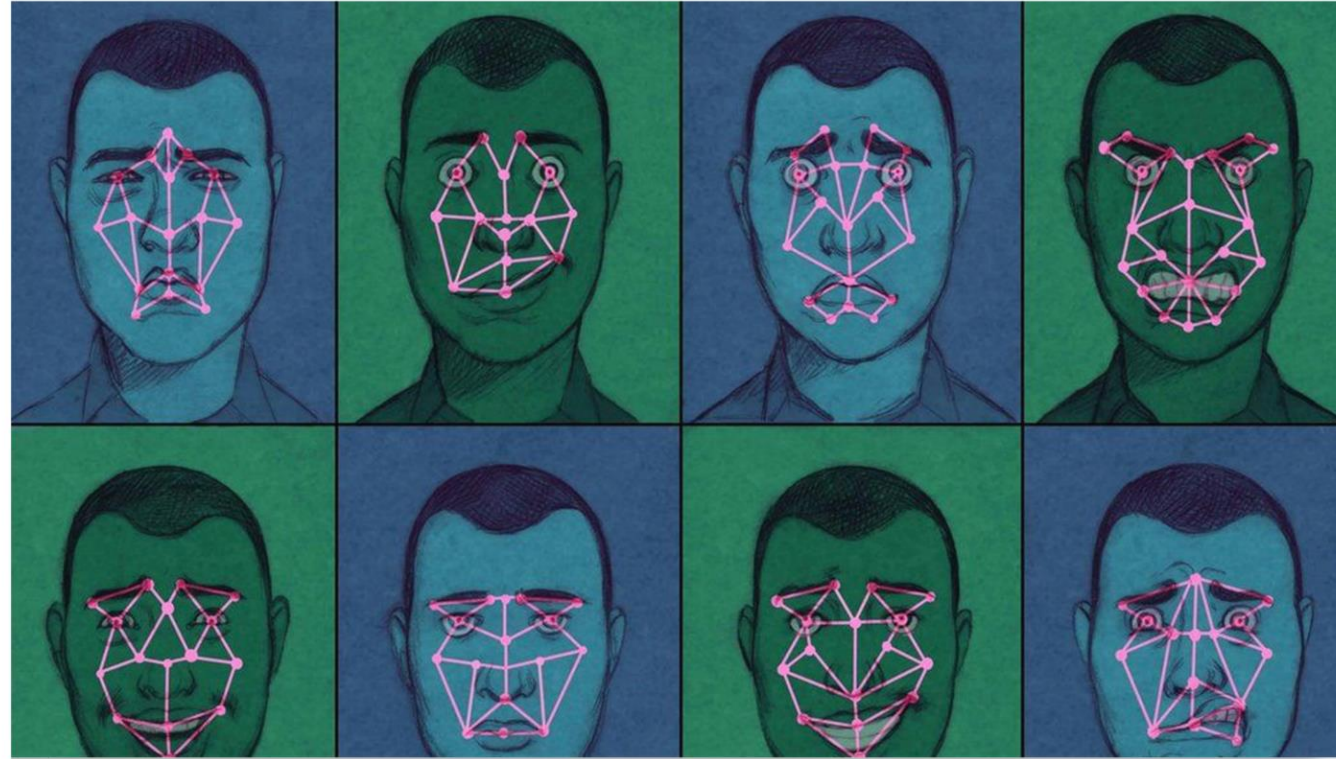
Under the Guidance of  
K.V. Sri Lakshmi Asharani  
Assistant Professor, CSED

# AGENDA

- ❖ Abstract
- ❖ Introduction
- ❖ Problem Statement
- ❖ System Requirements
- ❖ Flow chart
- ❖ Functionalities
- ❖ Test Results
- ❖ Advantages
- ❖ Conclusion







# Abstract

Human facial expressions convey a lot of information visually rather than articulately. Facial expression recognition plays a crucial role in the area of human-machine interaction. Recognition of facial expression by computer with high recognition rate is still a challenging task.

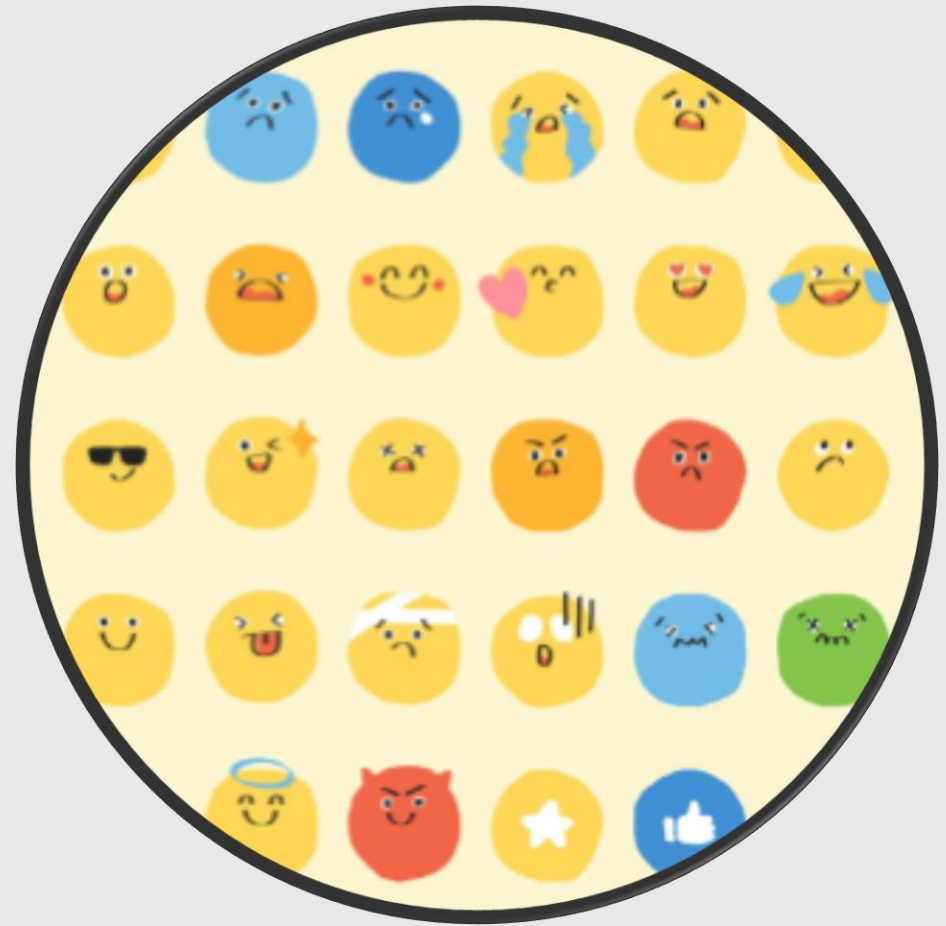
# INTRODUCTION

Image processing is the field of signal processing where both the input and output signals are images. One of the most important applications of Image processing is Facial expression recognition. Facial Expressions plays an important role in interpersonal communication



# PROBLEM STATEMENT

One of the most important application of image processing is facial emotion detection. Our emotions is revealed by the expressions in our face. Facial expression plays an important role in interpersonal communication



# System Requirements

## Hardware Requirements

- ❖ Minimum of 8GB RAM
- ❖ i5/ryzen5 or higher CPU
- ❖ 2GB dedicated GPU or higher

## Software Requirements

- ❖ PC running windows 7 or higher OS
- ❖ Any other preferred OS
- ❖ Python(version 3.5 or above)
- ❖ IDE (VS Code,Google colab, jupyter.)

## Packages

- ❖ OpenCV
- ❖ Keras
- ❖ Tensorflow

## Languages

- ❖ Python

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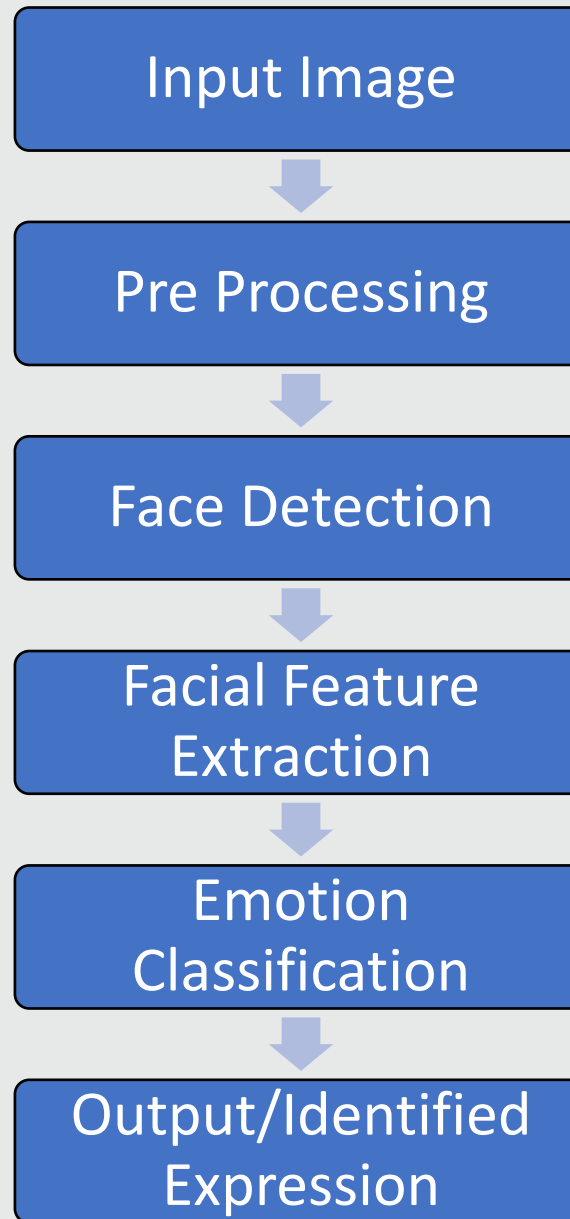
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## Languages

