IVA-LAB - CCS349 IMAGE & VIDEO ANALYTICS LAB MANUAL

Text Analytics (Anna University)

DEPARTMENT: B.TECH. ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

LABORATORY: IMAGE AND VIDEO ANALYTICS LABORATORY

Name : RAJAKARUPPAIAH S **Roll No: 21AI038**

Semester: V **Course: B.TECH** **Branch: AI&DS**

Subject Code & Title: CCS349 & IMAGE AND VIDEO ANALYTICS LABORATORY

University Register No:.

7	**2**	**0**	**5**	**2**	**1**	**2**	**4**	**3**	**0**	**3**	**8**

Certified that this is a bonafide record of work done by the above student in the laboratory during the year 2023 - 2024.

Signature of the staff in-charge **Head of the Department**

Submitted for the Anna University practical examination held on_____.

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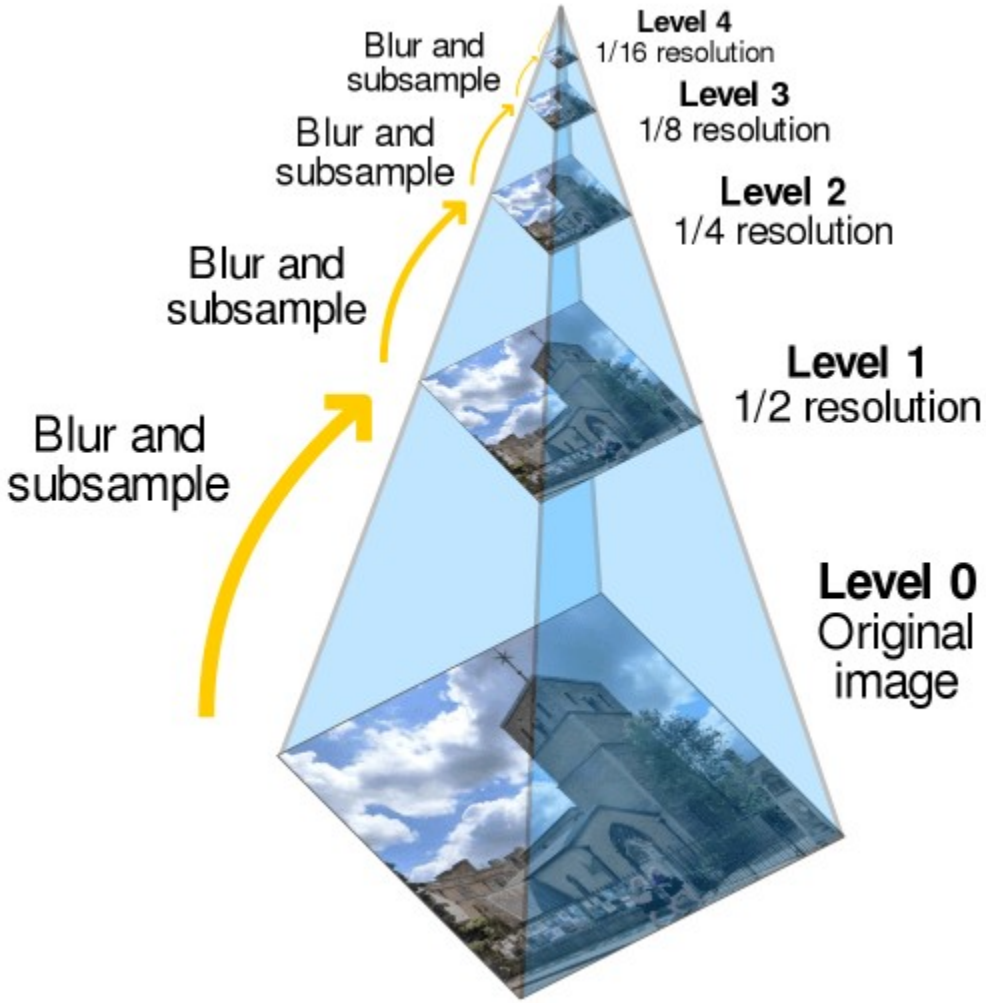
EXP:1	**T-PYRAMID OF AN IMAGE**
DATE:	

AIM:

To write python program for T- pyramid of an image.

ALGORITHM:

- First load the image
- Then construct the Gaussian pyramid with 3 levels.
- For the Laplacian pyramid, the topmost level remains the same as in Gaussian. The remaining levels are constructed from top to bottom by subtracting that Gaussian level from its upper expanded level.

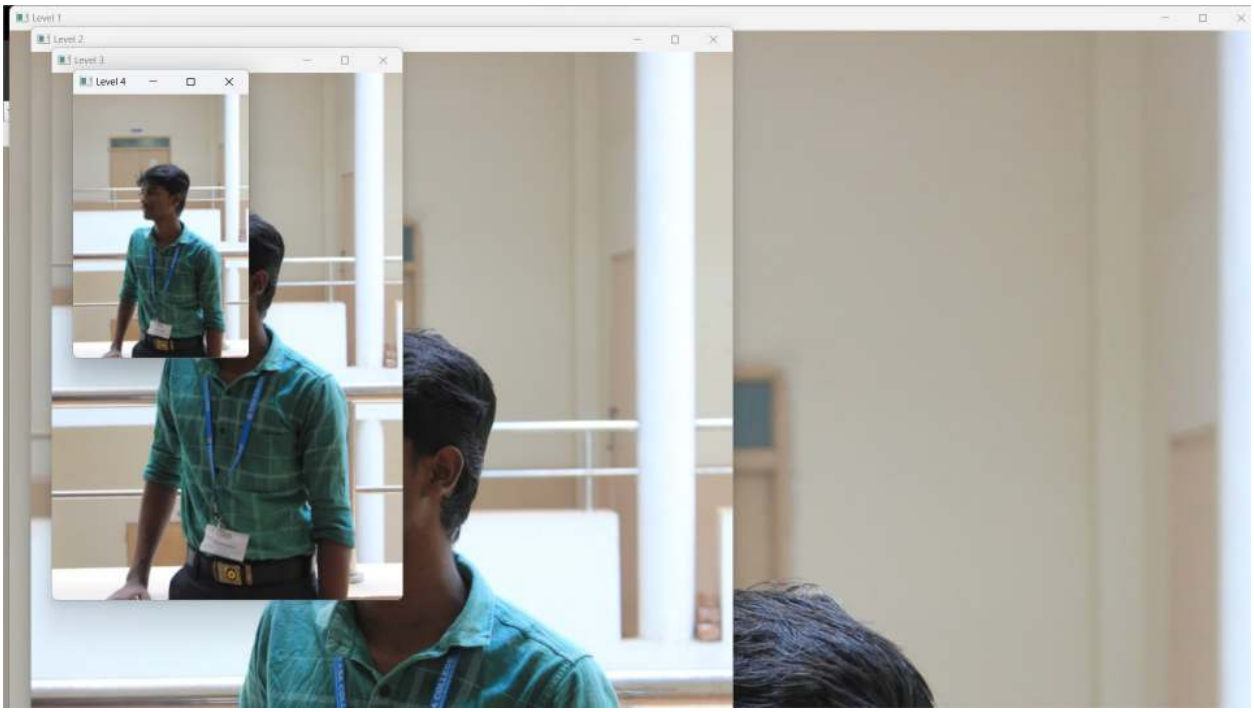


PROGRAM:

```
import cv2
import numpy as np

def build_t_pyramid(image, levels):
    pyramid = [image]
    for _ in range(levels - 1):
        image = cv2.pyrDown(image)
        pyramid.append(image)
    return pyramid

def main():
    image_path = "IMG_8366.jpg"
    levels = 5

    original_image = cv2.imread(image_path)
    if original_image is None:
        print("Error: Could not load the image.")
        return

    t_pyramid = build_t_pyramid(original_image, levels)

    for i, level_image in enumerate(t_pyramid):
        cv2.imshow(f"Level {i}", level_image)

    cv2.waitKey(0)
    cv2.destroyAllWindows()
```

```
if __name__ == "__main__":
    main()
```

OUTPUT:



RESULT:

Thus the python program for T-pyramid implemented and the output is obtained successfully.

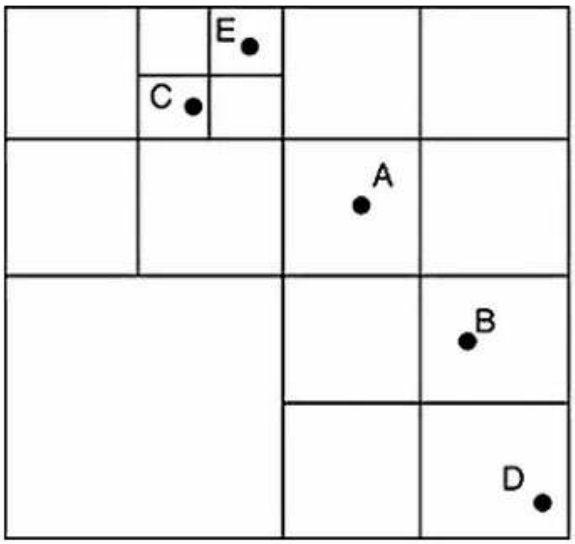
EXP:2	**QUAD TREE REPRESENTATION**
DATE:	

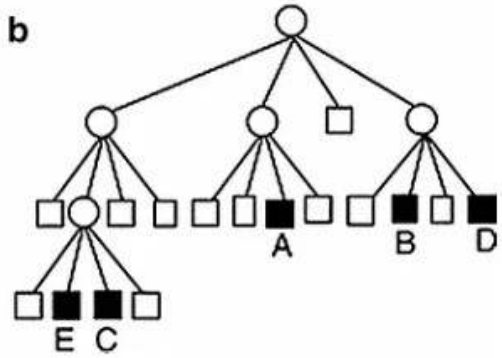
AIM:

To write a python program for quad tree representation of an image using the homogeneity criterion of equal intensity.

ALGORITHM:

1. Divide the current two dimensional space into four boxes.
2. If a box contains one or more points in it, create a child object, storing in it the two dimensional space of the box
3. If a box does not contain any points, do not create a child for it
4. Recurse for each of the children.

