DEPARTMENT OF
ELECTRONICS AND COMMUNICATION ENGINEERING
Faculty of Engineering and Technology
SRM Institute of Science and Technology

MINI PROJECT REPORT

ODD Semester, 2020-2021

Lab code & Sub Name	**: 18ECE201 J PYTHON AND SCIENTIFIC PYTHON**
Year & Semester	: 3rd YEAR & 5th SEMESTER
Project Title	: FACIAL EXPRESSION (AI) RECOGNITION SYSTEM
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FACIAL EXPRESSION (AI) RECOGNITION SYSTEM

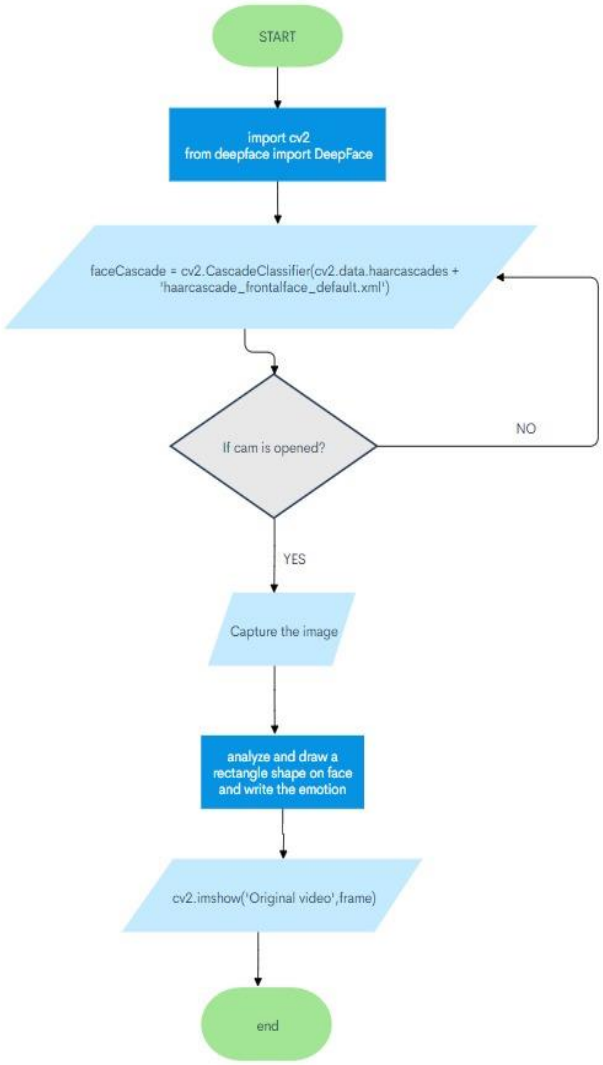
OBJECTIVE:

In this project we are presenting the real time facial expression recognition of seven most basic human expressions: ANGER, DISGUST, FEAR, HAPPY, NEUTRAL, SAD, SURPRISE.

ABSTRACT:

This model can be used for prediction of expressions of both still images and real time video. However, in both the cases we have to provide image to the model. In case of real time video the image should be taken at any frame in time and feed it to the model for prediction of expression. The system automatically detects the face using HAAR cascade then its crops it and resize the image to a specific size and give it to the model for prediction. The model will generate seven probability values corresponding to seven expressions. The highest probability value to the corresponding expression will be the predicted expression for that image.

