7. Capture video from web Camera and Display the video, in slow motion and in fast motion operations on the captured video

AIM: The Aim is to Capture video from web Camera and Display the video, in slow motion and in fast motion operations on the captured video

PROGRAM:

```python
import cv2
def display_video_slow_fast(video_path, slow_factor=0.5, fast_factor=2.0):
    cap = cv2.VideoCapture(video_path)
    if not cap.isOpened():
        print("Error: Could not open video device or file.")
        return
    while True:
        ret, frame = cap.read()
        if not ret:
            print("Error: Failed to capture frame.")
            break
        cv2.imshow('Original Video', frame)
        slow_frame = cv2.resize(frame, None, fx=slow_factor, fy=slow_factor, interpolation=cv2.INTER_LINEAR)
        cv2.imshow('Slow Motion', slow_frame)
        fast_frame = cv2.resize(frame, None, fx=fast_factor, fy=fast_factor, interpolation=cv2.INTER_LINEAR)
        cv2.imshow('Fast Motion', fast_frame)
        if cv2.waitKey(1) & 0xFF == ord('q'):
            break
    cap.release()
    cv2.destroyAllWindows()
video_path = 0
display_video_slow_fast(video_path)
```
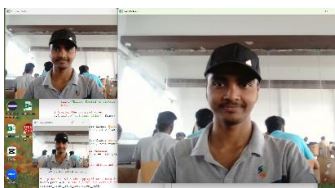
OUTPUT :

8. Scaling an image to its Bigger and Smaller sizes.

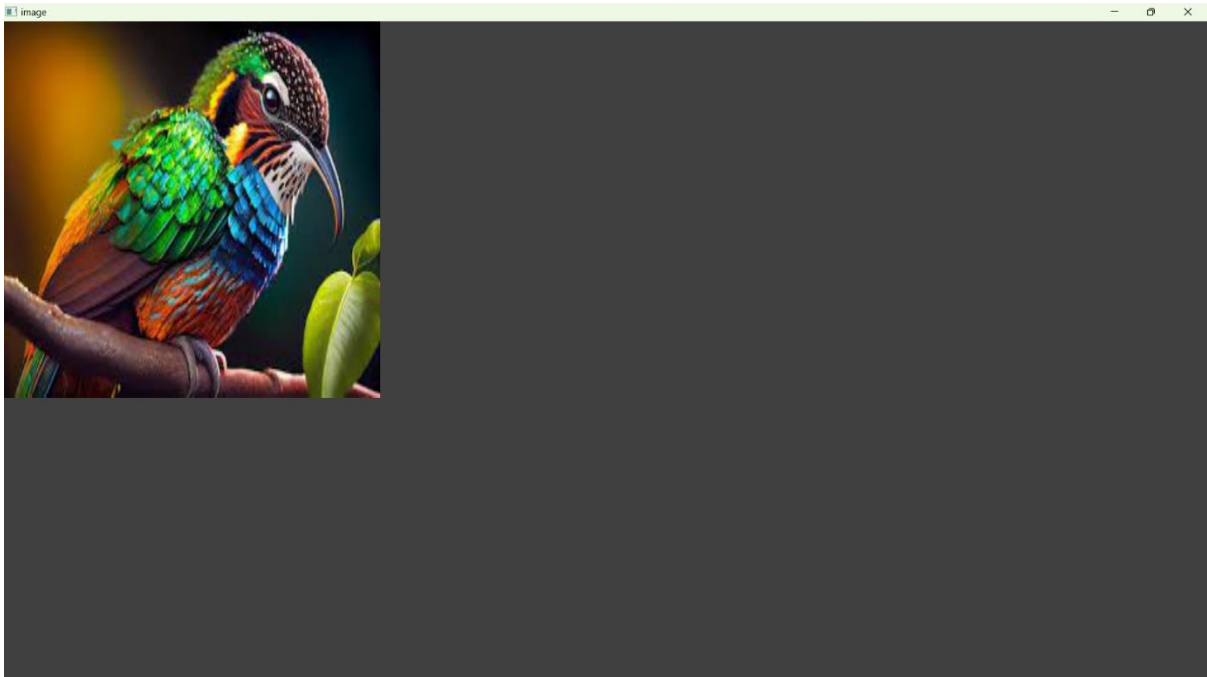**AIM:** The Aim is resize the image from bigger to smaller size

PROGRAM :

```
import cv2

import numpy as np

kernel = np.ones((5,5),np.uint8)

img = cv2.imread("C:/Users/vempa/Downloads/BIRD.jpg",cv2.IMREAD_COLOR)

img = cv2.resize(img,(600,600))

cv2.imshow("image",img)

cv2.waitKey(0)
```

INPUT :

OUTPUT:

9. Perform Rotation of an image to clockwise and counter clockwise direction.

ROTATION 90 ALONG DEGREE:

AIM : The Aim of the Experiment is to perform Rotation of an image along 90 degree

PROGRAM:

import cv2

path = r"C:\Users\vempa\Downloads\BIRD2.jpg"

src = cv2.imread(path)

window_name = 'Image'

image = cv2.rotate(src, cv2.ROTATE_90_COUNTERCLOCKWISE)

cv2.imshow(window_name, image)

cv2.waitKey(0)

INPUT:

OUTPUT:

10.ROTATION ALONG 180 DEGREE

AIM :The Aim of the Experiment is to perform Rotation of an image along 180 degree.

PROGRAM :

```
import cv2

path=r"C:\Users\vempa\Downloads\BIRD2.jpg"

src = cv2.imread(path)

window_name = 'Image'

image = cv2.rotate(src, cv2.ROTATE_180)

cv2.imshow(window_name, image)

cv2.waitKey(0)
```

INPUT:

OUTPUT:

11. Perform Affine Transformation on the image.

AIM : To Perform Affine Transformation on the image.

PROGRAM :

```
import cv2
import numpy as np
img = cv2.imread(r"C:\Users\vempa\Downloads\BIRD2.jpg")
rows,cols,_ = img.shape
pts1 = np.float32([[50,50],[200,50],[50,200]])
pts2 = np.float32([[10,100],[200,50],[100,250]])
M = cv2.getAffineTransform(pts1,pts2)
dst = cv2.warpAffine(img,M,(cols,rows))
cv2.imshow("Affine Transform", dst)
cv2.waitKey(0)
cv2.destroyAllWindows()
```

INPUT:

OUTPUT:

12. Perform Perspective Transformation on the image.

AIM : To Perform Perspective Transformation on the image

PROGRAM :

```
import cv2

import numpy as np

img = cv2.imread(r"C:\Users\vempa\Downloads\BIRD2.jpg")

rows,cols,ch = img.shape

pts1 = np.float32([[56,65],[368,52],[28,387],[389,390]])

pts2 = np.float32([[100,50],[300,0],[0,300],[300,300]])

M = cv2.getPerspectiveTransform(pts1,pts2)

dst = cv2.warpPerspective(img,M,(cols, rows))

cv2.imshow('Transformed Image', dst)

cv2.waitKey(0)

cv2.destroyAllWindows()
```

INPUT:

OUTPUT :