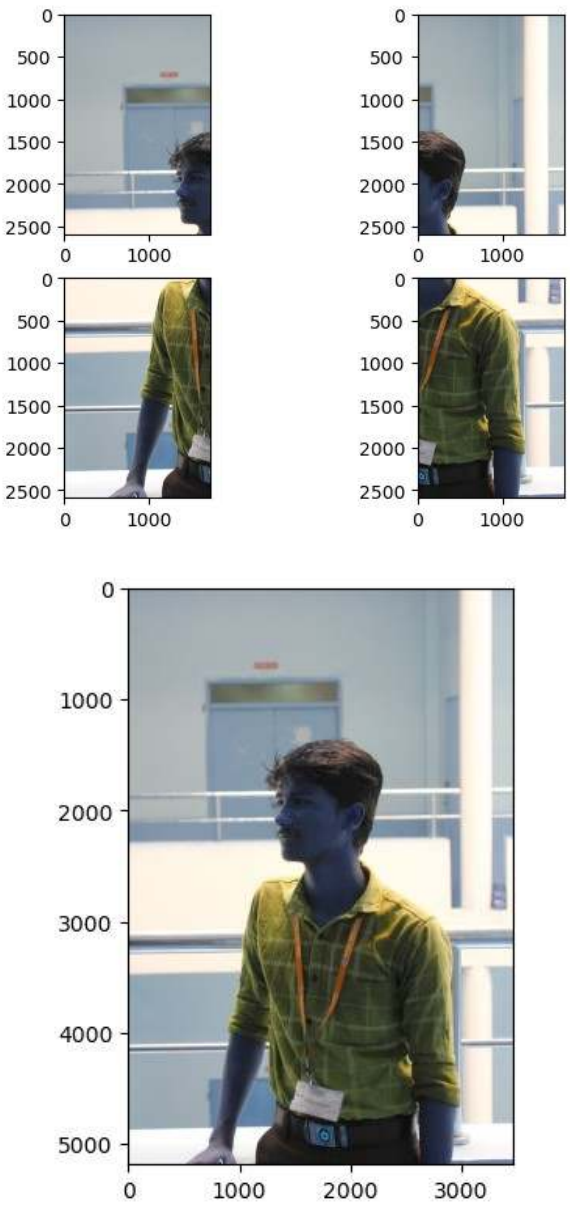




PROGRAM:

```
import matplotlib.pyplot as plt
import cv2
import numpy as np
img = cv2.imread("IMG_8366.JPG")
from operator import add
from functools import reduce
def split4(image):
    half_split = np.array_split(image, 2)
    res = map(lambda x: np.array_split(x, 2, axis= 1), half_split)
    return reduce(add, res)
split_img = split4(img)
split_img[0].shape, split_img[1].shape
fig, axs = plt.subplots(2, 2)
axs[0, 0].imshow(split_img[0])
axs[0, 1].imshow(split_img[1])
axs[1, 0].imshow(split_img[2])
axs[1, 1].imshow(split_img[3])
def concatenate4(north_west, north_east, south_west, south_east):
    top = np.concatenate((north_west, north_east), axis=1)
    bottom = np.concatenate((south_west, south_east), axis=1)
    return np.concatenate((top, bottom), axis=0)
full_img = concatenate4(split_img[0], split_img[1], split_img[2], split_img[3])
plt.imshow(full_img)
```

OUTPUT:



RESULT:

Thus the python program for quad tree representation was implementation and output is obtained successfully.

EXP:3	**GEOMETRIC TRANSFORMS**
DATE	**1)** Rotation **2)** Change of scale **3)** Skewing **4)** Affine transform calculated from three pairs of corresponding points **5)** Bilinear transform calculated from four pairs of corresponding points.

AIM:

To Develop programs for the following geometric transforms: (a) Rotation (b) Change of scale (c) Skewing (d) Affine transform calculated from three pairs of corresponding points (e) Bilinear transform calculated from four pairs of corresponding points.

ALGORITHM:

TRANSFORMATION MATRICES:

For each desired transformation, create a corresponding transformation matrix. For example:

- Translation: Create a 3×3 matrix with a 1 in the diagonal and the translation values in the last column.
- Rotation: Compute the rotation matrix using trigonometric functions (sin and cos) and the given rotation angle.
- Scaling: Create a 3×3 matrix with scaling factors along the diagonal and 1 in the last row and column.
- Shearing: Create an affine transformation matrix with shear factors in the off-diagonal elements.

COMBINE TRANSFORMATION MATRICES:

- Multiply the individual transformation matrices in the order you want to apply them. Matrix multiplication is not commutative, so the order matters. The combined matrix represents the sequence of transformations.

APPLY THE COMBINED TRANSFORMATION MATRIX:

In image processing, you can use libraries like OpenCV or Pillow to apply the combined transformation matrix to the image. For example, in OpenCV:

- Convert the 3×3 matrix to a 2×3 matrix by removing the last row.
- Use cv2.warpAffine() for affine transformations or cv2.warpPerspective() for projective transformations.
- Provide the combined transformation matrix and the input image as arguments to apply the transformations.

PROGRAM:

Rotation:

```
import cv2
import numpy as np


def rotate_image(image, angle):
    height, width = image.shape[:2]
    rotation_matrix = cv2.getRotationMatrix2D((width / 2, height / 2), angle, 1)
    rotated_image = cv2.warpAffine(image, rotation_matrix, (width, height))
    return rotated_image


# Usage
image = cv2.imread("img.jpg")
angle_degrees = 45
rotated = rotate_image(image, angle_degrees)
cv2.imshow("Rotated Image", rotated)
cv2.waitKey(0)
cv2.destroyAllWindows()
```

Change of scale:

```
def scale_image(image, scale_x, scale_y):
    scaled_image = cv2.resize(image, None, fx=scale_x, fy=scale_y)
    return scaled_image


# Usage
```

```
image = cv2.imread("path_to_image.jpg")
scale_factor_x = 1.5
scale_factor_y = 1.5
scaled = scale_image(image, scale_factor_x, scale_factor_y)
cv2.imshow("Scaled Image", scaled)
cv2.waitKey(0)
cv2.destroyAllWindows()
```

Skewing:

```
def skew_image(image, skew_x, skew_y):
        height, width = image.shape[:2]
        skew_matrix = np.float32([[1, skew_x, 0], [skew_y, 1, 0]])
        skewed_image = cv2.warpAffine(image, skew_matrix, (width, height))
        return skewed_image

# Usage
image = cv2.imread("path_to_image.jpg")
skew_factor_x = 0.2
skew_factor_y = 0.1
skewed = skew_image(image, skew_factor_x, skew_factor_y)
cv2.imshow("Skewed Image", skewed)
cv2.waitKey(0)
cv2.destroyAllWindows()
```

Affine transform calculated from three pairs of corresponding points:

```
def affine_transform(image, pts_src, pts_dst):
   matrix = cv2.getAffineTransform(pts_src, pts_dst)
```

```
    transformed_image = cv2.warpAffine(image, matrix, (image.shape[1],
image.shape[0]))
    return transformed_image

# Usage: Provide three pairs of corresponding points
image = cv2.imread("path_to_image.jpg")
src_points = np.float32([[50, 50], [200, 50], [50, 200]])
dst_points = np.float32([[10, 100], [200, 50], [100, 250]])
affine_transformed = affine_transform(image, src_points, dst_points)
cv2.imshow("Affine Transformed Image", affine_transformed)
cv2.waitKey(0)
cv2.destroyAllWindows()
```

Bilinear Transform from Four Corresponding Points:

```
def bilinear_transform(image, pts_src, pts_dst):
    matrix = cv2.getPerspectiveTransform(pts_src, pts_dst)
    transformed_image = cv2.warpPerspective(image, matrix, (image.shape[1],
image.shape[0]))
    return transformed_image

# Usage: Provide four pairs of corresponding points
image = cv2.imread("path_to_image.jpg")
src_points = np.float32([[56, 65], [368, 52], [28, 387], [389, 390]])
dst_points = np.float32([[0, 0], [300, 0], [0, 300], [300, 300]])
bilinear_transformed = bilinear_transform(image, src_points, dst_points)
cv2.imshow("Bilinear Transformed Image", bilinear_transformed)
```

```
cv2.waitKey(0)
cv2.destroyAllWindows()
```

OUTPUT:

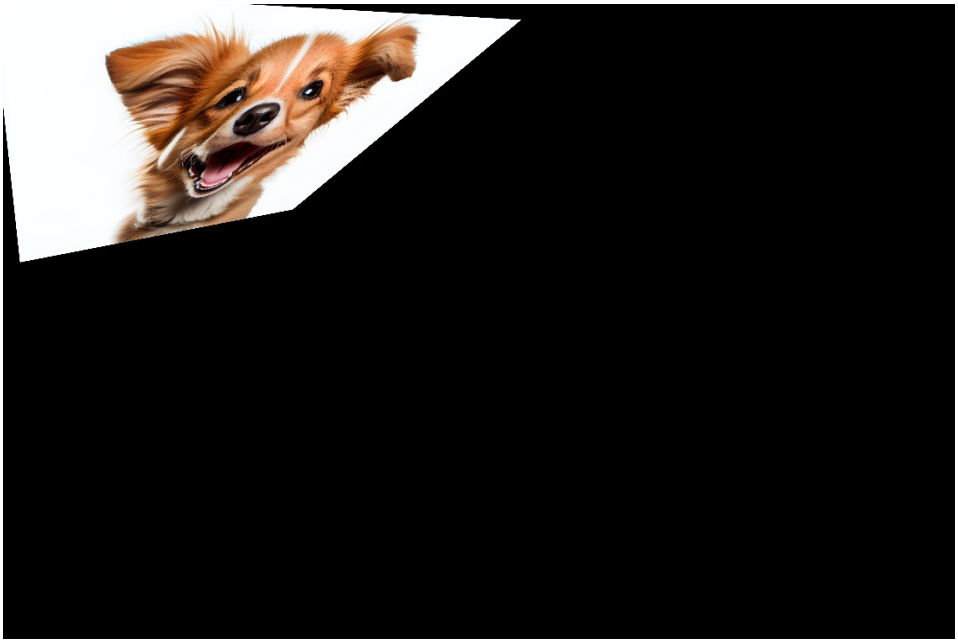
Rotation:

Change of scale:

Skewing:

Affine transform calculated from three pairs of corresponding points:

Bilinear Transform from Four Corresponding Points:



RESULT:

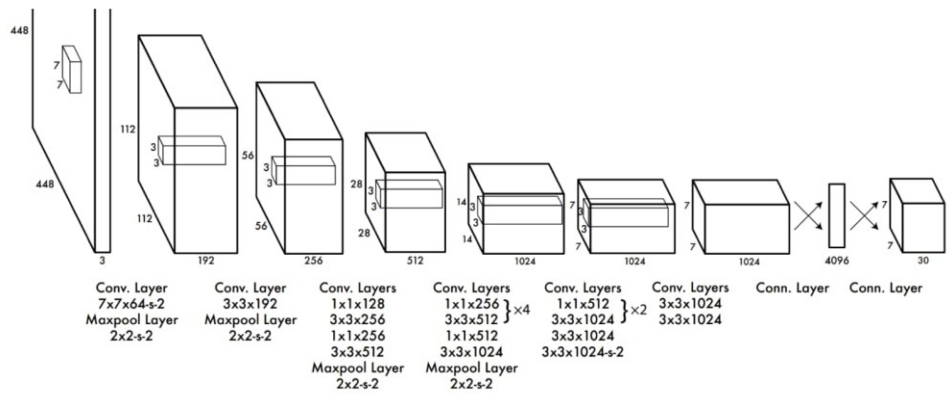
Thus the python program for geometric transforms implemented and output is obtained successfully.