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# FLOW

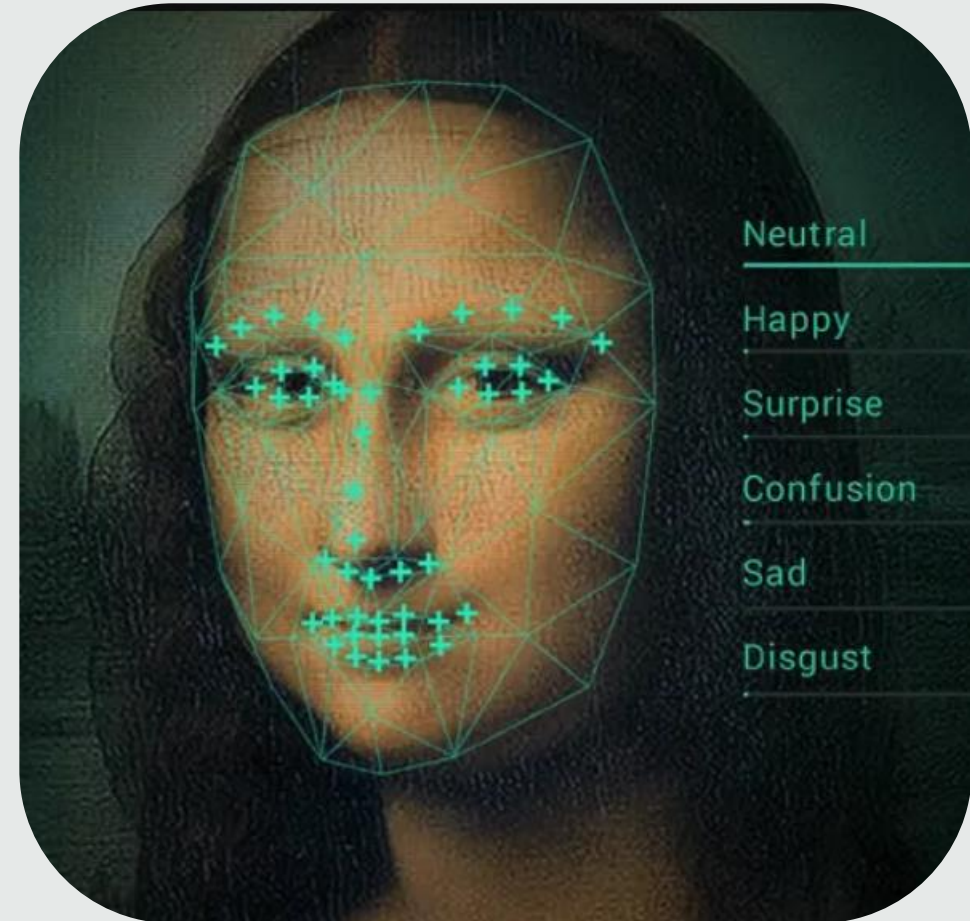


# CHART

# Functionalities

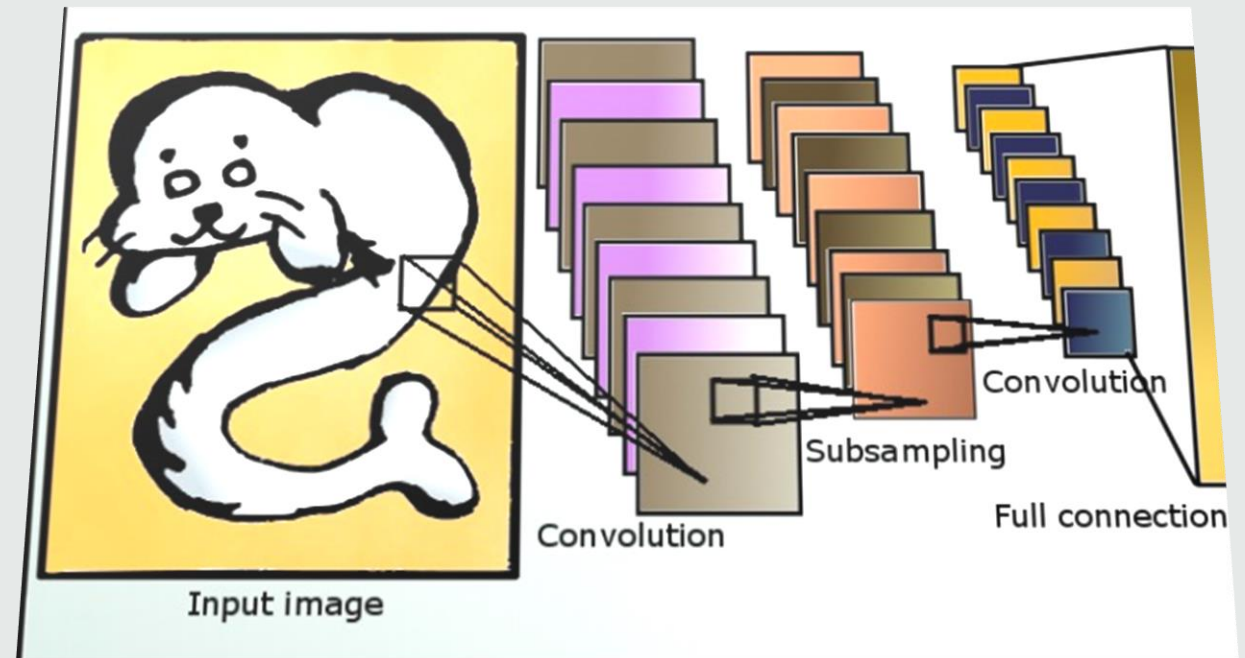
## FACE DETECTION

- ❖ Face detection is a computer technology being used in a variety of applications that identifies human faces in digital images.
- ❖ Face detection algorithms focus on the detection of frontal human faces.
- ❖ Some facial algorithms identify by doing facial feature extraction, or by analyzing relative position, size and shape of eyes, cheekbones etc.



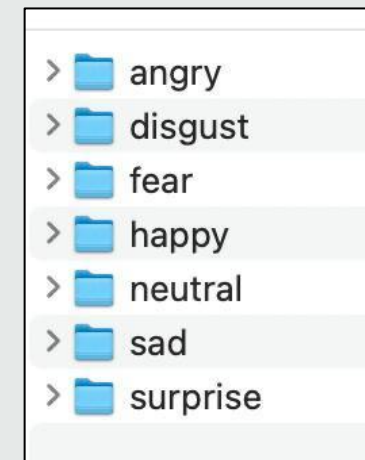
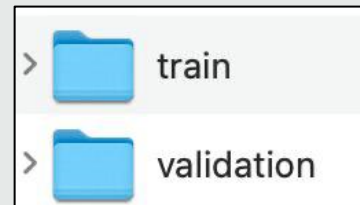
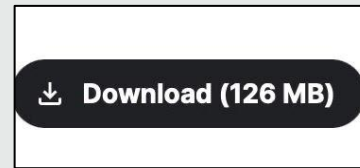
# CONVOLUTIONAL NEURAL NETWORKS

- ❖ CNN is a class of artificial neural network, most commonly applied to analyze visual imagery.
- ❖ A CNN consists of an input layer, hidden layers, and an output layer.
- ❖ The four convolutional neural network consists of similar training techniques such as : ReLu activation function, batch normalization, max polling and dropout.
- ❖ The ReLu activation function is used to increase non-linearity in the images and also makes evaluation quicker.



# IMPLEMENTATION

1. Collect training data.
2. Make a programmatic representation of faces.
3. Train your model.
4. Build a dataset of pictures.
5. Train the software by inserting new pictures into dataset.
6. Test your software to check its accuracy.

