FINAL REPORT

INT - 404

Title: Smile Detection Project

Submitted to

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Submitted By

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<u>ABSTRACT</u>

Smile detection from facial images is a specialized and challenging problem. **"Smile is the best ornament a human can adorn"**. As one of the most informative expressions, smiles convey basic underlying emotions, such as happiness and satisfaction, which lead to multiple applications, e.g., human behaviour analysis, guessing his moods on particular day or time. This project is a small part of emotion detection project.

The main aim of this project is to detect smile on human faces so that we can predict its nature or mood on a particular time or day. For example when an employ goes for work after a weekend his mood is not happy so he does not have smile on his face. Similarly on last working day of week his expressions are quite different. This project is basically used by organization to analyse behaviour of their staff, clients and students. This project is limited to detect only smile on human faces.

AIM: To develop a model that can classify facial pictures into 'Smile' or 'No smile' and further draw statistics to analyse happiness rate of people.

MOTIVATION: "Smile is the best ornament a human can adorn". This statement alone gave enough motivation to work on a project to detect smiles and further analyse them.

OBJECTIVE: The current objective is to classify images(facial) into 'Smile' and 'None' category.

IMPLEMENTATION

```python
import cv2

facePath = "lbpcascade_frontalface.xml"
faceCascade = cv2.CascadeClassifier(facePath)

finalimage=[]
smilePath = "haarcascade_smile.xml"
smileCascade = cv2.CascadeClassifier(smilePath)
im=["img1.jpeg","img2.jpeg","img3.jpeg","img4.jpeg","img5.jpeg","img6.jpeg","img7.jpeg"]

for i in im:
    img = cv2.imread(i)
    gray = cv2.cvtColor(img, cv2.COLOR_BGR2GRAY)
    faces = faceCascade.detectMultiScale(
    gray,
    scaleFactor= 1.1,
    minNeighbors=8,
    minSize=(55, 55),
    flags=cv2.CASCADE_SCALE_IMAGE
    )
    for (x, y, w, h) in faces:
        cv2.rectangle(img, (x, y), (x+w, y+h), (0, 0, 255), 2)
        roi_gray = gray[y:y+h, x:x+w]
        roi_color = img[y:y+h, x:x+w]


        smile = smileCascade.detectMultiScale(
            roi_gray,
            scaleFactor= 1.16,
            minNeighbors=35,
            minSize=(25, 25),
            flags=cv2.CASCADE_SCALE_IMAGE
        )
```
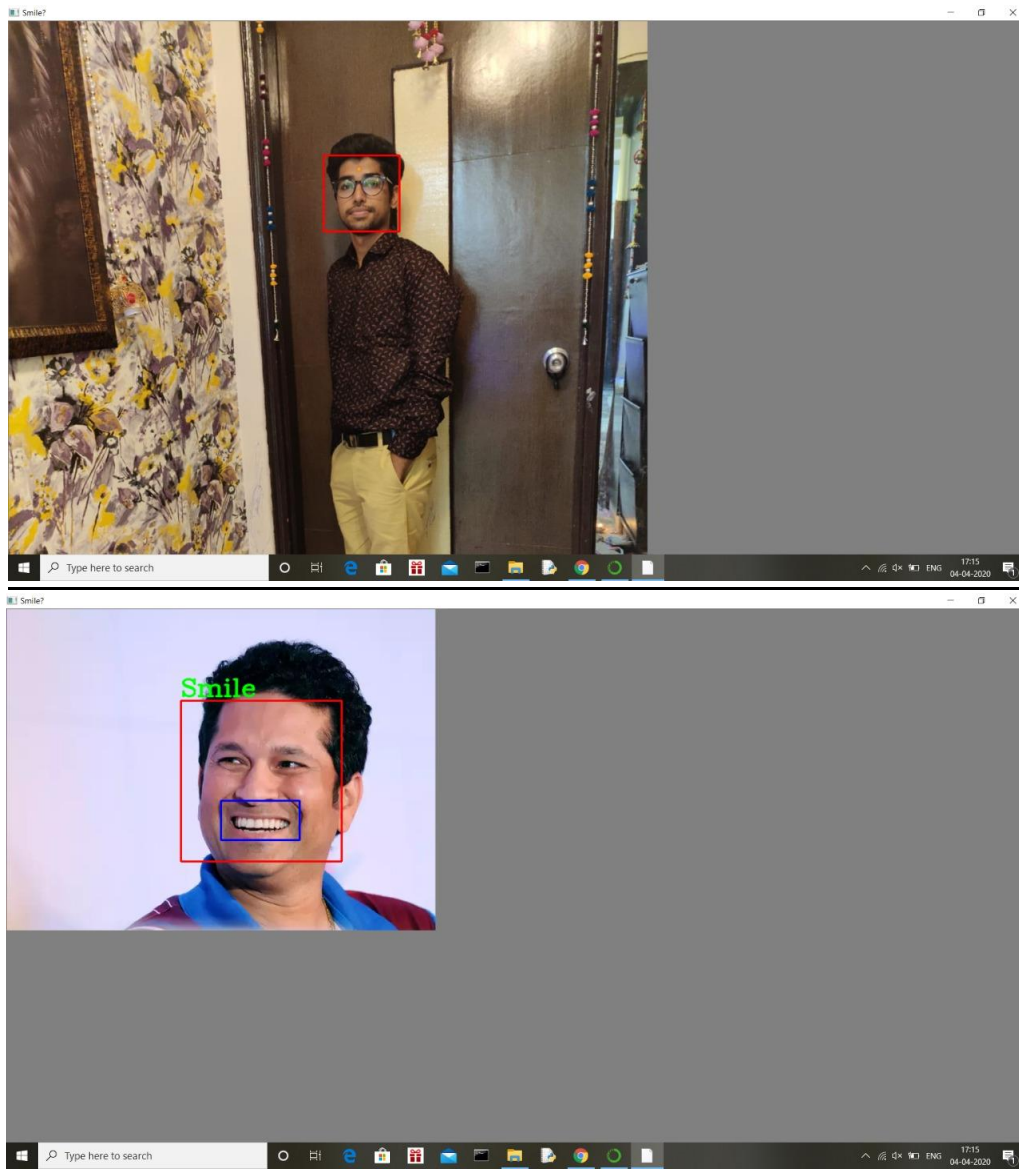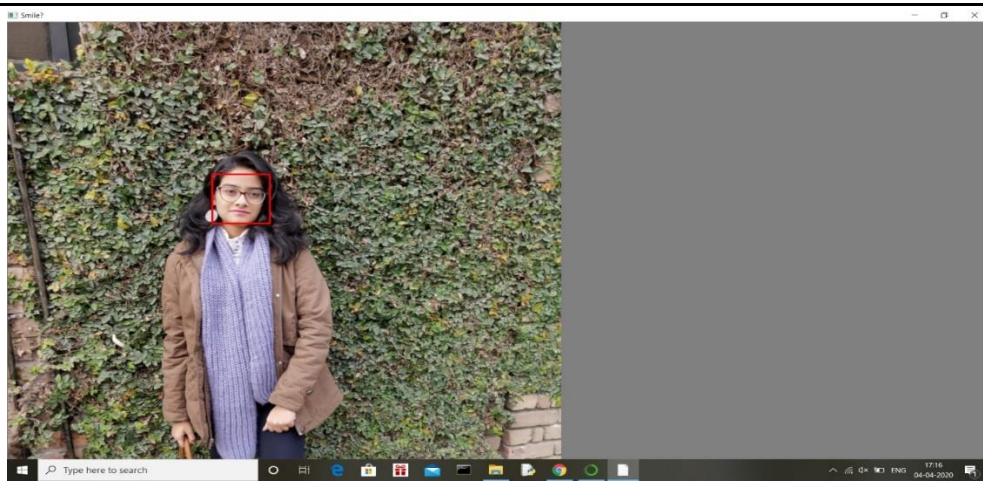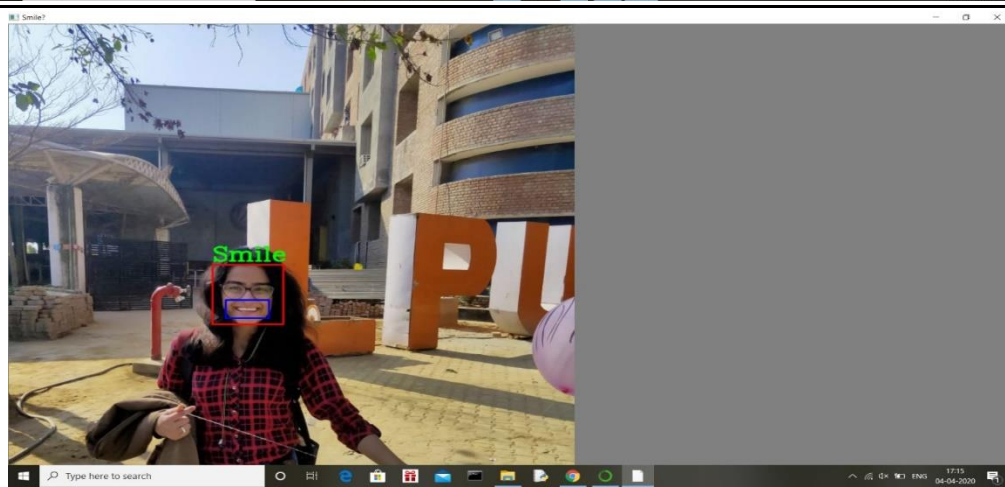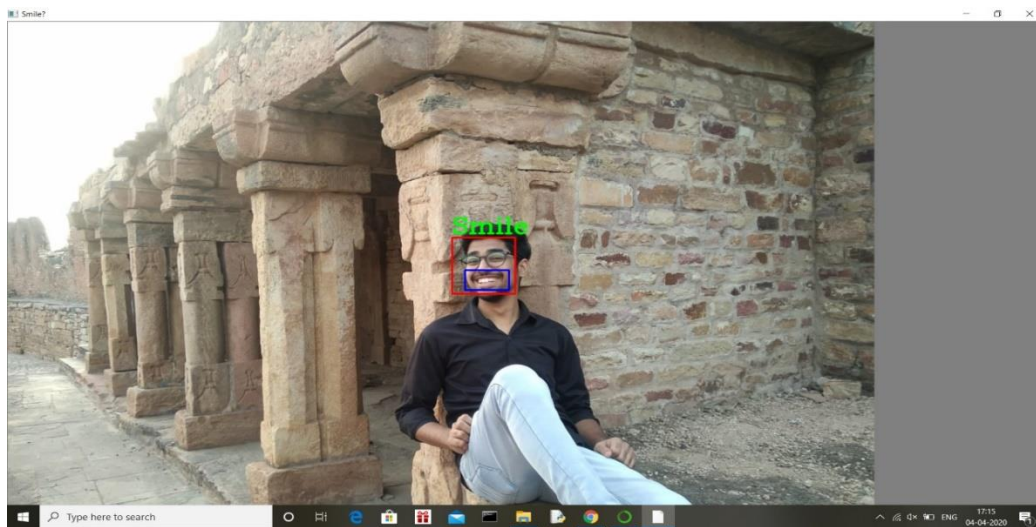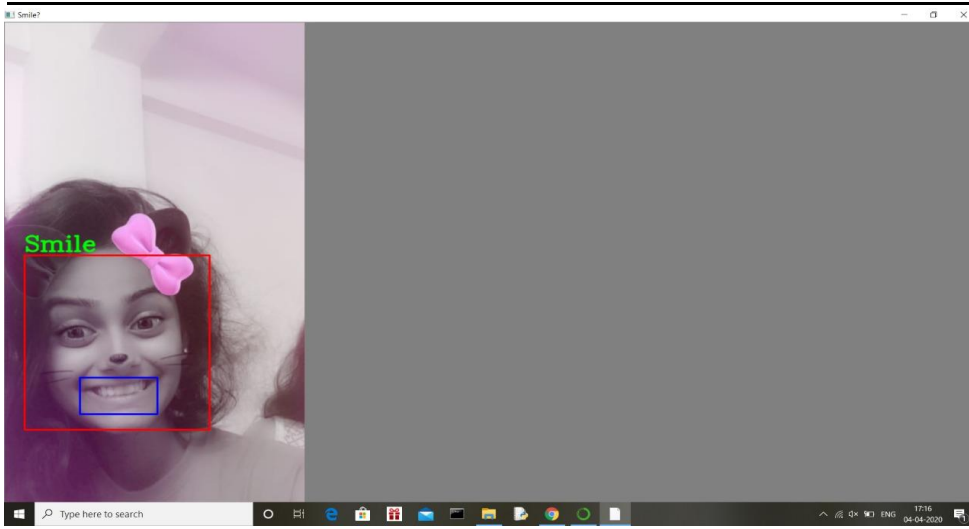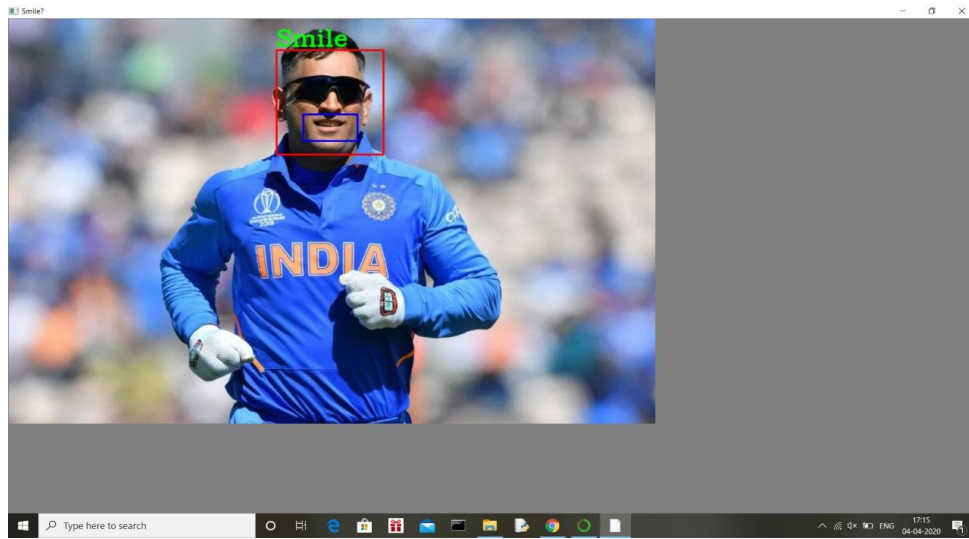
```
for (x2, y2, w2, h2) in smile:
    cv2.rectangle(roi_color, (x2, y2), (x2+w2, y2+h2), (255, 0, 0), 2)
    cv2.putText(img,'Smile',(x,y-7), 3, 1.2, (0, 255, 0), 2, cv2.LINE_AA)


cv2.imshow('Smile?', img)
#cv2.imwrite("smile.jpg",img)
c = cv2.waitKey(0)
```

RESULT/OUTPUT

LIBRARIES USED

OPEN CV: It is a library of programming functions mainly aimed at real-time computer vision. It is open source and easy to use. This is used mainly because code was written in python.

SCOPE OF PROJECT

This project if properly developed can be used by organization to track the emotional state (happiness factor) of their employees/staff/clients.

This project can be used by an organization in which daily attendance of employs or students is needed. It can be a part of biometric attendance in IT industries and in different schools and colleges. When the user presses his finger or punch his card on biometric machine his picture got clicked and it detects smile on his face so that one can analyse his or her moods.

Work Distribution:

Name	Roll No.	Work
Saundarya Modak	6	Develop the algorithm to detect smiles.
Dhairya Wadhwani	44	Collect and feed dataset to the algorithm for training and detection

GitHub Link: - https://github.com/yuu-melody/Smile-Detection-AI-assignment

References: -

• **Haar Cascade- ML object detection algorithm**.
http://www.willberger.org/cascade-haar-explained/

• https://www.geeksforgeeks.org/face-detection-usingpython-and-opencv-with-webcam/

• https://www.geeksforgeeks.org/detection-specificcolorblue-using-opencv-python/