EXP:4	**OBJECT DETECTION AND RECOGNITION**
DATE:	

AIM:

To Develop a program to implement Object Detection and Recognition.

ALGORITHM:(ARCHITECTURE):



The Architecture. Our detection network has 24 convolutional layers followed by 2 fully connected layers. Alternating 1×1 convolutional layers reduce the features space from preceding layers. We pretrain the convolutional layers on the ImageNet classification task at half the resolution (224×224 input image) and then double the resolution for detection.

PROGRAM:

```
from google.colab import drive
drive.mount ("/content/drive")
!git clone https://github.com/RizwanMunawar/yolov7-object-tracking.git
%cd "yolov7-object-tracking"
!yt-dlp "https://www.youtube.com/watch?v=ORrrKXGx2SE"
!python detect_and_track.py \
--weights yolov7.pt \
--source "background video | people | walking | [ORrrKXGx2SE].webm" \
--classes 0 \
--name "YOLOV7 Object Tracking"
```

OUTPUT:

```
Cloning into 'yolov7-object-tracking'...
remote: Enumerating objects: 223, done.
remote: Counting objects: 100% (23/23), done.
remote: Compressing objects: 100% (21/21), done.
remote: Total 223 (delta 8), reused 9 (delta 2), pack-reused 200
Receiving objects: 100% (223/223), 171.97 KiB | 4.41 MiB/s, done.
```

Resolving deltas: 100% (107/107), done.

[youtube] Extracting URL: https://www.youtube.com/watch?v=ORrrKXGx2SE

[youtube] ORrrKXGx2SE: Downloading webpage

[youtube] ORrrKXGx2SE: Downloading ios player API JSON

[youtube] ORrrKXGx2SE: Downloading android player API JSON

[youtube] ORrrKXGx2SE: Downloading player 190c935f

[youtube] ORrrKXGx2SE: Downloading m3u8 information

[info] ORrrKXGx2SE: Downloading 1 format(s): 248+251

[download] Destination: background video ｜ people ｜ walking ｜ [ORrrKXGx2SE].f248.webm

[download] 100% of 4.15MiB in **00:00:00** at 21.18MiB/s

[download] Destination: background video ｜ people ｜ walking ｜ [ORrrKXGx2SE].f251.webm

[download] 100% of 6.34KiB in **00:00:00** at 104.16KiB/s

[Merger] Merging formats into "background video ｜ people ｜ walking ｜ [ORrrKXGx2SE].webm"

Deleting original file background video ｜ people ｜ walking ｜ [ORrrKXGx2SE].f251.webm (pass -k to keep)

Deleting original file background video ｜ people ｜ walking ｜ [ORrrKXGx2SE].f248.webm (pass -k to keep)

Namespace(weights=['yolov7.pt'], download=True, source='background video ｜ people ｜ walking ｜ [ORrrKXGx2SE].webm', img_size=640, conf_thres=0.25, iou_thres=0.45, device='', view_img=False, save_txt=False, save_conf=False, nosave=False, classes=[0], agnostic_nms=False, augment=False, update=False, project='runs/detect', name='YOLOV7 Object Tracking', exist_ok=False, no_trace=False, colored_trk=False, save_bbox_dim=False, save_with_object_id=False)

Model weights not found. Attempting to download now...

yolov7.pt: 100% 72.1M/72.1M [00:01<00:00, 75.3MiB/s]

YOLOR yolov7-object-tracking-49-g45def67 torch 2.1.0+cu118 CPU

Fusing layers...

RepConv.fuse_repvgg_block

RepConv.fuse_repvgg_block

RepConv.fuse_repvgg_block

/usr/local/lib/python3.10/dist-packages/torch/functional.py:504: UserWarning: torch.meshgrid: in an upcoming release, it will be required to pass the indexing argument. (Triggered internally at ../aten/src/ATen/native/TensorShape.cpp:3526.)

return _VF.meshgrid(tensors, **kwargs) # type: ignore[attr-defined]

Model Summary: 306 layers, 36905341 parameters, 6652669 gradients, 104.5 GFLOPS

Convert model to Traced-model...

traced_script_module saved!

model is traced!

video 1/1 (1/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 31 persons, Done. (1374.6ms) Inference, (38.8ms) NMS

OpenCV: FFMPEG: tag 0x7634706d/'mp4v' is not supported with codec id 12 and format 'webm / WebM'

[webm @ 0x596e5a782640] Only VP8 or VP9 or AV1 video and Vorbis or Opus audio and WebVTT subtitles are supported for WebM.

video 1/1 (2/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 32 persons, Done. (1239.5ms) Inference, (1.3ms) NMS

video 1/1 (3/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 33 persons, Done. (1227.3ms) Inference, (1.3ms) NMS

video 1/1 (4/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 32 persons, Done. (1217.8ms) Inference, (1.3ms) NMS

video 1/1 (5/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 33 persons, Done. (1334.5ms) Inference, (3.0ms) NMS

video 1/1 (6/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 35 persons, Done. (1962.2ms) Inference, (1.9ms) NMS

video 1/1 (7/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 32 persons, Done. (1995.4ms) Inference, (2.0ms) NMS

video 1/1 (8/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 33 persons, Done. (1962.0ms) Inference, (3.2ms) NMS

video 1/1 (9/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 36 persons, Done. (1944.4ms) Inference, (2.1ms) NMS

video 1/1 (10/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 35 persons, Done. (1476.0ms) Inference, (1.4ms) NMS

video 1/1 (11/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 37 persons, Done. (1236.8ms) Inference, (1.5ms) NMS

video 1/1 (12/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 34 persons, Done. (1259.4ms) Inference, (1.4ms) NMS

video 1/1 (13/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 36 persons, Done. (1259.5ms) Inference, (1.5ms) NMS

video 1/1 (14/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 37 persons, Done. (1278.8ms) Inference, (1.3ms) NMS

video 1/1 (15/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 37 persons, Done. (1239.8ms) Inference, (1.8ms) NMS

video 1/1 (16/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 35 persons, Done. (1221.2ms) Inference, (1.7ms) NMS

video 1/1 (17/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 33 persons, Done. (1260.1ms) Inference, (1.3ms) NMS

video 1/1 (18/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 32 persons, Done. (1901.0ms) Inference, (2.0ms) NMS

video 1/1 (19/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 34 persons, Done. (2003.8ms) Inference, (2.0ms) NMS

video 1/1 (20/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 33 persons, Done. (2031.9ms) Inference, (2.0ms) NMS

video 1/1 (21/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 35 persons, Done. (1908.9ms) Inference, (2.2ms) NMS

video 1/1 (22/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 34 persons, Done. (1706.6ms) Inference, (1.6ms) NMS

video 1/1 (23/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 36 persons, Done. (1289.3ms) Inference, (1.7ms) NMS

video 1/1 (24/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 35 persons, Done. (1230.8ms) Inference, (1.3ms) NMS

video 1/1 (25/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 35 persons, Done. (1243.9ms) Inference, (1.5ms) NMS

video 1/1 (26/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 35 persons, Done. (1275.2ms) Inference, (1.6ms) NMS

video 1/1 (27/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 33 persons, Done. (1225.1ms) Inference, (1.4ms) NMS

video 1/1 (28/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 31 persons, Done. (1257.4ms) Inference, (1.4ms) NMS

video 1/1 (29/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 31 persons, Done. (1247.4ms) Inference, (1.4ms) NMS

video 1/1 (30/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 32 persons, Done. (1736.0ms) Inference, (1.9ms) NMS

video 1/1 (31/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 34 persons, Done. (1904.5ms) Inference, (2.3ms) NMS

video 1/1 (32/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 34 persons, Done. (2011.8ms) Inference, (2.0ms) NMS

video 1/1 (33/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 35 persons, Done. (1919.7ms) Inference, (2.0ms) NMS

video 1/1 (34/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 35 persons, Done. (2264.0ms) Inference, (1.4ms) NMS

video 1/1 (35/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 37 persons, Done. (1276.4ms) Inference, (1.5ms) NMS

video 1/1 (36/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 37 persons, Done. (1282.2ms) Inference, (1.4ms) NMS

video 1/1 (37/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 38 persons, Done. (1298.5ms) Inference, (1.5ms) NMS

video 1/1 (38/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 34 persons, Done. (1263.9ms) Inference, (1.4ms) NMS

video 1/1 (39/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 35 persons, Done. (1268.3ms) Inference, (1.4ms) NMS

video 1/1 (40/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 36 persons, Done. (1293.9ms) Inference, (1.4ms) NMS

video 1/1 (41/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 37 persons, Done. (1261.6ms) Inference, (1.3ms) NMS

video 1/1 (42/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 35 persons, Done. (1661.3ms) Inference, (1.9ms) NMS

video 1/1 (43/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 35 persons, Done. (1956.7ms) Inference, (1.9ms) NMS

video 1/1 (44/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 33 persons, Done. (1987.8ms) Inference, (1.9ms) NMS

video 1/1 (45/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 36 persons, Done. (1932.8ms) Inference, (2.0ms) NMS