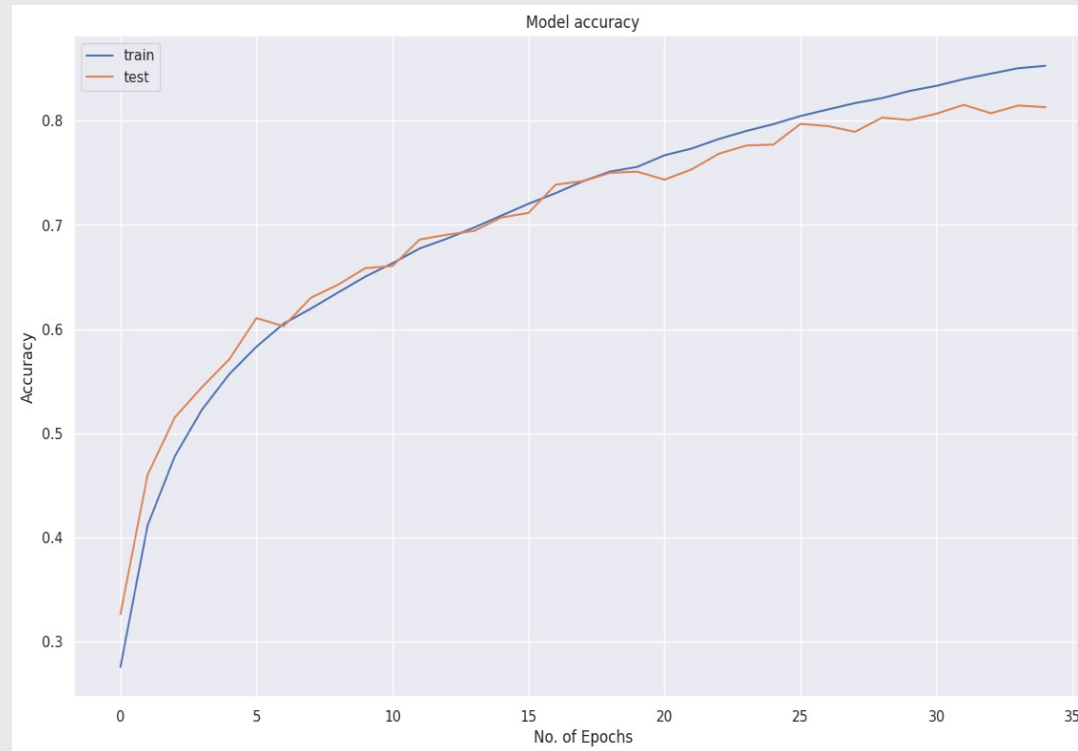


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# ANALYZING AND TESTING

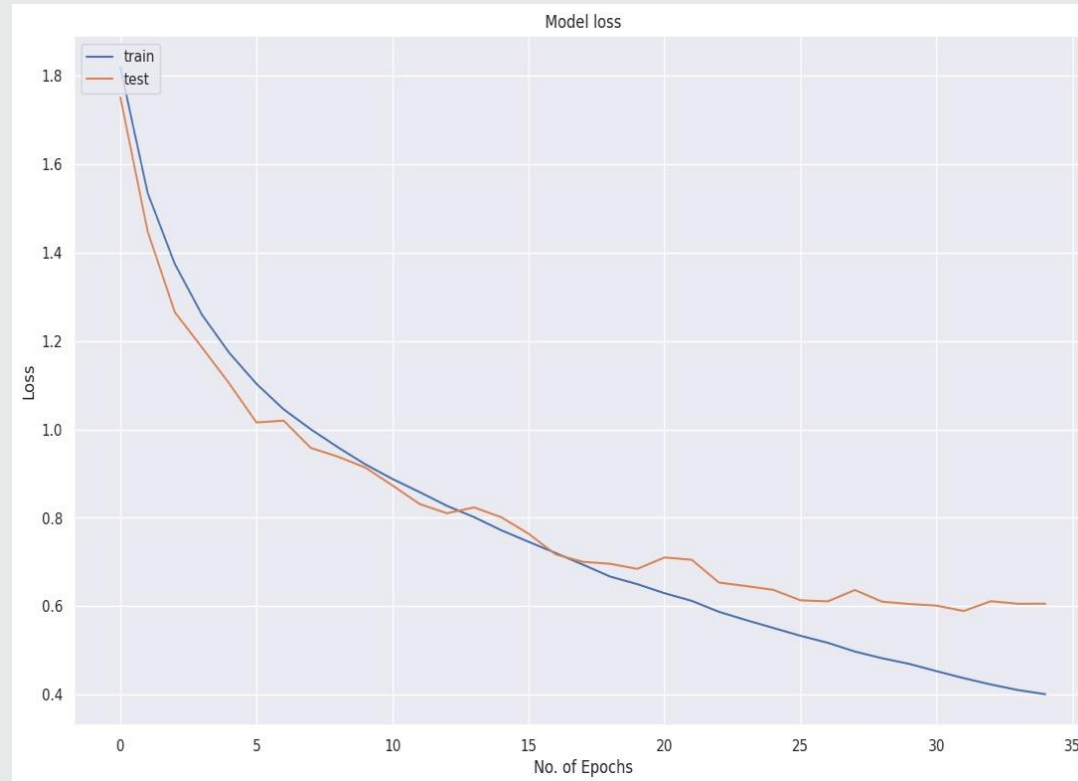
## ACCURACY GRAPH



The final accuracy score on validation comes out to be 81% which is better than most existing state-of-the-art results.

# ANALYZING AND TESTING

LOSS GRAPH



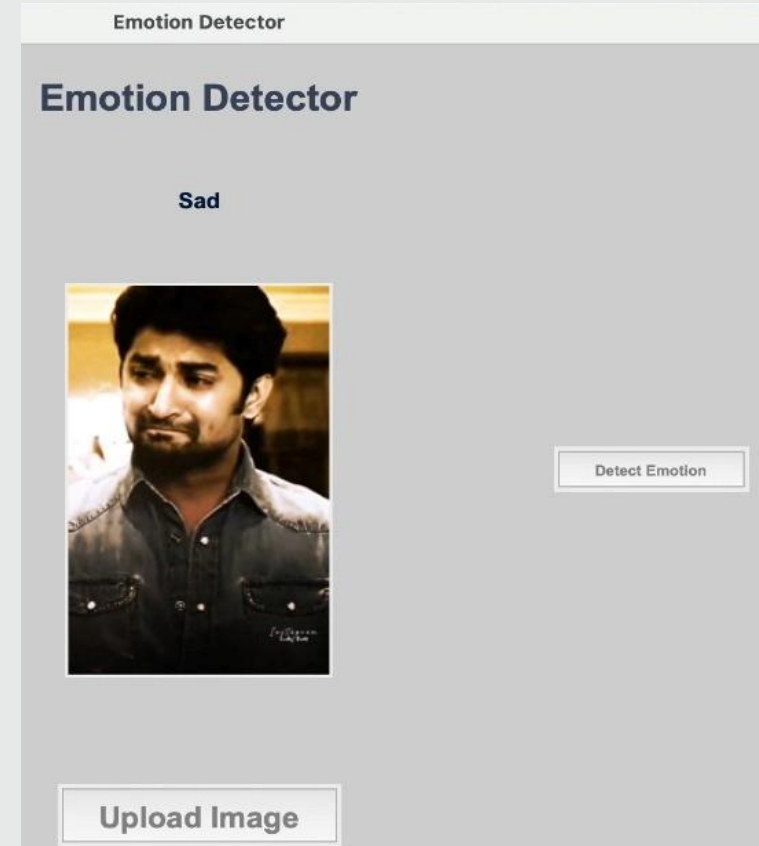
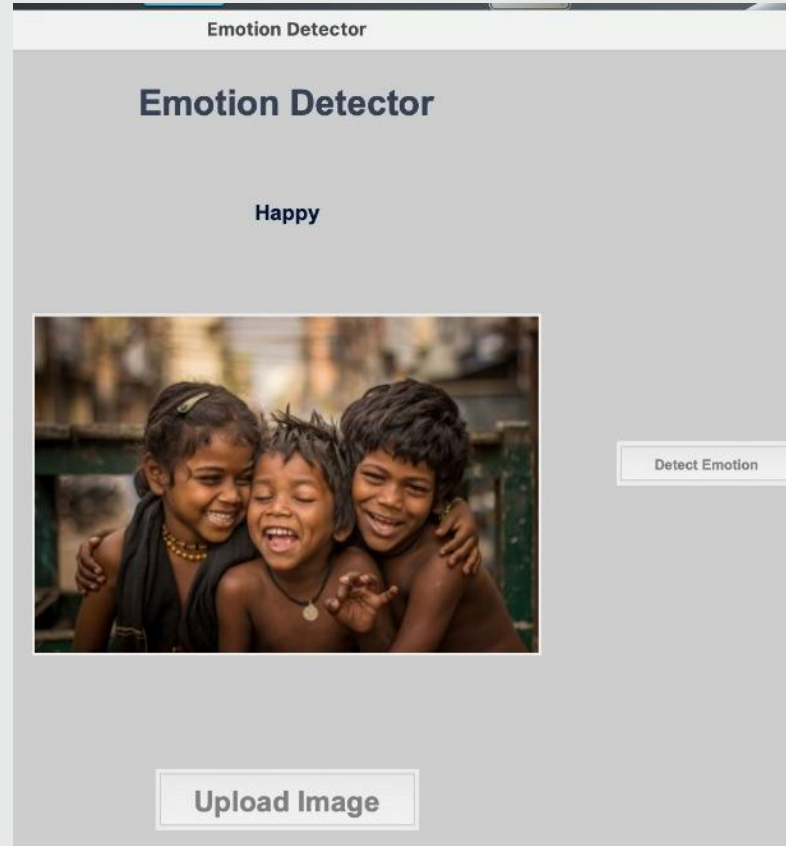
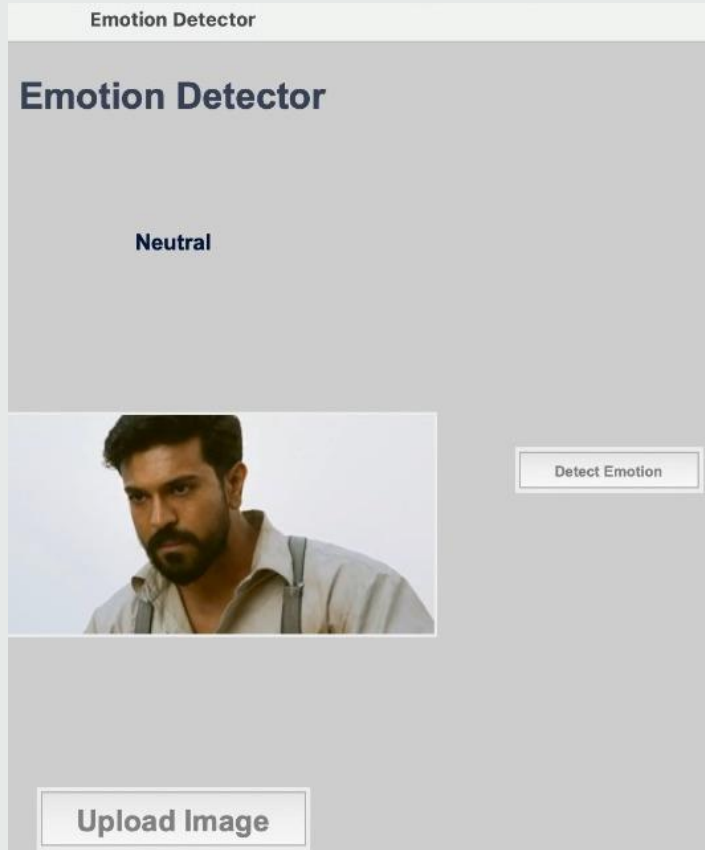
Final loss on validation data is coming out to be 0.603, which is less than 1 and better than the existing state-of-the-art results.