FLOWCHART / ALGORITHM:

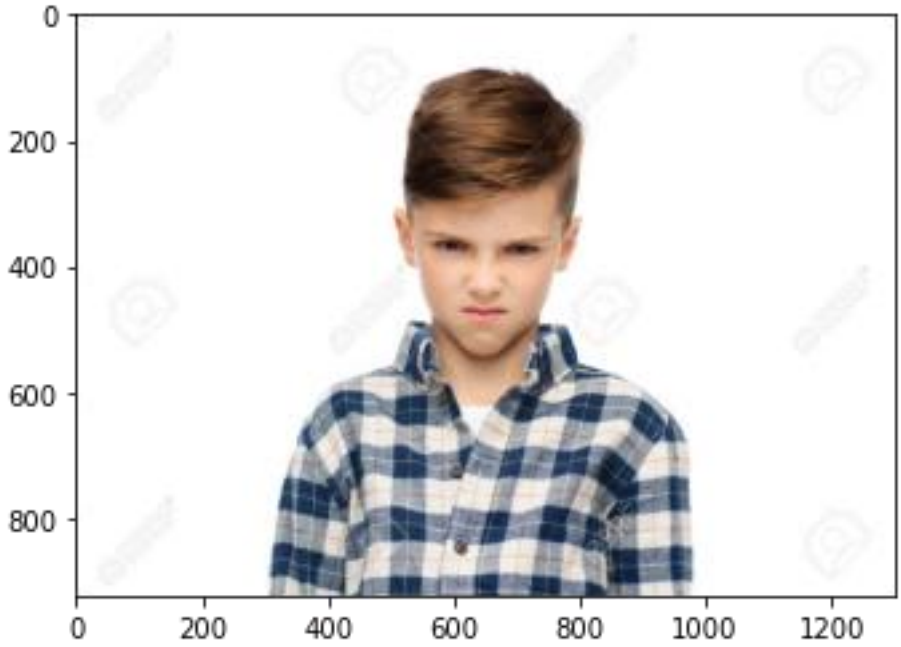


SOFTWARE REQUIREMENTS:

Anaconda Navigator,
Jupyter Notebook.

PROGRAMS:

```
from deepface import DeepFace
import cv2
import matplotlib.pyplot as plt
import  sys, numpy, os
import pandas as np
img = cv2.imread(r'C:\Users\praveen\Desktop\project\angry boy.jpg')
plt.imshow(img) #BGR
plt.imshow(cv2.cvtColor(img,cv2.COLOR_BGR2RGB))
```




```
predictions = DeepFace.analyze(img,actions = ['emotion'])
predictions  #Making predictions
predictions['dominant_emotion']
```

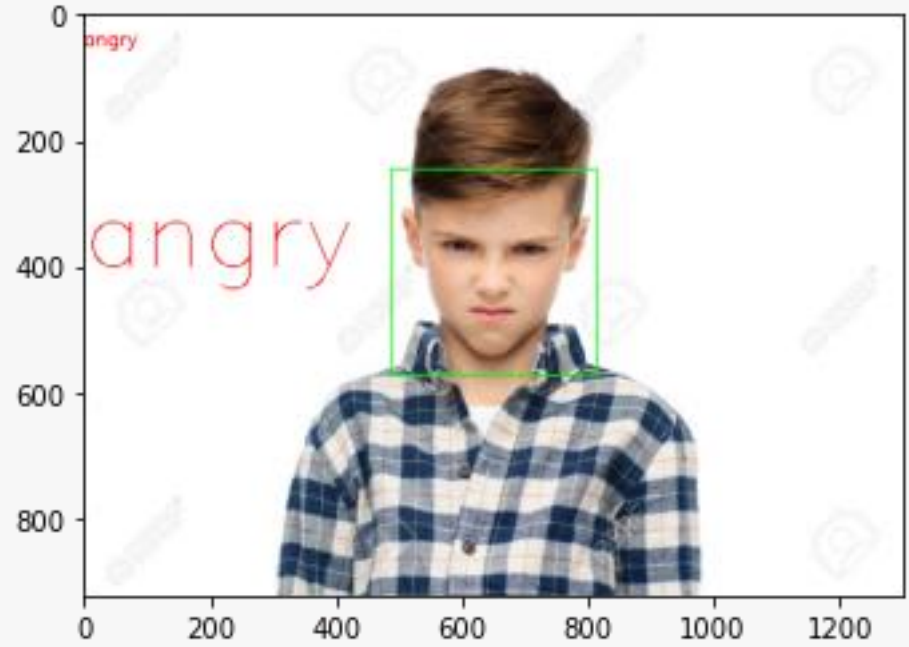
#**we are drawing a rectangle across a face**

```
faceCascade = cv2.CascadeClassifier(cv2.data.haarcascades + r'C:\Users\praveen\Desktop\project\haarcascade_frontalface_default.xml')
gray = cv2.cvtColor(img, cv2.COLOR_BGR2GRAY)
faces = faceCascade.detectMultiScale(gray,1.1,4)
for(x,y,w,h) in faces:
    cv2.rectangle(img, (x, y), (x+w, y+h), (0,255,0),2)
plt.imshow(cv2.cvtColor(img,cv2.COLOR_BGR2RGB))
```