video 1/1 (46/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 36 persons, Done. (1956.6ms) Inference, (2.0ms) NMS

video 1/1 (47/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 33 persons, Done. (1270.5ms) Inference, (1.4ms) NMS

video 1/1 (48/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 36 persons, Done. (1280.9ms) Inference, (1.5ms) NMS

video 1/1 (49/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 35 persons, Done. (1269.1ms) Inference, (1.4ms) NMS

video 1/1 (50/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 35 persons, Done. (1226.7ms) Inference, (1.3ms) NMS

video 1/1 (51/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 37 persons, Done. (1258.7ms) Inference, (1.5ms) NMS

video 1/1 (52/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 37 persons, Done. (1283.7ms) Inference, (1.8ms) NMS

video 1/1 (53/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 36 persons, Done. (1281.7ms) Inference, (1.5ms) NMS

video 1/1 (54/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 36 persons, Done. (1538.6ms) Inference, (2.0ms) NMS

video 1/1 (55/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 36 persons, Done. (1960.8ms) Inference, (2.5ms) NMS

video 1/1 (56/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 35 persons, Done. (2015.7ms) Inference, (1.9ms) NMS

video 1/1 (57/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 34 persons, Done. (1969.8ms) Inference, (2.1ms) NMS

video 1/1 (58/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 36 persons, Done. (1987.0ms) Inference, (2.1ms) NMS

video 1/1 (59/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 37 persons, Done. (1354.4ms) Inference, (1.4ms) NMS

video 1/1 (60/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 35 persons, Done. (1268.0ms) Inference, (1.6ms) NMS

video 1/1 (61/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 34 persons, Done. (1298.3ms) Inference, (1.7ms) NMS

video 1/1 (62/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 34 persons, Done. (1272.3ms) Inference, (1.3ms) NMS

video 1/1 (63/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 34 persons, Done. (1271.3ms) Inference, (1.5ms) NMS

video 1/1 (64/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 34 persons, Done. (1250.1ms) Inference, (1.7ms) NMS

video 1/1 (65/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 34 persons, Done. (1278.7ms) Inference, (1.4ms) NMS

video 1/1 (66/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 34 persons, Done. (1384.5ms) Inference, (2.1ms) NMS

video 1/1 (67/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 33 persons, Done. (2029.8ms) Inference, (2.4ms) NMS

video 1/1 (68/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 32 persons, Done. (1983.6ms) Inference, (1.9ms) NMS

video 1/1 (69/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 32 persons, Done. (1975.9ms) Inference, (2.0ms) NMS

video 1/1 (70/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 31 persons, Done. (1964.3ms) Inference, (2.4ms) NMS

video 1/1 (71/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 32 persons, Done. (1358.3ms) Inference, (1.3ms) NMS

video 1/1 (72/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 34 persons, Done. (1235.7ms) Inference, (1.2ms) NMS

video 1/1 (73/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 33 persons, Done. (1277.3ms) Inference, (1.6ms) NMS

video 1/1 (74/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 35 persons, Done. (1278.3ms) Inference, (1.5ms) NMS

video 1/1 (75/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 33 persons, Done. (1282.0ms) Inference, (1.4ms) NMS

video 1/1 (76/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 33 persons, Done. (1285.3ms) Inference, (1.5ms) NMS

video 1/1 (77/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 34 persons, Done. (1240.4ms) Inference, (1.4ms) NMS

video 1/1 (78/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 34 persons, Done. (1371.6ms) Inference, (1.9ms) NMS

video 1/1 (79/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 34 persons, Done. (2008.6ms) Inference, (2.0ms) NMS

video 1/1 (80/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 35 persons, Done. (1987.4ms) Inference, (2.7ms) NMS

video 1/1 (81/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 35 persons, Done. (1926.9ms) Inference, (1.7ms) NMS

video 1/1 (82/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 35 persons, Done. (1934.2ms) Inference, (2.2ms) NMS

video 1/1 (83/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 36 persons, Done. (1571.0ms) Inference, (1.5ms) NMS

video 1/1 (84/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 36 persons, Done. (1242.1ms) Inference, (1.4ms) NMS

video 1/1 (85/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 37 persons, Done. (1265.2ms) Inference, (1.3ms) NMS

video 1/1 (86/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 38 persons, Done. (1231.5ms) Inference, (1.7ms) NMS

video 1/1 (87/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 38 persons, Done. (1259.7ms) Inference, (1.4ms) NMS

video 1/1 (88/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 37 persons, Done. (1275.2ms) Inference, (1.5ms) NMS

video 1/1 (89/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 37 persons, Done. (1276.3ms) Inference, (1.7ms) NMS

video 1/1 (90/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 35 persons, Done. (1283.4ms) Inference, (1.5ms) NMS

video 1/1 (91/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 35 persons, Done. (1962.5ms) Inference, (2.7ms) NMS

video 1/1 (92/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 35 persons, Done. (2100.0ms) Inference, (4.3ms) NMS

video 1/1 (93/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 34 persons, Done. (2046.1ms) Inference, (2.1ms) NMS

video 1/1 (94/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 35 persons, Done. (2153.0ms) Inference, (5.7ms) NMS

video 1/1 (95/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 35 persons, Done. (2163.6ms) Inference, (2.2ms) NMS

video 1/1 (96/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 35 persons, Done. (1426.7ms) Inference, (2.0ms) NMS

video 1/1 (97/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 35 persons, Done. (1362.8ms) Inference, (1.3ms) NMS

video 1/1 (98/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 35 persons, Done. (1220.3ms) Inference, (1.3ms) NMS

video 1/1 (99/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 35 persons, Done. (1230.2ms) Inference, (1.2ms) NMS

video 1/1 (100/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 32 persons, Done. (1248.5ms) Inference, (1.4ms) NMS

video 1/1 (101/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 34 persons, Done. (1270.9ms) Inference, (1.4ms) NMS

video 1/1 (102/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 34 persons, Done. (1273.4ms) Inference, (1.4ms) NMS

video 1/1 (103/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 33 persons, Done. (1513.6ms) Inference, (1.8ms) NMS

video 1/1 (104/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 33 persons, Done. (1944.6ms) Inference, (2.3ms) NMS

video 1/1 (105/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 33 persons, Done. (1996.1ms) Inference, (1.9ms) NMS

video 1/1 (106/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 34 persons, Done. (2039.2ms) Inference, (2.1ms) NMS

video 1/1 (107/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 34 persons, Done. (2141.4ms) Inference, (2.0ms) NMS

video 1/1 (108/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 33 persons, Done. (1658.1ms) Inference, (1.6ms) NMS

video 1/1 (109/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 33 persons, Done. (1351.7ms) Inference, (1.3ms) NMS

video 1/1 (110/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 34 persons, Done. (1336.7ms) Inference, (2.1ms) NMS

video 1/1 (111/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 34 persons, Done. (1361.9ms) Inference, (1.5ms) NMS

video 1/1 (112/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 34 persons, Done. (1385.1ms) Inference, (1.5ms) NMS

video 1/1 (113/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 34 persons, Done. (1390.3ms) Inference, (1.5ms) NMS

video 1/1 (114/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 35 persons, Done. (1358.9ms) Inference, (1.6ms) NMS

video 1/1 (115/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 35 persons, Done. (1689.9ms) Inference, (2.2ms) NMS

video 1/1 (116/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 34 persons, Done. (1947.6ms) Inference, (1.9ms) NMS

video 1/1 (117/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 34 persons, Done. (1983.9ms) Inference, (5.2ms) NMS

video 1/1 (118/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 36 persons, Done. (1953.3ms) Inference, (1.9ms) NMS

video 1/1 (119/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 35 persons, Done. (2144.6ms) Inference, (2.1ms) NMS

video 1/1 (120/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 34 persons, Done. (1505.0ms) Inference, (1.4ms) NMS

video 1/1 (121/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 35 persons, Done. (1350.5ms) Inference, (1.5ms) NMS

video 1/1 (122/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 33 persons, Done. (1321.6ms) Inference, (1.4ms) NMS

video 1/1 (123/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 34 persons, Done. (1288.1ms) Inference, (1.7ms) NMS

video 1/1 (124/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 35 persons, Done. (1314.6ms) Inference, (1.6ms) NMS

video 1/1 (125/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 34 persons, Done. (1340.8ms) Inference, (1.4ms) NMS

video 1/1 (126/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 34 persons, Done. (1368.9ms) Inference, (1.6ms) NMS

video 1/1 (127/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 34 persons, Done. (1888.7ms) Inference, (1.9ms) NMS

video 1/1 (128/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 33 persons, Done. (1983.3ms) Inference, (1.9ms) NMS

video 1/1 (129/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 33 persons, Done. (1985.4ms) Inference, (3.2ms) NMS

video 1/1 (130/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 32 persons, Done. (1900.0ms) Inference, (1.9ms) NMS

video 1/1 (131/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 32 persons, Done. (1959.7ms) Inference, (2.2ms) NMS

video 1/1 (132/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 31 persons, Done. (1298.8ms) Inference, (1.4ms) NMS

video 1/1 (133/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 30 persons, Done. (1284.0ms) Inference, (1.3ms) NMS

video 1/1 (134/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 30 persons, Done. (1310.5ms) Inference, (1.7ms) NMS

video 1/1 (135/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 31 persons, Done. (1341.0ms) Inference, (2.3ms) NMS

video 1/1 (136/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 31 persons, Done. (1264.6ms) Inference, (1.4ms) NMS

video 1/1 (137/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 31 persons, Done. (1277.3ms) Inference, (1.4ms) NMS

video 1/1 (138/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 31 persons, Done. (1270.8ms) Inference, (1.5ms) NMS

video 1/1 (139/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 29 persons, Done. (1569.8ms) Inference, (2.0ms) NMS

video 1/1 (140/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 30 persons, Done. (1923.6ms) Inference, (1.9ms) NMS

video 1/1 (141/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 30 persons, Done. (2061.4ms) Inference, (2.1ms) NMS

video 1/1 (142/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 31 persons, Done. (2091.8ms) Inference, (2.0ms) NMS

video 1/1 (143/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 30 persons, Done. (1980.4ms) Inference, (2.3ms) NMS

video 1/1 (144/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 30 persons, Done. (1591.9ms) Inference, (1.4ms) NMS