# TEST RESULTS

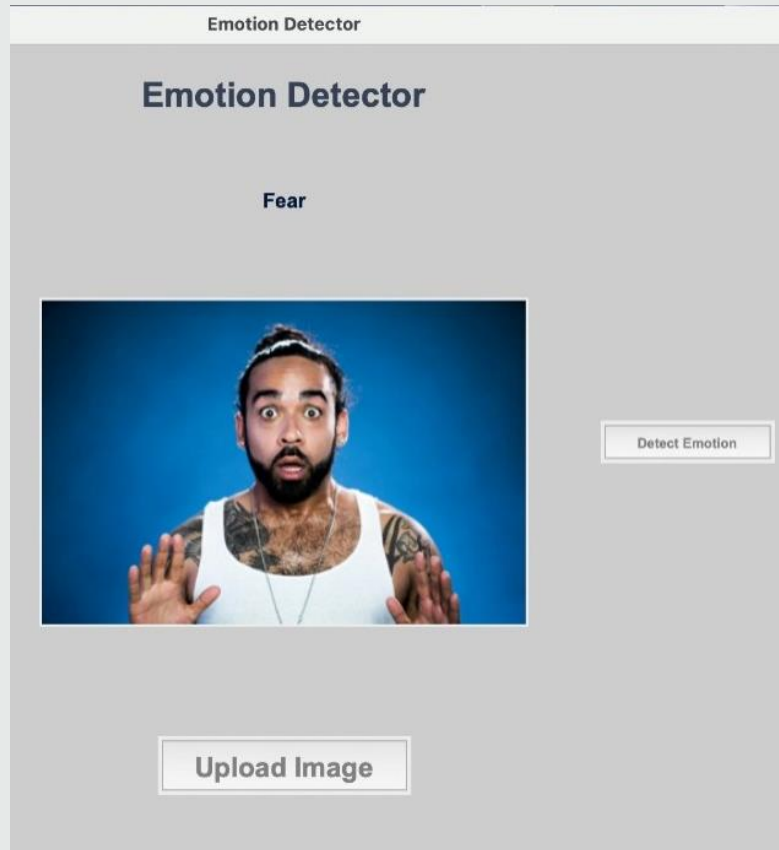
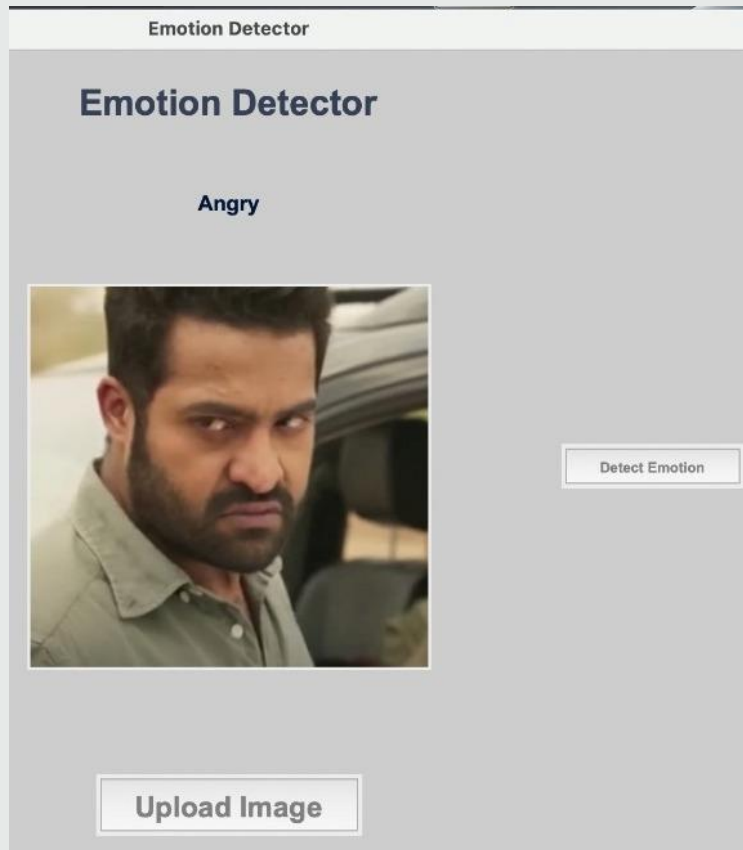