#inserting text on video

```
font = cv2.FONT_HERSHEY_SIMPLEX

cv2.putText(img,
                 predictions['dominant_emotion'],
                 (0,400),
                 font, 5,
                 (0, 0, 255),
                 2,
                 cv2.LINE_4);
plt.imshow(cv2.cvtColor(img,cv2.COLOR_BGR2RGB))
```



#Real time video for Face emotion Recognition

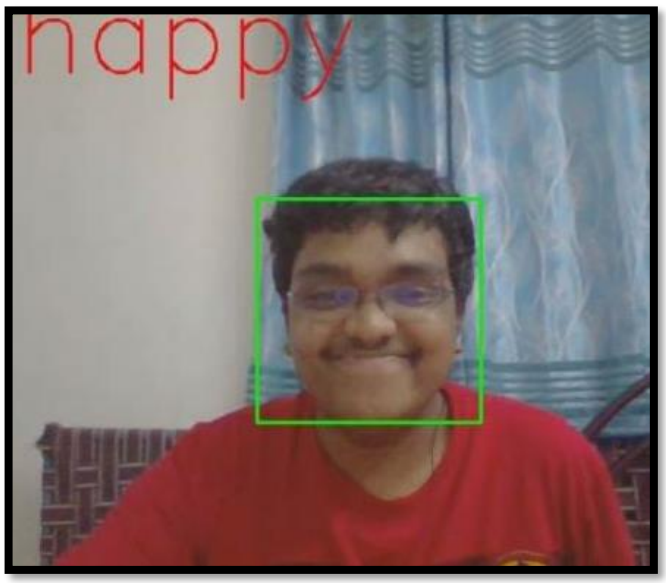
```
import cv2
from deepface import DeepFace
faceCascade = cv2.CascadeClassifier(cv2.data.haarcascades +
'haarcascade_frontalface_default.xml')
cap = cv2.VideoCapture(1)
if not cap.isOpened():
    cap = cv2.VideoCapture(0)
if not cap.isOpened():
    raise IOError("Cannot open webcam")
while True:
    ret,frame = cap.read()##read one image from a video
    result = DeepFace.analyze(frame,actions = ['emotion'])
    gray = cv2.cvtColor(frame,cv2.COLOR_BGR2GRAY)
    faces = faceCascade.detectMultiScale(gray,1.1,4)
    for (x, y, w, h) in faces:
      cv2.rectangle(frame, (x, y), (x+w, y+h), (0, 255,0),2)
```

```
    font = cv2.FONT_HERSHEY_SIMPLEX
    cv2.putText(frame,
                result['dominant_emotion'],
                (50,50),
                font, 3,
                (0, 0, 255),
                2,
                cv2.LINE_4)
     cv2.imshow('Original video',frame)
     if cv2.waitKey(2) & 0xFF == ord('q'):
         break
cap.release()
cv2.destroyAllWindows()
```

OUTPUT:

NEUTRAL:

HAPPY:



SAD:

CONCLUSIONS:

Hence we are successfully capturing the real time different facial expression recognition of humans and in Images.

DRIVE LINK:

https://drive.google.com/file/d/15e-MODkP7mAmIXaJYlSFB_CK9M9Sufqb/view?usp=drivesdk