video 1/1 (145/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 29 persons, Done. (1343.8ms) Inference, (1.3ms) NMS

video 1/1 (146/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 28 persons, Done. (1267.5ms) Inference, (1.3ms) NMS

video 1/1 (147/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 28 persons, Done. (1294.7ms) Inference, (1.4ms) NMS

video 1/1 (148/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 29 persons, Done. (1300.9ms) Inference, (1.3ms) NMS

video 1/1 (149/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 29 persons, Done. (1339.4ms) Inference, (1.8ms) NMS

video 1/1 (150/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 29 persons, Done. (1406.1ms) Inference, (1.4ms) NMS

video 1/1 (151/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 30 persons, Done. (1690.3ms) Inference, (4.7ms) NMS

video 1/1 (152/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 29 persons, Done. (1943.2ms) Inference, (2.0ms) NMS

video 1/1 (153/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 29 persons, Done. (1972.2ms) Inference, (6.3ms) NMS

video 1/1 (154/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 28 persons, Done. (1930.9ms) Inference, (1.9ms) NMS

video 1/1 (155/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 28 persons, Done. (1939.3ms) Inference, (2.1ms) NMS

video 1/1 (156/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 28 persons, Done. (1414.8ms) Inference, (1.8ms) NMS

video 1/1 (157/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 28 persons, Done. (1281.8ms) Inference, (1.5ms) NMS

video 1/1 (158/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 28 persons, Done. (1276.4ms) Inference, (1.5ms) NMS

video 1/1 (159/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 28 persons, Done. (1340.1ms) Inference, (1.5ms) NMS

video 1/1 (160/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 28 persons, Done. (1342.1ms) Inference, (1.4ms) NMS

video 1/1 (161/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 28 persons, Done. (1285.1ms) Inference, (1.5ms) NMS

video 1/1 (162/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 28 persons, Done. (1239.5ms) Inference, (1.5ms) NMS

video 1/1 (163/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 28 persons, Done. (1554.7ms) Inference, (1.8ms) NMS

video 1/1 (164/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 27 persons, Done. (1981.0ms) Inference, (2.0ms) NMS

video 1/1 (165/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 28 persons, Done. (1979.2ms) Inference, (1.8ms) NMS

video 1/1 (166/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 28 persons, Done. (2031.5ms) Inference, (2.5ms) NMS

video 1/1 (167/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 28 persons, Done. (2099.4ms) Inference, (2.2ms) NMS

video 1/1 (168/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 28 persons, Done. (1558.1ms) Inference, (1.3ms) NMS

video 1/1 (169/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 28 persons, Done. (1334.1ms) Inference, (1.4ms) NMS

video 1/1 (170/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 28 persons, Done. (1801.9ms) Inference, (2.0ms) NMS

video 1/1 (171/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 28 persons, Done. (1999.8ms) Inference, (1.9ms) NMS

video 1/1 (172/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 28 persons, Done. (2034.4ms) Inference, (2.2ms) NMS

video 1/1 (173/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 29 persons, Done. (2040.7ms) Inference, (4.4ms) NMS

video 1/1 (174/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 29 persons, Done. (2127.6ms) Inference, (2.1ms) NMS

video 1/1 (175/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 29 persons, Done. (2119.7ms) Inference, (2.0ms) NMS

video 1/1 (176/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 29 persons, Done. (2180.1ms) Inference, (2.1ms) NMS

video 1/1 (177/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 28 persons, Done. (1970.6ms) Inference, (1.8ms) NMS

video 1/1 (178/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 28 persons, Done. (1979.3ms) Inference, (1.9ms) NMS

video 1/1 (179/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 30 persons, Done. (1503.1ms) Inference, (1.4ms) NMS

video 1/1 (180/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 29 persons, Done. (1337.1ms) Inference, (1.3ms) NMS

video 1/1 (181/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 27 persons, Done. (1275.6ms) Inference, (1.3ms) NMS

video 1/1 (182/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 29 persons, Done. (1309.2ms) Inference, (1.7ms) NMS

video 1/1 (183/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 29 persons, Done. (1373.5ms) Inference, (1.5ms) NMS

video 1/1 (184/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 29 persons, Done. (1341.5ms) Inference, (1.8ms) NMS

video 1/1 (185/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 30 persons, Done. (1274.2ms) Inference, (1.5ms) NMS

video 1/1 (186/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 31 persons, Done. (1660.7ms) Inference, (1.9ms) NMS

video 1/1 (187/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 28 persons, Done. (2012.1ms) Inference, (1.9ms) NMS

video 1/1 (188/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 29 persons, Done. (2021.8ms) Inference, (2.3ms) NMS

video 1/1 (189/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 31 persons, Done. (2019.0ms) Inference, (2.0ms) NMS

video 1/1 (190/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 30 persons, Done. (2047.8ms) Inference, (2.1ms) NMS

video 1/1 (191/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 29 persons, Done. (1527.2ms) Inference, (1.4ms) NMS

video 1/1 (192/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 29 persons, Done. (1293.7ms) Inference, (1.3ms) NMS

video 1/1 (193/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 27 persons, Done. (1302.6ms) Inference, (1.4ms) NMS

video 1/1 (194/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 27 persons, Done. (1277.5ms) Inference, (1.4ms) NMS

video 1/1 (195/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 29 persons, Done. (1269.9ms) Inference, (1.3ms) NMS

video 1/1 (196/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 28 persons, Done. (1280.6ms) Inference, (1.3ms) NMS

video 1/1 (197/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 28 persons, Done. (1257.9ms) Inference, (1.3ms) NMS

video 1/1 (198/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 29 persons, Done. (1378.7ms) Inference, (2.1ms) NMS

video 1/1 (199/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 29 persons, Done. (1929.9ms) Inference, (1.9ms) NMS

video 1/1 (200/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 30 persons, Done. (1903.4ms) Inference, (1.8ms) NMS

video 1/1 (201/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 29 persons, Done. (1972.4ms) Inference, (1.6ms) NMS

video 1/1 (202/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 29 persons, Done. (1967.2ms) Inference, (2.1ms) NMS

video 1/1 (203/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 30 persons, Done. (1763.6ms) Inference, (1.3ms) NMS

video 1/1 (204/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 30 persons, Done. (1303.6ms) Inference, (1.5ms) NMS

video 1/1 (205/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 30 persons, Done. (1323.1ms) Inference, (1.5ms) NMS

video 1/1 (206/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 29 persons, Done. (1317.1ms) Inference, (1.6ms) NMS

video 1/1 (207/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 30 persons, Done. (1310.5ms) Inference, (1.7ms) NMS

video 1/1 (208/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 31 persons, Done. (1338.7ms) Inference, (2.2ms) NMS

video 1/1 (209/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 29 persons, Done. (1295.4ms) Inference, (1.4ms) NMS

video 1/1 (210/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 30 persons, Done. (1390.4ms) Inference, (1.9ms) NMS

video 1/1 (211/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 31 persons, Done. (1974.5ms) Inference, (1.9ms) NMS

video 1/1 (212/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 30 persons, Done. (2010.0ms) Inference, (2.2ms) NMS

video 1/1 (213/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 31 persons, Done. (2010.7ms) Inference, (1.9ms) NMS

video 1/1 (214/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 31 persons, Done. (2056.3ms) Inference, (2.0ms) NMS

video 1/1 (215/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 31 persons, Done. (1711.2ms) Inference, (1.4ms) NMS

video 1/1 (216/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 29 persons, Done. (1295.8ms) Inference, (2.3ms) NMS

video 1/1 (217/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 30 persons, Done. (1332.1ms) Inference, (2.2ms) NMS

video 1/1 (218/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 30 persons, Done. (1336.6ms) Inference, (1.6ms) NMS

video 1/1 (219/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 29 persons, Done. (1248.4ms) Inference, (1.3ms) NMS

video 1/1 (220/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 29 persons, Done. (1263.7ms) Inference, (1.6ms) NMS

video 1/1 (221/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 29 persons, Done. (1272.9ms) Inference, (1.5ms) NMS

video 1/1 (222/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 29 persons, Done. (1234.4ms) Inference, (1.5ms) NMS

video 1/1 (223/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 29 persons, Done. (1914.1ms) Inference, (2.0ms) NMS

video 1/1 (224/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 29 persons, Done. (1960.2ms) Inference, (2.0ms) NMS

video 1/1 (225/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 29 persons, Done. (2088.9ms) Inference, (1.9ms) NMS

video 1/1 (226/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 28 persons, Done. (1977.7ms) Inference, (2.1ms) NMS

video 1/1 (227/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 27 persons, Done. (1903.6ms) Inference, (1.3ms) NMS

video 1/1 (228/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 27 persons, Done. (1307.1ms) Inference, (1.4ms) NMS

video 1/1 (229/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 27 persons, Done. (1319.4ms) Inference, (1.5ms) NMS

video 1/1 (230/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 27 persons, Done. (1319.7ms) Inference, (1.5ms) NMS

video 1/1 (231/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 27 persons, Done. (1268.5ms) Inference, (1.5ms) NMS

video 1/1 (232/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 27 persons, Done. (1283.3ms) Inference, (1.5ms) NMS

video 1/1 (233/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 27 persons, Done. (1313.7ms) Inference, (1.4ms) NMS

video 1/1 (234/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 27 persons, Done. (1311.6ms) Inference, (1.4ms) NMS

video 1/1 (235/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 27 persons, Done. (2072.5ms) Inference, (2.0ms) NMS

video 1/1 (236/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 28 persons, Done. (2038.0ms) Inference, (2.0ms) NMS

video 1/1 (237/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 29 persons, Done. (2023.4ms) Inference, (2.4ms) NMS

video 1/1 (238/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 29 persons, Done. (1969.8ms) Inference, (2.2ms) NMS

video 1/1 (239/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 29 persons, Done. (1867.8ms) Inference, (1.4ms) NMS

video 1/1 (240/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 29 persons, Done. (1328.3ms) Inference, (1.5ms) NMS

video 1/1 (241/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 30 persons, Done. (1450.3ms) Inference, (1.5ms) NMS

video 1/1 (242/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 30 persons, Done. (1405.9ms) Inference, (1.5ms) NMS

video 1/1 (243/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 29 persons, Done. (1346.6ms) Inference, (1.6ms) NMS