# GUI RESULTS

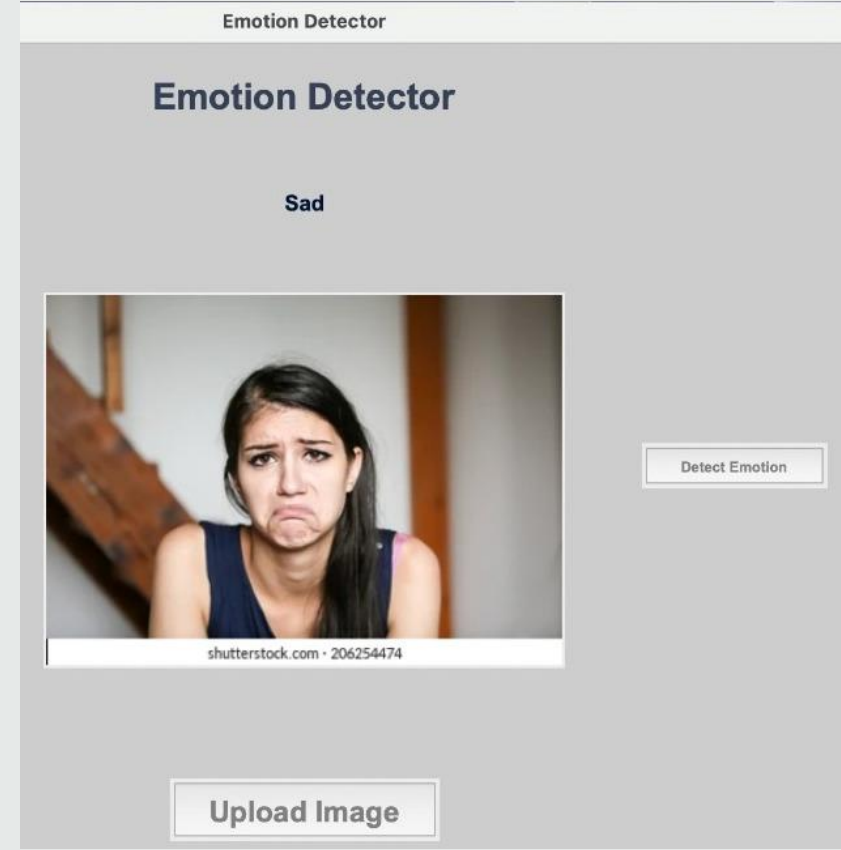
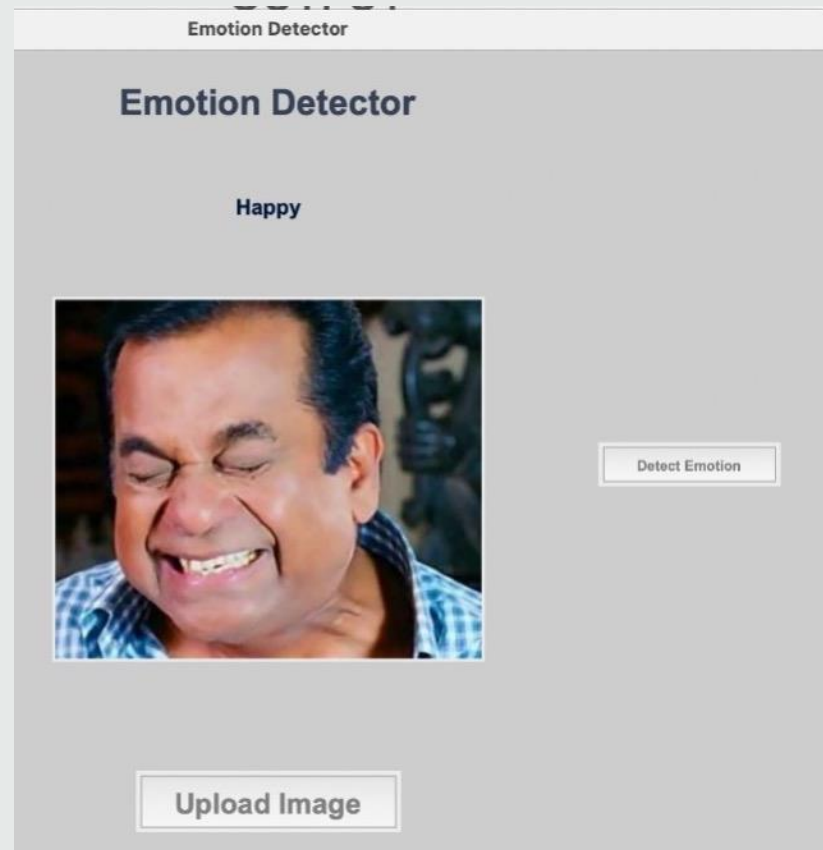
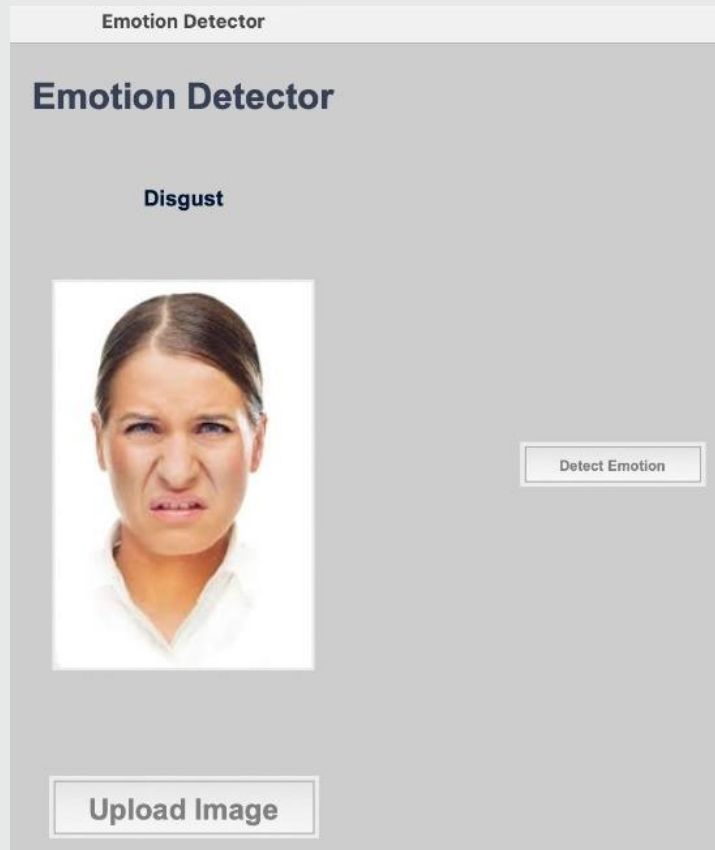




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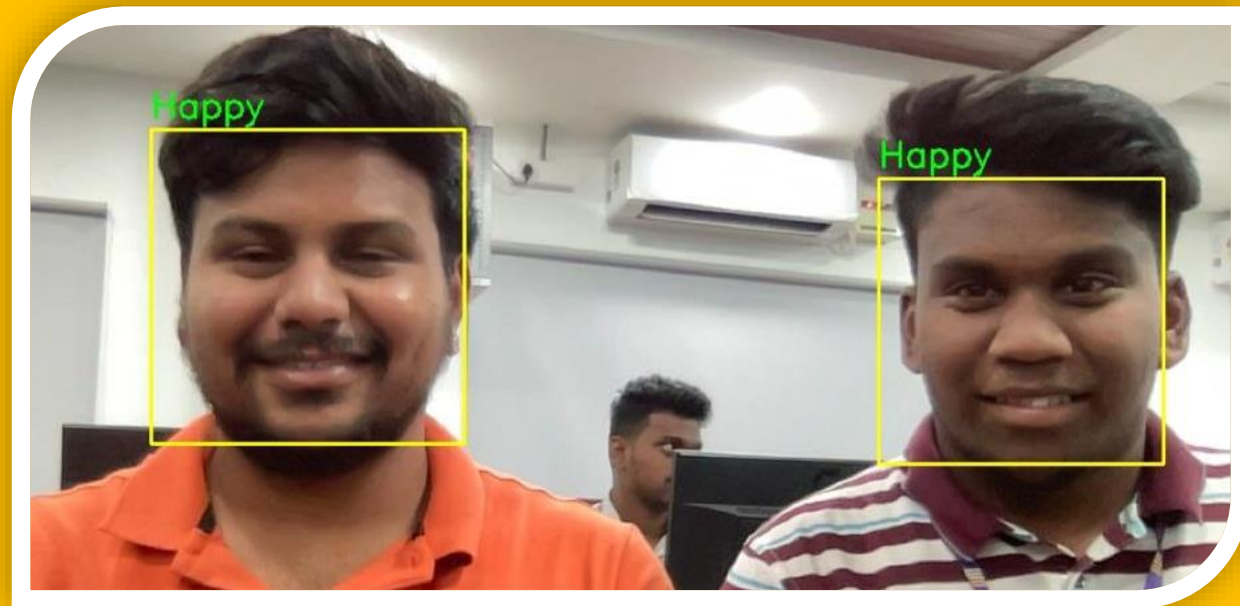


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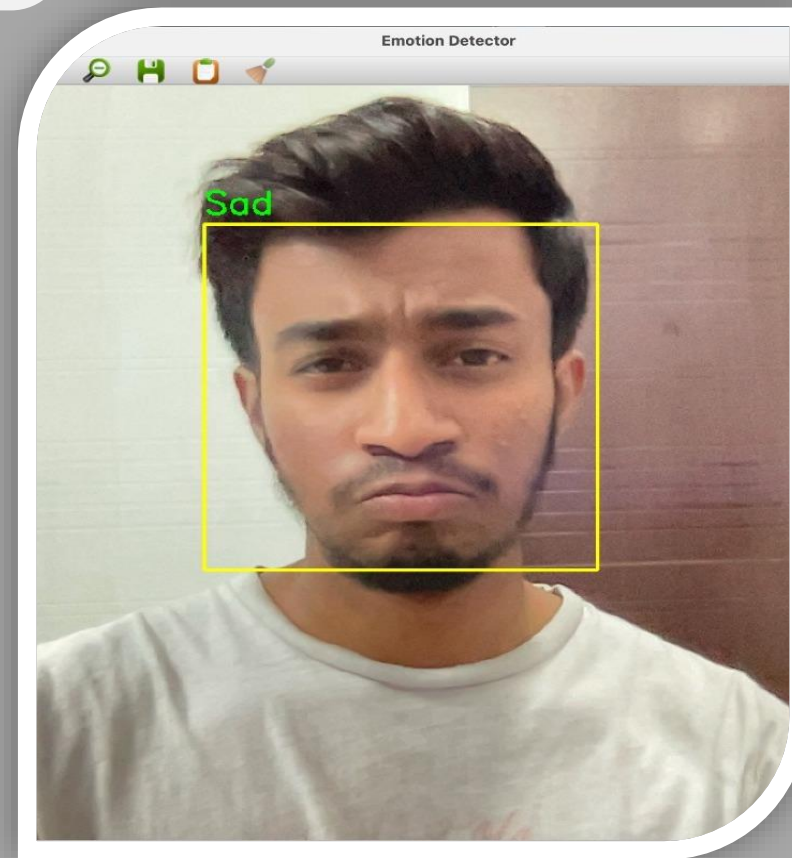
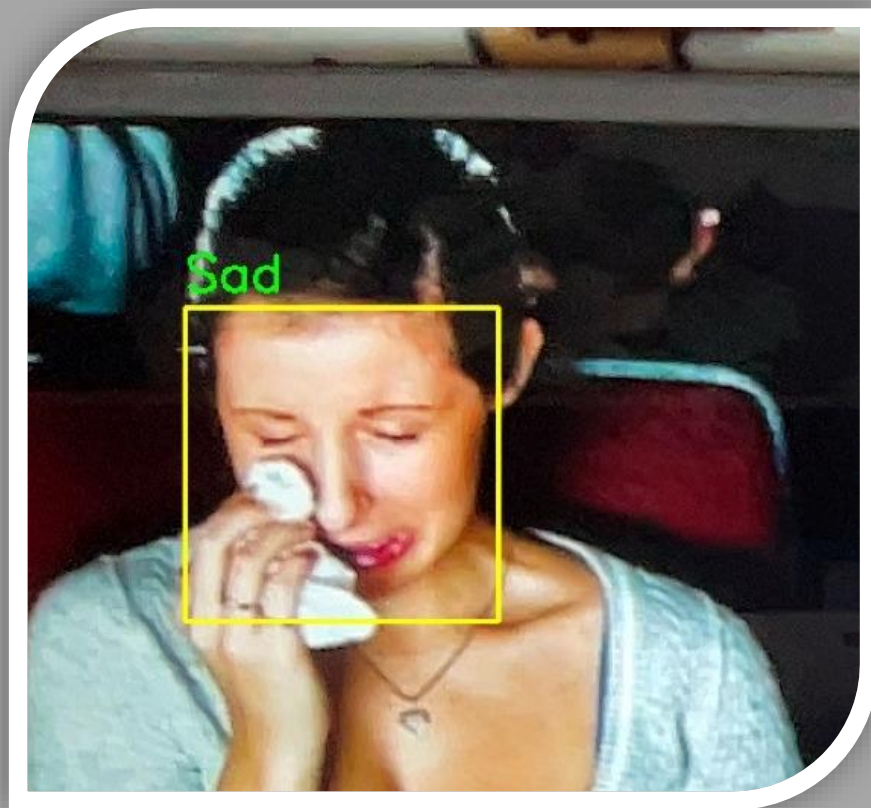




