

231501037

EXP NO: 09

DATE: 26-09-2025

Face Detection

Aim: Face Detection on available online human face image datasets

Algorithm:

1. Load pretrained Haar Cascade or DNN face detector.
2. Read image or video frame.
3. Convert to grayscale for faster detection.
4. Detect faces using detectMultiScale().
5. Draw bounding boxes around faces.
6. Display and save output.

Code:

```
import cv2
```

```
from google.colab.patches import cv2_imshow
```

```
face_cascade =
```

```
cv2.CascadeClassifier(cv2.data.haarcascades+'haarcascade_frontalface_default.xml')
```

```
img = cv2.imread('face.jpg'); gray = cv2.cvtColor(img, cv2.COLOR_BGR2GRAY)
```

```
faces = face_cascade.detectMultiScale(gray, 1.3, 5)
```

```
for (x,y,w,h) in faces: cv2.rectangle(img,(x,y),(x+w,y+h),(0,255,0),2)
```

```
cv2_imshow(img)
```

```
import dlib, cv2
```

```
from google.colab.patches import cv2_imshow
```

```
detector = dlib.get_frontal_face_detector()
```

```
img = cv2.imread('face.jpg'); rgb = cv2.cvtColor(img, cv2.COLOR_BGR2RGB)
```

```
for d in detector(rgb): cv2.rectangle(img,(d.left(),d.top()),(d.right(),d.bottom()),(0,255,0),2)
```

```
cv2_imshow(img); cv2.waitKey(0); cv2.destroyAllWindows()
```

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```
from mtcnn import MTCNN
```

```
import cv2
```

```
from google.colab.patches import cv2_imshow
```

```
detector = MTCNN(); img = cv2.imread('face.jpg')
```

```
res = detector.detect_faces(cv2.cvtColor(img, cv2.COLOR_BGR2RGB))
```

```
for r in res: x,y,w,h = r['box']; cv2.rectangle(img,(x,y),(x+w,y+h),(0,255,0),2)
```

```
cv2_imshow(img); cv2.waitKey(0); cv2.destroyAllWindows()
```

```
import cv2
```

```
from google.colab.patches import cv2_imshow
```

```
net =
```

```
cv2.dnn.readNetFromCaffe('deploy.prototxt','res10_300x300_ssd_iter_140000.caffemodel')
```

```
img = cv2.imread('face.jpg'); h,w = img.shape[:2]
```

```
blob = cv2.dnn.blobFromImage(cv2.resize(img,(300,300)),1.0,(300,300),(104,177,123))
```

```
net.setInput(blob); dets = net.forward()
```

```
for i in range(dets.shape[2]):
```

```
    if dets[0,0,i,2]>0.5:
```

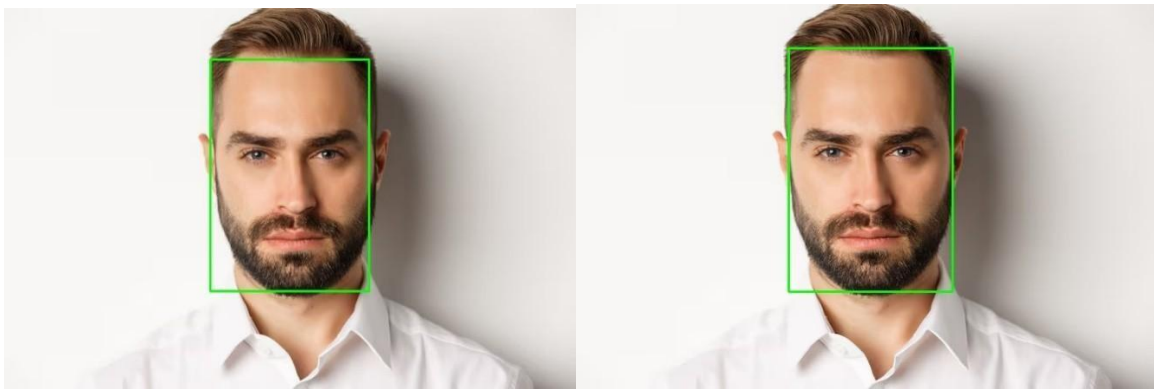
```
        box = dets[0,0,i,3:7]*[w,h,w,h]; x1,y1,x2,y2 = box.astype(int)
```

```
        cv2.rectangle(img,(x1,y1),(x2,y2),(0,255,0),2)
```

```
cv2_imshow(img); cv2.waitKey(0); cv2.destroyAllWindows()
```

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Output:



Result: Thus, Face Detection on available online human face image datasets was implemented successfully.