video 1/1 (244/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 30 persons, Done. (1330.6ms) Inference, (2.1ms) NMS

video 1/1 (245/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 30 persons, Done. (1285.6ms) Inference, (1.5ms) NMS

video 1/1 (246/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 30 persons, Done. (1295.0ms) Inference, (2.1ms) NMS

video 1/1 (247/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 29 persons, Done. (2021.4ms) Inference, (2.0ms) NMS

video 1/1 (248/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 28 persons, Done. (2056.0ms) Inference, (1.9ms) NMS

video 1/1 (249/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 28 persons, Done. (2026.8ms) Inference, (2.0ms) NMS

video 1/1 (250/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 30 persons, Done. (2040.3ms) Inference, (2.3ms) NMS

video 1/1 (251/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 30 persons, Done. (1877.6ms) Inference, (1.5ms) NMS

video 1/1 (252/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 28 persons, Done. (1266.9ms) Inference, (1.5ms) NMS

video 1/1 (253/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 28 persons, Done. (1297.0ms) Inference, (1.4ms) NMS

video 1/1 (254/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 30 persons, Done. (1306.3ms) Inference, (1.5ms) NMS

video 1/1 (255/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 31 persons, Done. (1348.5ms) Inference, (1.5ms) NMS

video 1/1 (256/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 30 persons, Done. (1369.2ms) Inference, (1.5ms) NMS

video 1/1 (257/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 29 persons, Done. (1355.3ms) Inference, (1.5ms) NMS

video 1/1 (258/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 28 persons, Done. (1314.1ms) Inference, (1.8ms) NMS

video 1/1 (259/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 29 persons, Done. (2000.4ms) Inference, (1.9ms) NMS

video 1/1 (260/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 28 persons, Done. (1964.3ms) Inference, (1.9ms) NMS

video 1/1 (261/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 29 persons, Done. (2027.7ms) Inference, (2.1ms) NMS

video 1/1 (262/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 28 persons, Done. (2025.8ms) Inference, (2.3ms) NMS

video 1/1 (263/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 29 persons, Done. (1845.1ms) Inference, (1.6ms) NMS

video 1/1 (264/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 29 persons, Done. (1301.3ms) Inference, (1.5ms) NMS

video 1/1 (265/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 30 persons, Done. (1319.9ms) Inference, (1.5ms) NMS

video 1/1 (266/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 30 persons, Done. (1284.5ms) Inference, (1.3ms) NMS

video 1/1 (267/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 28 persons, Done. (1262.5ms) Inference, (1.2ms) NMS

video 1/1 (268/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 31 persons, Done. (1279.2ms) Inference, (1.6ms) NMS

video 1/1 (269/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 29 persons, Done. (1308.7ms) Inference, (1.7ms) NMS

video 1/1 (270/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 30 persons, Done. (1277.5ms) Inference, (1.4ms) NMS

video 1/1 (271/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 30 persons, Done. (1937.1ms) Inference, (1.9ms) NMS

video 1/1 (272/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 31 persons, Done. (1936.6ms) Inference, (2.1ms) NMS

video 1/1 (273/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 30 persons, Done. (1985.7ms) Inference, (2.1ms) NMS

video 1/1 (274/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 30 persons, Done. (1965.2ms) Inference, (2.2ms) NMS

video 1/1 (275/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 33 persons, Done. (1891.5ms) Inference, (1.4ms) NMS

video 1/1 (276/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 30 persons, Done. (1248.0ms) Inference, (1.5ms) NMS

video 1/1 (277/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 34 persons, Done. (1285.3ms) Inference, (1.6ms) NMS

video 1/1 (278/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 30 persons, Done. (1295.7ms) Inference, (1.5ms) NMS

video 1/1 (279/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 32 persons, Done. (1243.5ms) Inference, (1.3ms) NMS

video 1/1 (280/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 33 persons, Done. (1246.1ms) Inference, (1.4ms) NMS

video 1/1 (281/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 34 persons, Done. (1357.1ms) Inference, (1.5ms) NMS

video 1/1 (282/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 34 persons, Done. (1327.0ms) Inference, (1.4ms) NMS

video 1/1 (283/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 32 persons, Done. (1846.0ms) Inference, (1.9ms) NMS

video 1/1 (284/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 35 persons, Done. (1993.1ms) Inference, (2.1ms) NMS

video 1/1 (285/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 35 persons, Done. (2047.2ms) Inference, (2.1ms) NMS

video 1/1 (286/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 33 persons, Done. (2733.5ms) Inference, (2.1ms) NMS

video 1/1 (287/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 35 persons, Done. (1782.4ms) Inference, (1.4ms) NMS

video 1/1 (288/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 33 persons, Done. (1309.8ms) Inference, (1.4ms) NMS

video 1/1 (289/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 32 persons, Done. (1434.2ms) Inference, (1.5ms) NMS

video 1/1 (290/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 31 persons, Done. (1416.9ms) Inference, (1.4ms) NMS

video 1/1 (291/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 31 persons, Done. (1378.8ms) Inference, (1.8ms) NMS

video 1/1 (292/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 30 persons, Done. (1275.9ms) Inference, (1.5ms) NMS

video 1/1 (293/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 29 persons, Done. (1350.3ms) Inference, (1.6ms) NMS

video 1/1 (294/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 35 persons, Done. (1626.6ms) Inference, (2.0ms) NMS

video 1/1 (295/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 34 persons, Done. (2063.0ms) Inference, (1.9ms) NMS

video 1/1 (296/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 34 persons, Done. (2039.9ms) Inference, (1.7ms) NMS

video 1/1 (297/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 33 persons, Done. (1943.7ms) Inference, (2.1ms) NMS

video 1/1 (298/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 33 persons, Done. (1993.2ms) Inference, (2.2ms) NMS

video 1/1 (299/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 31 persons, Done. (1563.4ms) Inference, (1.4ms) NMS

video 1/1 (300/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 30 persons, Done. (1267.9ms) Inference, (1.3ms) NMS

video 1/1 (301/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 30 persons, Done. (1279.1ms) Inference, (1.4ms) NMS

video 1/1 (302/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 31 persons, Done. (1251.6ms) Inference, (1.3ms) NMS

video 1/1 (303/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 33 persons, Done. (1258.6ms) Inference, (1.3ms) NMS

video 1/1 (304/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 31 persons, Done. (1284.7ms) Inference, (1.5ms) NMS

video 1/1 (305/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 32 persons, Done. (1391.2ms) Inference, (1.3ms) NMS

video 1/1 (306/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 31 persons, Done. (1517.5ms) Inference, (1.9ms) NMS

video 1/1 (307/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 31 persons, Done. (2085.6ms) Inference, (2.3ms) NMS

video 1/1 (308/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 33 persons, Done. (1979.6ms) Inference, (2.8ms) NMS

video 1/1 (309/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 32 persons, Done. (1940.3ms) Inference, (2.4ms) NMS

video 1/1 (310/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 31 persons, Done. (1965.2ms) Inference, (2.1ms) NMS

video 1/1 (311/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 32 persons, Done. (1734.4ms) Inference, (2.1ms) NMS

video 1/1 (312/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 31 persons, Done. (1411.6ms) Inference, (1.9ms) NMS

video 1/1 (313/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 30 persons, Done. (1493.6ms) Inference, (2.1ms) NMS

video 1/1 (314/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 31 persons, Done. (1359.8ms) Inference, (1.7ms) NMS

video 1/1 (315/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 30 persons, Done. (1314.2ms) Inference, (1.5ms) NMS

video 1/1 (316/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 30 persons, Done. (1302.4ms) Inference, (1.4ms) NMS

video 1/1 (317/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 30 persons, Done. (1279.1ms) Inference, (1.4ms) NMS

video 1/1 (318/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 30 persons, Done. (1599.6ms) Inference, (2.3ms) NMS

video 1/1 (319/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 30 persons, Done. (1979.8ms) Inference, (1.7ms) NMS

video 1/1 (320/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 31 persons, Done. (2007.2ms) Inference, (2.2ms) NMS

video 1/1 (321/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 30 persons, Done. (1996.9ms) Inference, (1.9ms) NMS

video 1/1 (322/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 32 persons, Done. (1973.3ms) Inference, (2.5ms) NMS

video 1/1 (323/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 33 persons, Done. (1403.1ms) Inference, (1.4ms) NMS

video 1/1 (324/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 35 persons, Done. (1325.5ms) Inference, (1.6ms) NMS

video 1/1 (325/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 35 persons, Done. (1319.3ms) Inference, (1.5ms) NMS

video 1/1 (326/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 35 persons, Done. (1315.0ms) Inference, (1.6ms) NMS

video 1/1 (327/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 34 persons, Done. (1320.9ms) Inference, (1.8ms) NMS

video 1/1 (328/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 34 persons, Done. (1281.8ms) Inference, (1.5ms) NMS

video 1/1 (329/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 33 persons, Done. (1278.7ms) Inference, (1.5ms) NMS

video 1/1 (330/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 35 persons, Done. (1669.6ms) Inference, (1.9ms) NMS

video 1/1 (331/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 33 persons, Done. (1903.8ms) Inference, (2.2ms) NMS

video 1/1 (332/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 35 persons, Done. (1995.7ms) Inference, (2.0ms) NMS

video 1/1 (333/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 31 persons, Done. (1910.9ms) Inference, (2.0ms) NMS

video 1/1 (334/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 35 persons, Done. (2021.2ms) Inference, (2.5ms) NMS

video 1/1 (335/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 35 persons, Done. (1323.6ms) Inference, (1.4ms) NMS

video 1/1 (336/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 34 persons, Done. (1255.2ms) Inference, (1.5ms) NMS

video 1/1 (337/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 31 persons, Done. (1296.8ms) Inference, (1.6ms) NMS

video 1/1 (338/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 31 persons, Done. (1284.7ms) Inference, (1.3ms) NMS

video 1/1 (339/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 32 persons, Done. (1233.2ms) Inference, (1.3ms) NMS

video 1/1 (340/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 29 persons, Done. (1327.9ms) Inference, (1.7ms) NMS

video 1/1 (341/343) /content/yolov7-object-tracking/background video | people | walking | [ORrrKXGx2SE].webm: 30 persons, Done. (1310.6ms) Inference, (1.4ms) NMS

Done. (560.343s)

RESULT:

Thus the python program for Object Detection and Recognition implemented and output is obtained successfully.