😊 HAPPY 😊

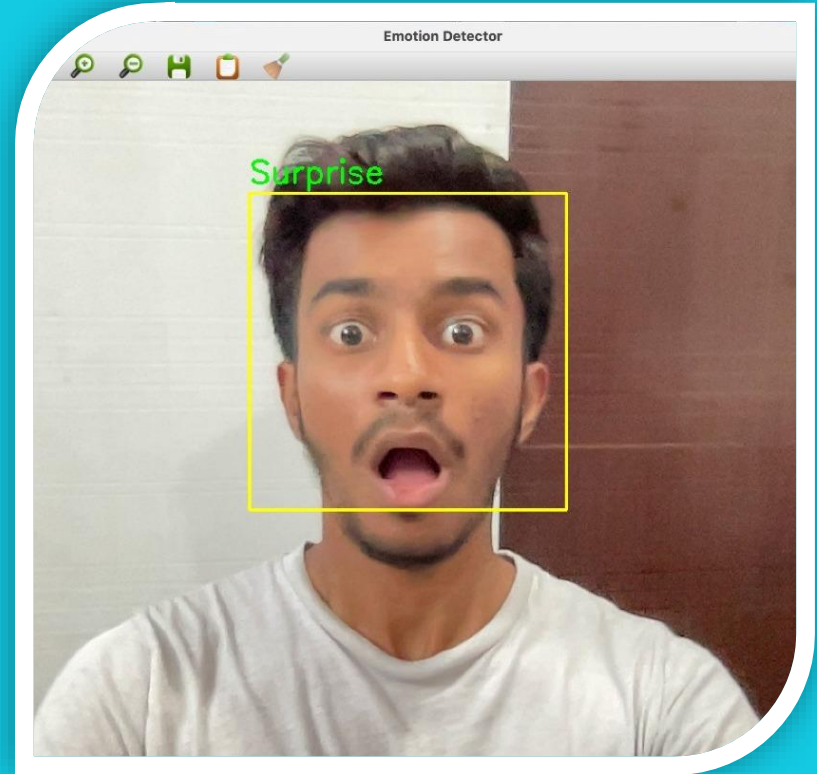
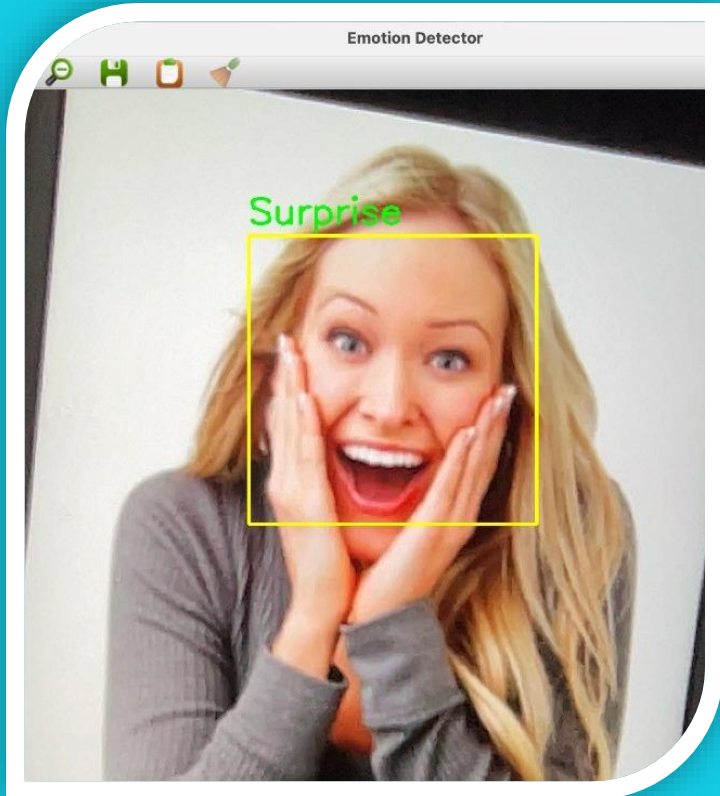


😞 SAD 😞

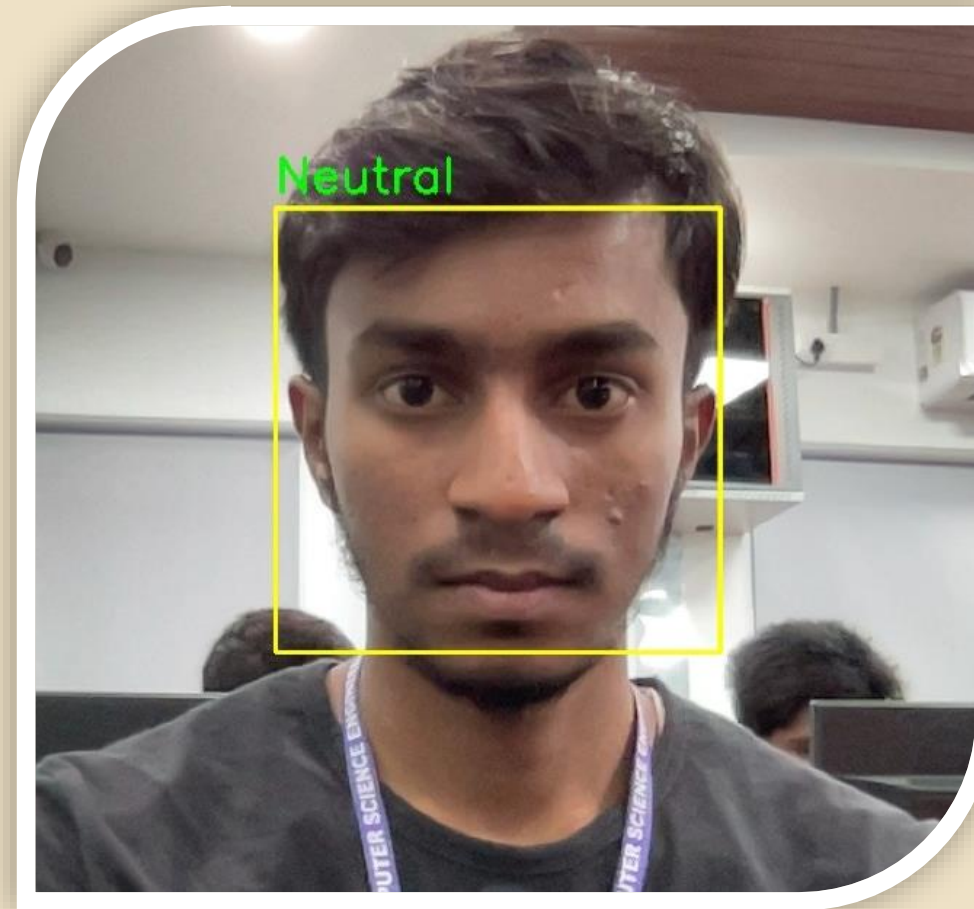
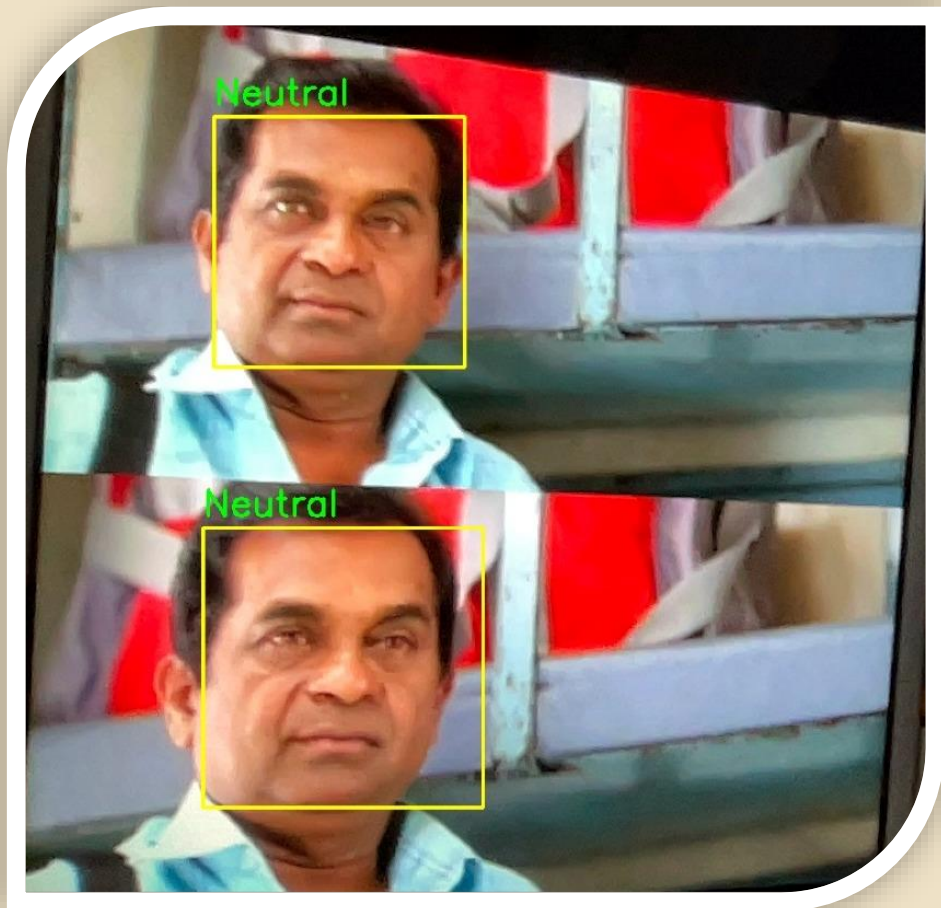