EXP:5	**MOTION ANALYSIS USING MOVING EDGES**
DATE:	

AIM:

To Develop a program for motion analysis using moving edges, and apply it to your image sequences.

ALGORITHM:

Objective

Creating automated Laban movement annotation:

- Training four different machine learning algorithms through supervised learning on existing human motion datasets of video and skeletal sequences
- Test feature extraction methods (within and across frames) to improve the annotation accuracy
- Input raw videos and export Laban annotated videos

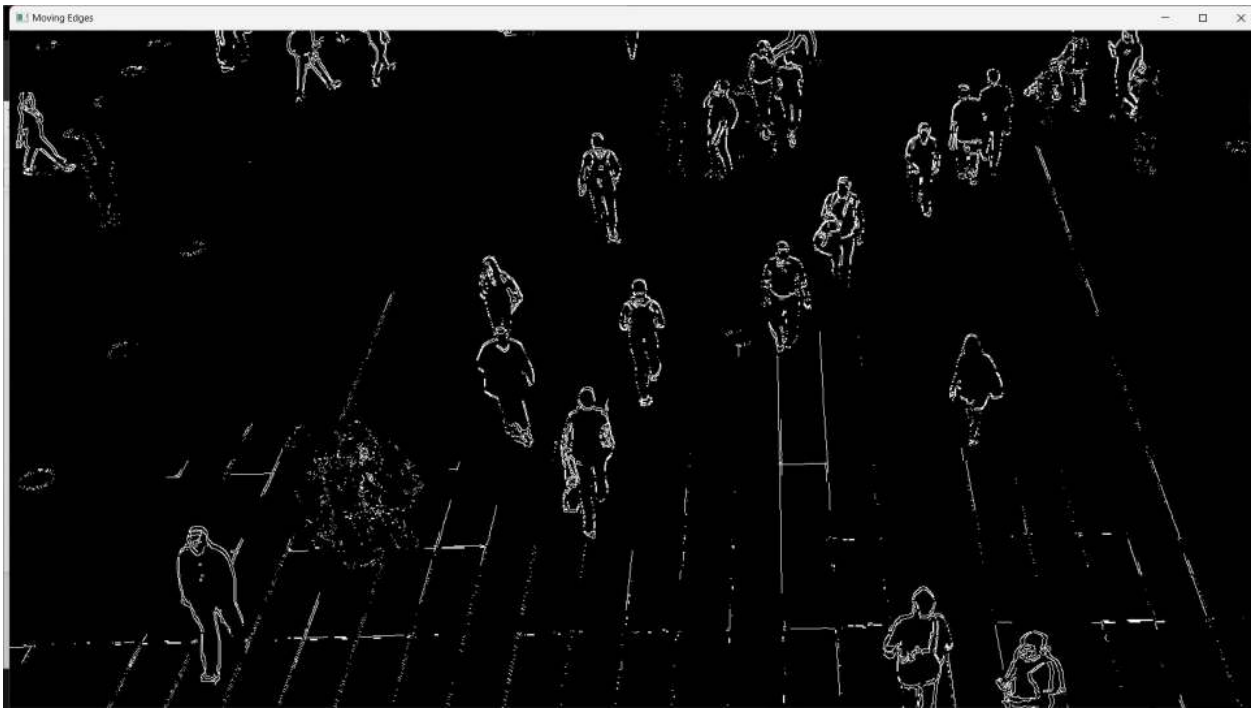
PROGRAM:

```
import cv2
```

```
import numpy as np

# Function to perform motion analysis using moving edges
def motion_analysis(video_path):
    cap = cv2.VideoCapture(video_path)

    # Read the first frame
    ret, prev_frame = cap.read()
    prev_gray = cv2.cvtColor(prev_frame, cv2.COLOR_BGR2GRAY)

    while cap.isOpened():
        ret, frame = cap.read()
        if not ret:
            break

        # Convert the current frame to grayscale
        gray = cv2.cvtColor(frame, cv2.COLOR_BGR2GRAY)

        # Perform Canny edge detection on both frames
        edges_prev = cv2.Canny(prev_gray, 50, 150)
        edges_curr = cv2.Canny(gray, 50, 150)

        # Compute frame difference to detect moving edges
        frame_diff = cv2.absdiff(edges_prev, edges_curr)

        # Display the moving edges
        cv2.imshow('Moving Edges', frame_diff)
        if cv2.waitKey(30) & 0xFF == ord('q'):
```

```
            break

        # Update the previous frame and previous grayscale image
        prev_gray = gray.copy()

    cap.release()
    cv2.destroyAllWindows()

# Replace 'path_to_video.mp4' with your video file path
video_path = "background-video-people-walking-1080-ytshorts.savetube.me.mp4"
motion_analysis(video_path)
```

OUTPUT:



RESULT:

Thus the python program for motion analysis using moving edge was implemented and output is obtained successfully.

EXP:6	**FACIAL DETECTION AND RECOGNITION**
DATE:	

AIM:

To Develop a program for Facial Detection and Recognition.

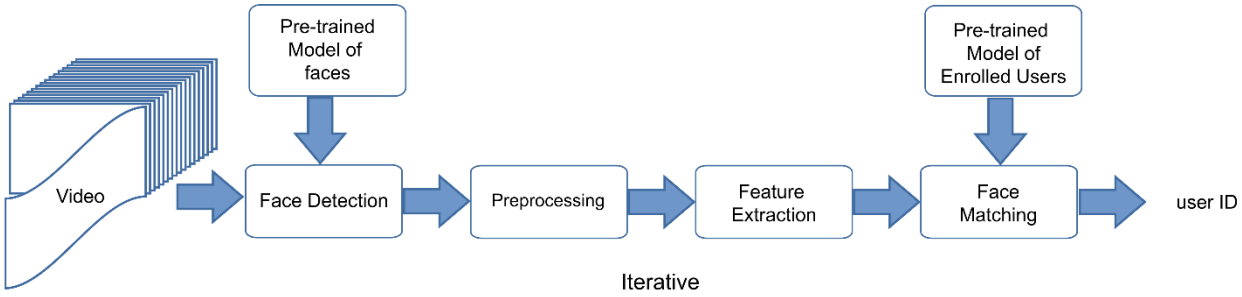
ALGORITHM:

Face Detection: The very first task we perform is detecting faces in the image or video stream. Now that we know the exact location/coordinates of face, we extract this face for further processing ahead.

Feature Extraction: Now that we have cropped the face out of the image, we extract features from it. Here we are going to use face embeddings to extract the features out of the face. A neural network takes an image of the person's face as input and outputs a vector which represents the most important features of a face. In machine learning, this vector is called embedding and thus we call this vector as face embedding.

$$f\left(\text{  }\right) = \begin{pmatrix} 0.112 \\ 0.067 \\ 0.091 \\ 0.129 \\ 0.002 \\ 0.012 \\ 0.175 \\ \vdots \\ 0.023 \end{pmatrix}$$

ARCHITECTURE:



PROGRAM:

```
from imutils import paths
import face_recognition
import pickle
import cv2
import os


#get paths of each file in folder named Images
#Images here contains my data(folders of various persons)
imagePaths = list(paths.list_images('Images'))
knownEncodings = []
knownNames = []
```

```
# loop over the image paths
for (i, imagePath) in enumerate(imagePaths):
    # extract the person name from the image path
    name = imagePath.split(os.path.sep)[-2]
    # load the input image and convert it from BGR (OpenCV ordering)
    # to dlib ordering (RGB)
    image = cv2.imread(imagePath)
    rgb = cv2.cvtColor(image, cv2.COLOR_BGR2RGB)
    #Use Face_recognition to locate faces
    boxes = face_recognition.face_locations(rgb,model='hog')
    # compute the facial embedding for the face
    encodings = face_recognition.face_encodings(rgb, boxes)
    # loop over the encodings
    for encoding in encodings:
        knownEncodings.append(encoding)
        knownNames.append(name)
#save emcodings along with their names in dictionary data
data = {"encodings": knownEncodings, "names": knownNames}
#use pickle to save data into a file for later use
f = open("face_enc", "wb")
f.write(pickle.dumps(data))
f.close()


#FACE REGAGNITION LIVE WEBCAM
import face_recognition
import imutils
import pickle
import time
```

```
import cv2
import os

#find path of xml file containing haarcascade file
cascPathface = os.path.dirname(
 cv2.__file__) + "/data/haarcascade_frontalface_alt2.xml"
# load the harcaascade in the cascade classifier
faceCascade = cv2.CascadeClassifier(cascPathface)
# load the known faces and embeddings saved in last file
data = pickle.loads(open('face_enc', "rb").read())

print("Streaming started")
video_capture = cv2.VideoCapture(0)
# loop over frames from the video file stream
while True:
    # grab the frame from the threaded video stream
    ret, frame = video_capture.read()
    gray = cv2.cvtColor(frame, cv2.COLOR_BGR2GRAY)
    faces = faceCascade.detectMultiScale(gray,
                                         scaleFactor=1.1,
                                         minNeighbors=5,
                                         minSize=(60, 60),
                                         flags=cv2.CASCADE_SCALE_IMAGE)

    # convert the input frame from BGR to RGB
    rgb = cv2.cvtColor(frame, cv2.COLOR_BGR2RGB)
    # the facial embeddings for face in input
    encodings = face_recognition.face_encodings(rgb)
```