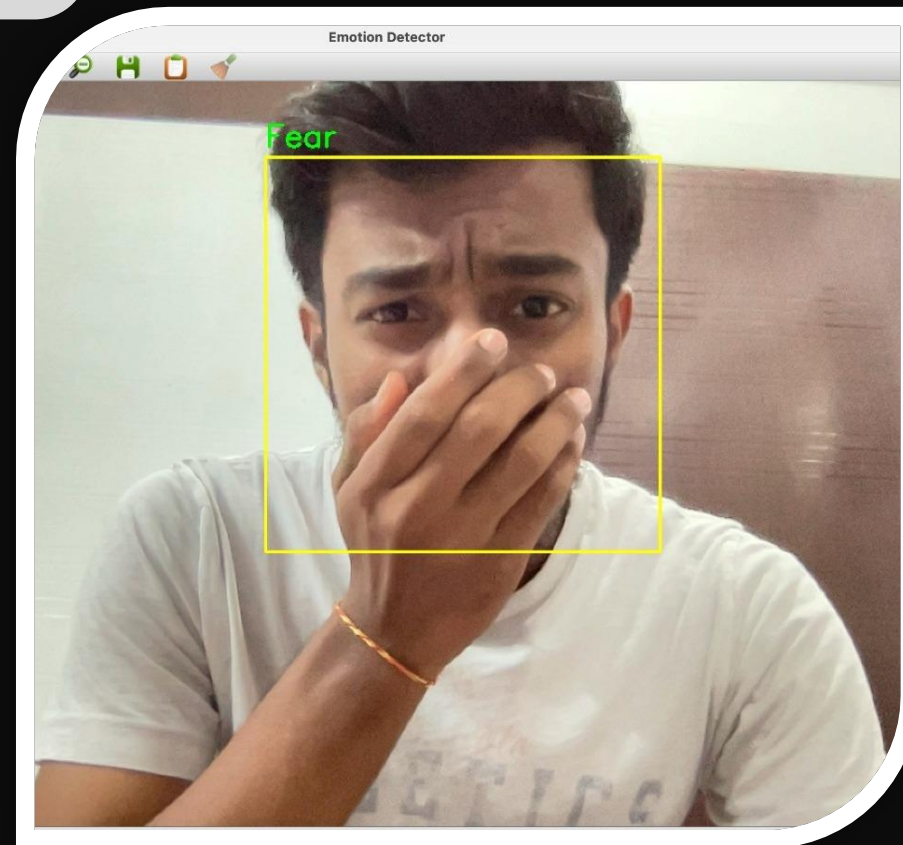
# 🤯 SURPRISE 🤯



😐 NEUTRAL 😐

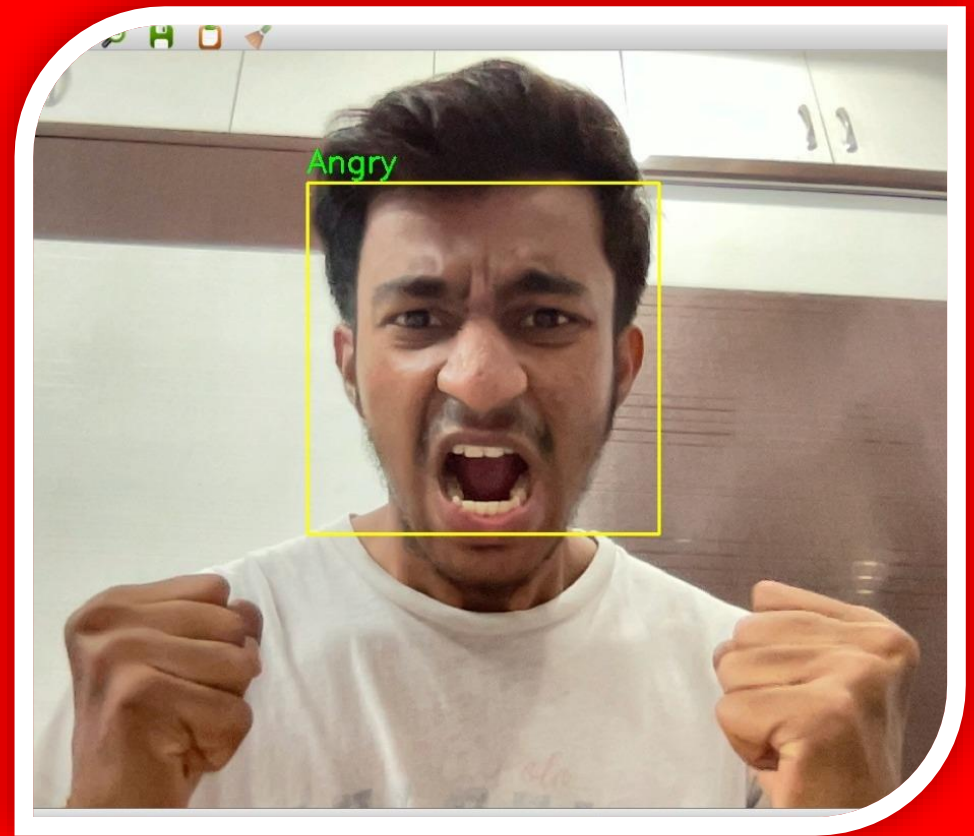
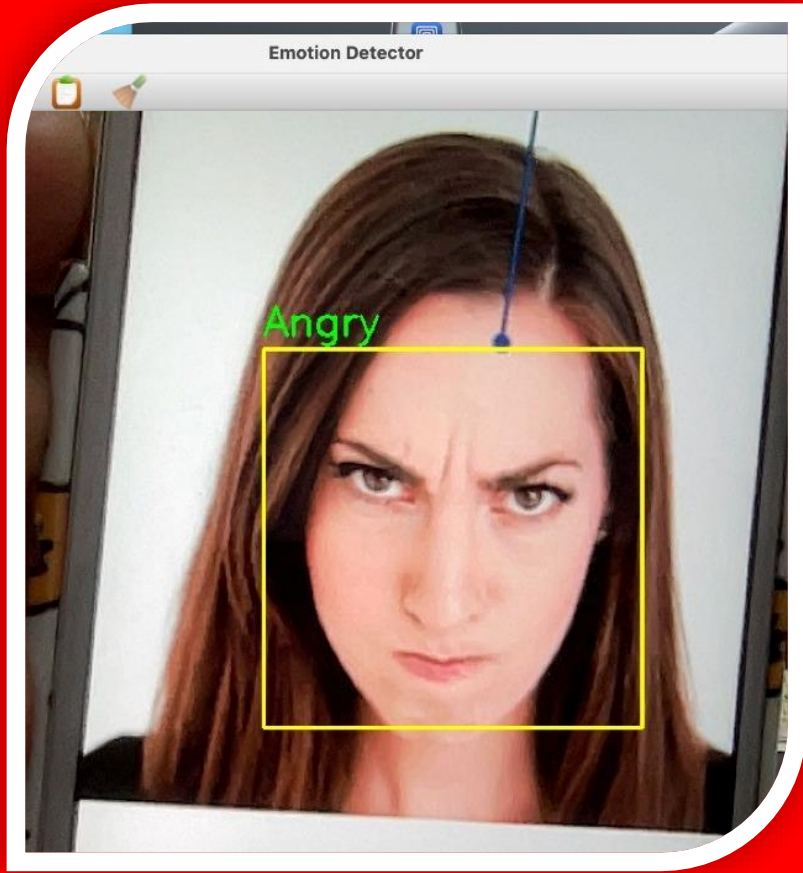


😨 FEAR 😨



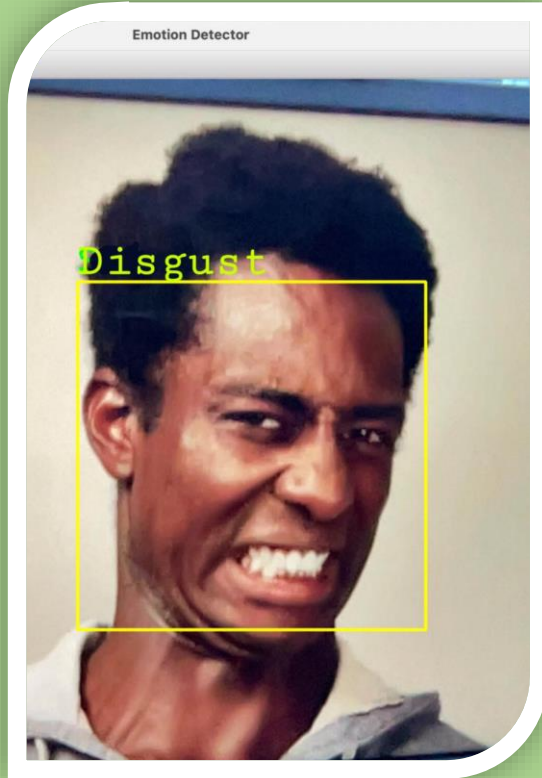


🤔 ANGRY 🤔

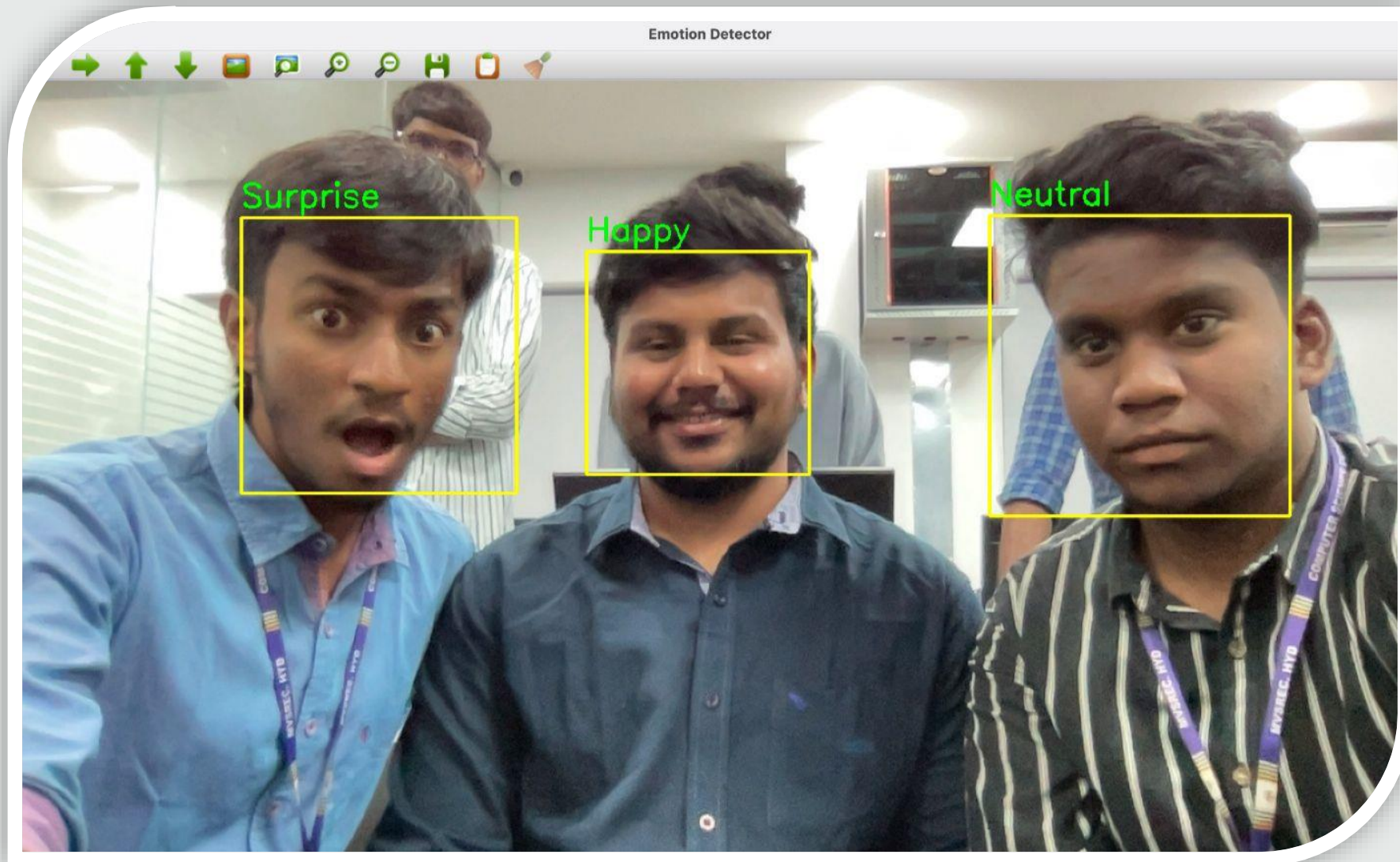




# 🤢 DISGUST 🤢



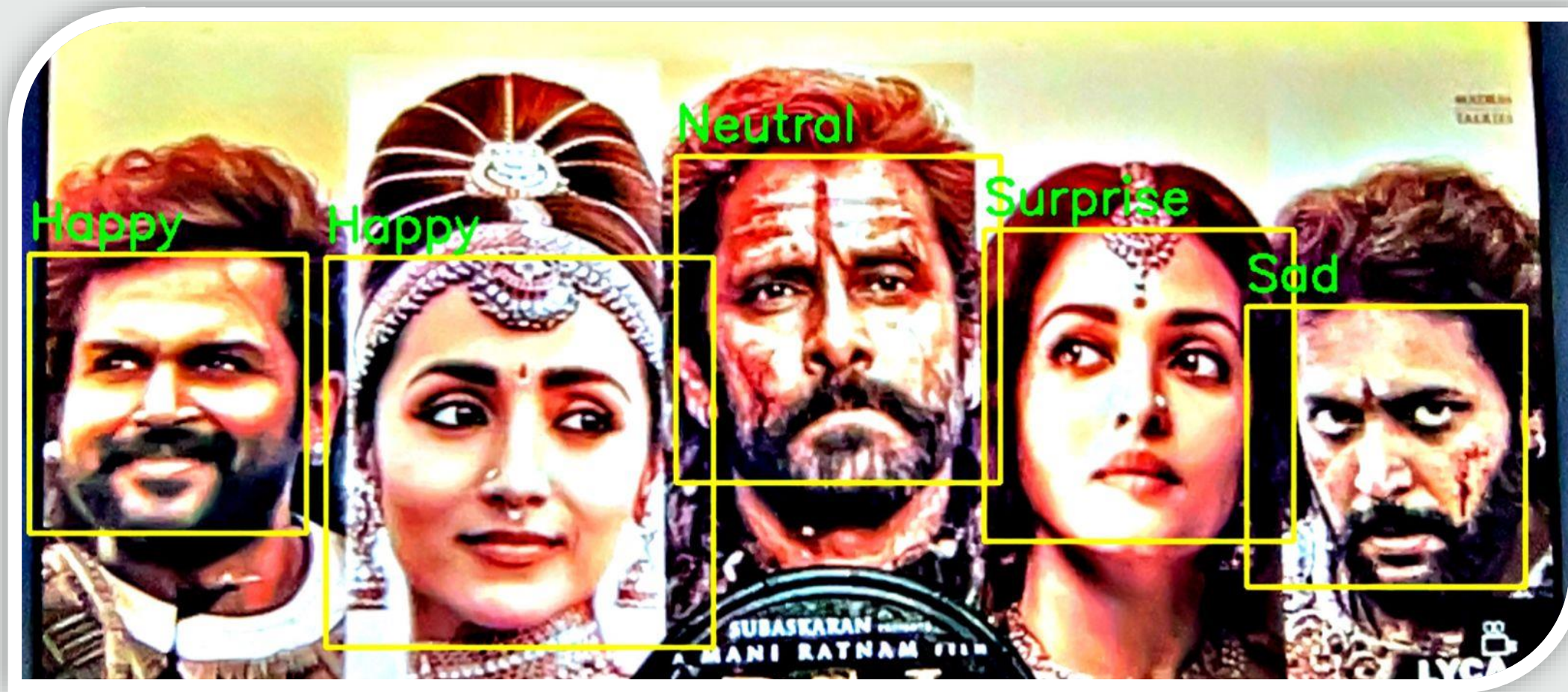
# ADDITIONAL TEST RESULTS



Multiple Facial Emotion Detection



# ADDITIONAL TEST RESULTS





# ADDITIONAL TEST RESULTS





# ADDITIONAL TEST RESULTS





# ADDITIONAL TEST RESULTS



# ADVANTAGES

- ❖ It is useful and important for security and health care purposes.
- ❖ It is crucial for easy and simple detection of human feelings at a specific moments without actually asking them.
- ❖ Facial expressions can display personal emotions and indicate an individual intentions within a social situations.
- ❖ The human face is extremely expressive, able to convey countless emotions without saying a word.

# CONCLUSION

In this work it has been shown that if a facial image of a person is given then the network can be able to recognize the face of the person. The proposed system helps to identify emotions and classify learner involvement and interest in the topic which are plotted as feedback to the instructor to improve learner experience

**Any Questions?**

Your queries are welcomed

**THANK YOU**