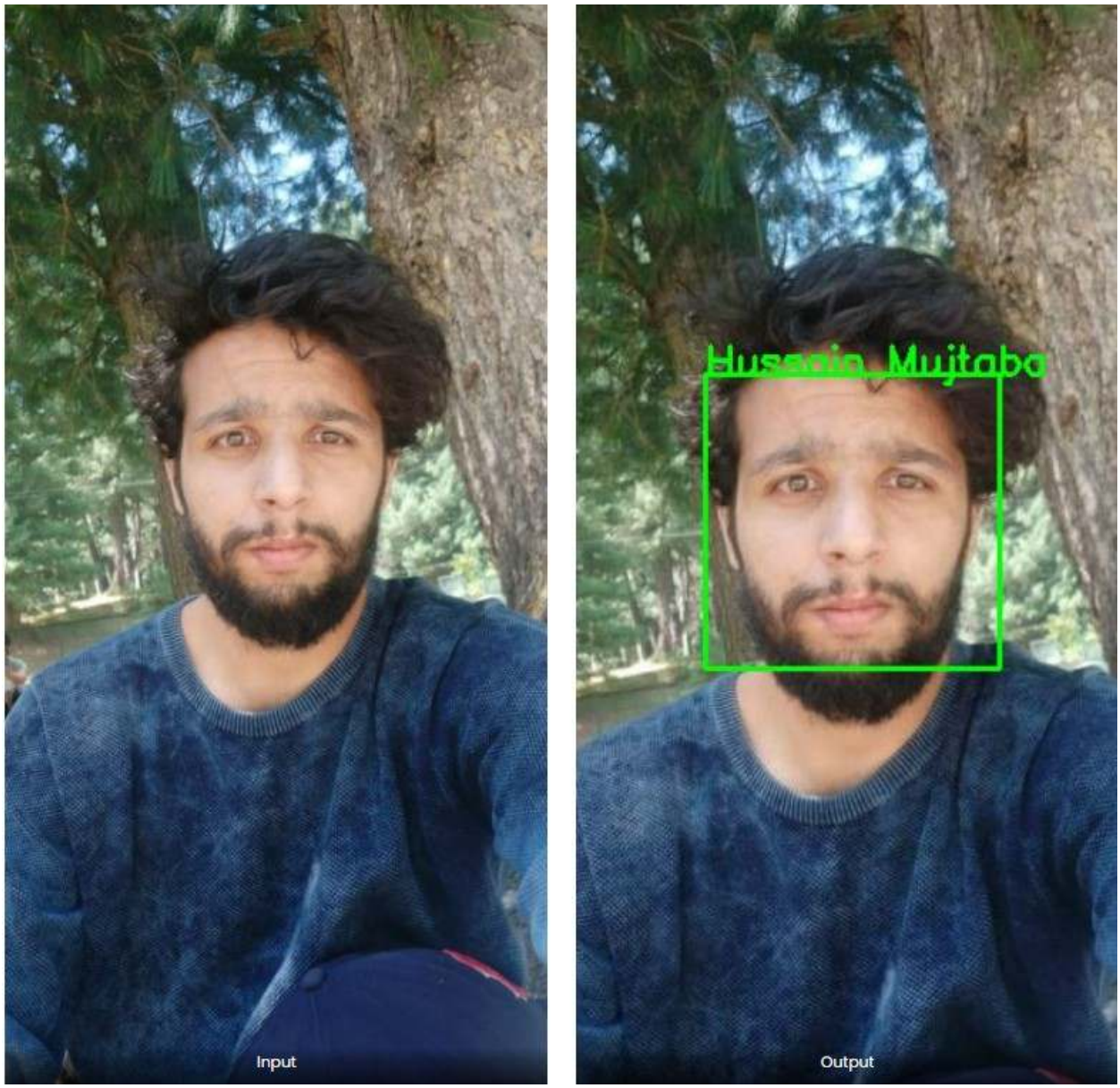
```
    names = []
    # loop over the facial embeddings incase
    # we have multiple embeddings for multiple fcaes
    for encoding in encodings:
      #Compare encodings with encodings in data["encodings"]
      #Matches contain array with boolean values and True for the embeddings it matches closely
      #and False for rest
       matches = face_recognition.compare_faces(data["encodings"],
        encoding)
       #set name =inknown if no encoding matches
       name = "Unknown"
       # check to see if we have found a match
       if True in matches:
          #Find positions at which we get True and store them
          matchedIdxs = [i for (i, b) in enumerate(matches) if b]
          counts = {}
          # loop over the matched indexes and maintain a count for
          # each recognized face face
          for i in matchedIdxs:
             #Check the names at respective indexes we stored in matchedIdxs
             name = data["names"][i]
             #increase count for the name we got
             counts[name] = counts.get(name, 0) + 1
          #set name which has highest count
          name = max(counts, key=counts.get)


       # update the list of names
```

```
        names.append(name)
        # loop over the recognized faces
        for ((x, y, w, h), name) in zip(faces, names):
            # rescale the face coordinates
            # draw the predicted face name on the image
            cv2.rectangle(frame, (x, y), (x + w, y + h), (0, 255, 0), 2)
            cv2.putText(frame, name, (x, y), cv2.FONT_HERSHEY_SIMPLEX,
             0.75, (0, 255, 0), 2)
    cv2.imshow("Frame", frame)
    if cv2.waitKey(1) & 0xFF == ord('q'):
        break
video_capture.release()
cv2.destroyAllWindows()
#Face Recognition in Images
import face_recognition
import imutils
import pickle
import time
import cv2
import os

#find path of xml file containing haarcascade file
cascPathface = os.path.dirname(
 cv2.__file__) + "/data/haarcascade_frontalface_alt2.xml"
# load the harcaascade in the cascade classifier
faceCascade = cv2.CascadeClassifier(cascPathface)
# load the known faces and embeddings saved in last file
data = pickle.loads(open('face_enc', "rb").read())
```

```
#Find path to the image you want to detect face and pass it here
image = cv2.imread(Path-to-img)
rgb = cv2.cvtColor(image, cv2.COLOR_BGR2RGB)
#convert image to Greyscale for haarcascade
gray = cv2.cvtColor(image, cv2.COLOR_BGR2GRAY)
faces = faceCascade.detectMultiScale(gray,
                                     scaleFactor=1.1,
                                     minNeighbors=5,
                                     minSize=(60, 60),
                                     flags=cv2.CASCADE_SCALE_IMAGE)


# the facial embeddings for face in input
encodings = face_recognition.face_encodings(rgb)
names = []
# loop over the facial embeddings incase
# we have multiple embeddings for multiple fcaes
for encoding in encodings:
   #Compare encodings with encodings in data["encodings"]
   #Matches contain array with boolean values and True for the embeddings it matches
closely
   #and False for rest
   matches = face_recognition.compare_faces(data["encodings"],
   encoding)
   #set name =inknown if no encoding matches
   name = "Unknown"
   # check to see if we have found a match
   if True in matches:
      #Find positions at which we get True and store them
      matchedIdxs = [i for (i, b) in enumerate(matches) if b]
```

```
    counts = {}
    # loop over the matched indexes and maintain a count for
    # each recognized face face
    for i in matchedIdxs:
        #Check the names at respective indexes we stored in matchedIdxs
        name = data["names"][i]
        #increase count for the name we got
        counts[name] = counts.get(name, 0) + 1
        #set name which has highest count
        name = max(counts, key=counts.get)


    # update the list of names
    names.append(name)
    # loop over the recognized faces
    for ((x, y, w, h), name) in zip(faces, names):
        # rescale the face coordinates
        # draw the predicted face name on the image
        cv2.rectangle(image, (x, y), (x + w, y + h), (0, 255, 0), 2)
        cv2.putText(image, name, (x, y), cv2.FONT_HERSHEY_SIMPLEX,
         0.75, (0, 255, 0), 2)
cv2.imshow("Frame", image)
cv2.waitKey(0)
```

OUTPUT:



RESULT:

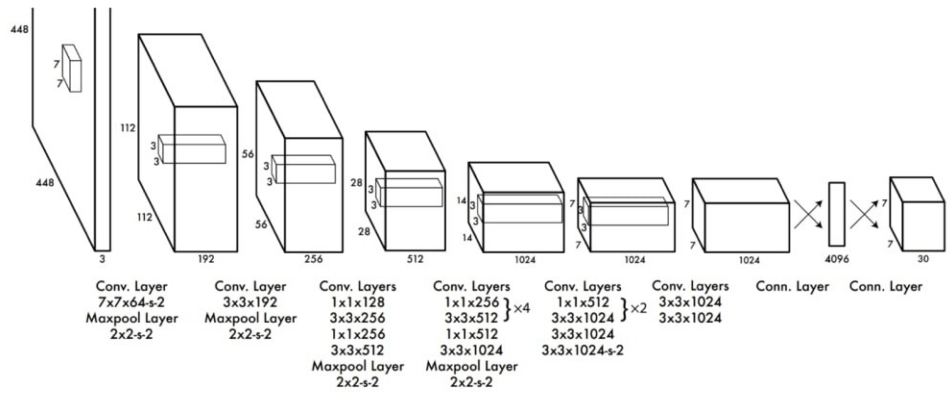
Thus the python program for Facial Detection and Recognition was implemented and output is obtained successfully.

EXP:7	**EVENT DETECTION IN VIDEO SURVEILLANCE SYSTEM**
DATE:	

AIM:

To Write a program for event detection in video surveillance system

ALGORITHM:(ARCHITECTURE):



The Architecture. Our detection network has 24 convolutional layers followed by 2 fully connected layers. Alternating 1×1 convolutional layers reduce the features space from preceding layers. We pretrain the convolutional layers on the ImageNet classification task at half the resolution (224×224 input image) and then double the resolution for detection.

PROGRAM:

```
import cv2


# Initialize video capture

video_capture = cv2.VideoCapture("background-video-people-walking-1080-
ytshorts.savetube.me.mp4")  # Replace with your video file


# Initialize background subtractor

bg_subtractor = cv2.createBackgroundSubtractorMOG2()


while video_capture.isOpened():

   ret, frame = video_capture.read()
```

```
        if not ret:
            break

        # Apply background subtraction
        fg_mask = bg_subtractor.apply(frame)

        # Apply thresholding to get a binary mask
        _, thresh = cv2.threshold(fg_mask, 50, 255, cv2.THRESH_BINARY)

        # Find contours
        contours, _ = cv2.findContours(thresh, cv2.RETR_EXTERNAL,
    cv2.CHAIN_APPROX_SIMPLE)

        for contour in contours:
            # Filter contours based on area (adjust the threshold as needed)
            if cv2.contourArea(contour) > 100:
                # Draw a bounding box around detected objects or events
                x, y, w, h = cv2.boundingRect(contour)
                cv2.rectangle(frame, (x, y), (x + w, y + h), (0, 255, 0), 2)

        # Display the processed frame
        cv2.imshow('Video', frame)

        if cv2.waitKey(1) & 0xFF == ord('q'):
            break
    # Release video capture and close OpenCV windows
    video_capture.release()
    cv2.destroyAllWindows()
```

OUTPUT:

RESULT:

Thus the python program for event detection in video surveillance system was implemented and output is obtained successfully.