Experiment-2 Worksheet

Question:

Write the python program to implement the different modules of reading and displaying the image and video using openCV in with all the techniques that we have learnt during the session.(format is given below)

Experiment Title :Read and Display Images

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Semester: 5   **Date of Performance:**

Subject Name: Digital Image Processing lab   **Subject Code: CSF-336**

1. Aim/Overview of the practical:

 To use OpenCV with Python for Image and Video Analysis

2. The task to be done:

We need import all the required libraries for performing the tasks in different modules and we need have images in different formats.

We will read the image and video, show and perform task with both image and video in different modules.

3. required libraries or software

Import these all libraries to perform tasks we will work with these in jupyter notebook.

- Numpy
- Matplotlib
- CV2

4. Algorithm/Flowchart :

1. Import library
2. Read the image
3. Show image
4. Plot on the image

5. Theme/Interests definition(For creative domains):

6. Steps for experiment/practical: (Step by step):

Importing the required libraries:

```python
In [1]: import numpy as np
        import matplotlib.pyplot as plt
        import cv2 as cv
```

Reading the image and displaying it:

```python
img = cv.imread('C:/Users/SV Reddy/Downloads/Lenna.png', cv.IMREAD_GRAYSCALE)


cv.imshow('Image window', img)

cv.waitKey(0)
cv.destroyAllWindows
```

Plotting on the image using open cv:

```
# Convert GBR colour mode to RGB colour mode
RGBimg = cv.cvtColor(img, cv.COLOR_BGR2RGB)

# To plot on the image
plt.plot([120,700] , [230,700] , 'c' , linewidth=5)

# using matplotlib to display the image
plt.imshow(RGBimg)

# Save the image
cv.imwrite('C:/Users/SV Reddy/Downloads/Woman.png' , img)
```
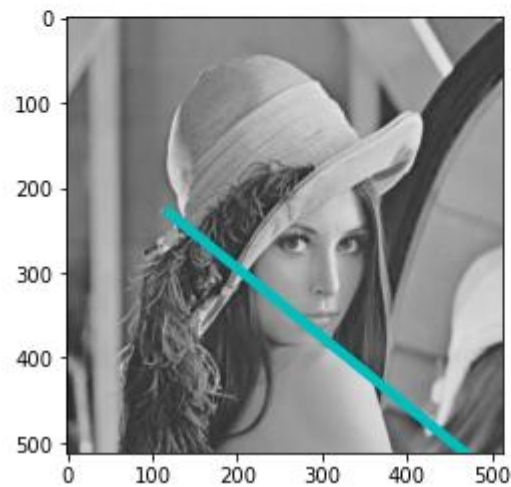
Out[2]: True

Reading and playing the video:

```
In [3]: import numpy as np
        import cv2 as cv

        # To capture the video
        cap = cv.VideoCapture('C:/Users/SV Reddy/Downloads/example video.mp4')

        while(True):

            #infinite loop, ret_repeat
            ret, frame = cap.read()
            # To display the video
            cv.imshow('frame Window',frame)
            # To be broken later by a break statement
            if cv.waitKey(1) & 0xFF == ord('1'):
                break


        cap.release()
        cv.destroyAllWindows()
```

Making the video into grayscale:

```
In [1]: import numpy as np
        import cv2 as cv

        cap = cv.VideoCapture('./video.mp4')

        while(True):

            #infinite loop, ret_repeat
            ret, frame = cap.read()
            #convering to gray
            grayimg = cv.cvtColor(frame, cv.COLOR_BGR2GRAY)
            # To display the video
            cv.imshow('frame Window',frame)
            cv.imshow('Gray Window', grayimg)
            # To be broken later by a break statement
            if cv.waitKey(1) & 0xFF == ord('q'):
                break

        cap.release()
        cv.destroyAllWindows()
```

7. Observations/Discussions(For applied/experimental sciences/materials based labs):

(if the same concept had to be applied in the real-life where would you choose to apply)

This can pretty much say how one can plot on the images using various techniques and how one can manipulate a video.
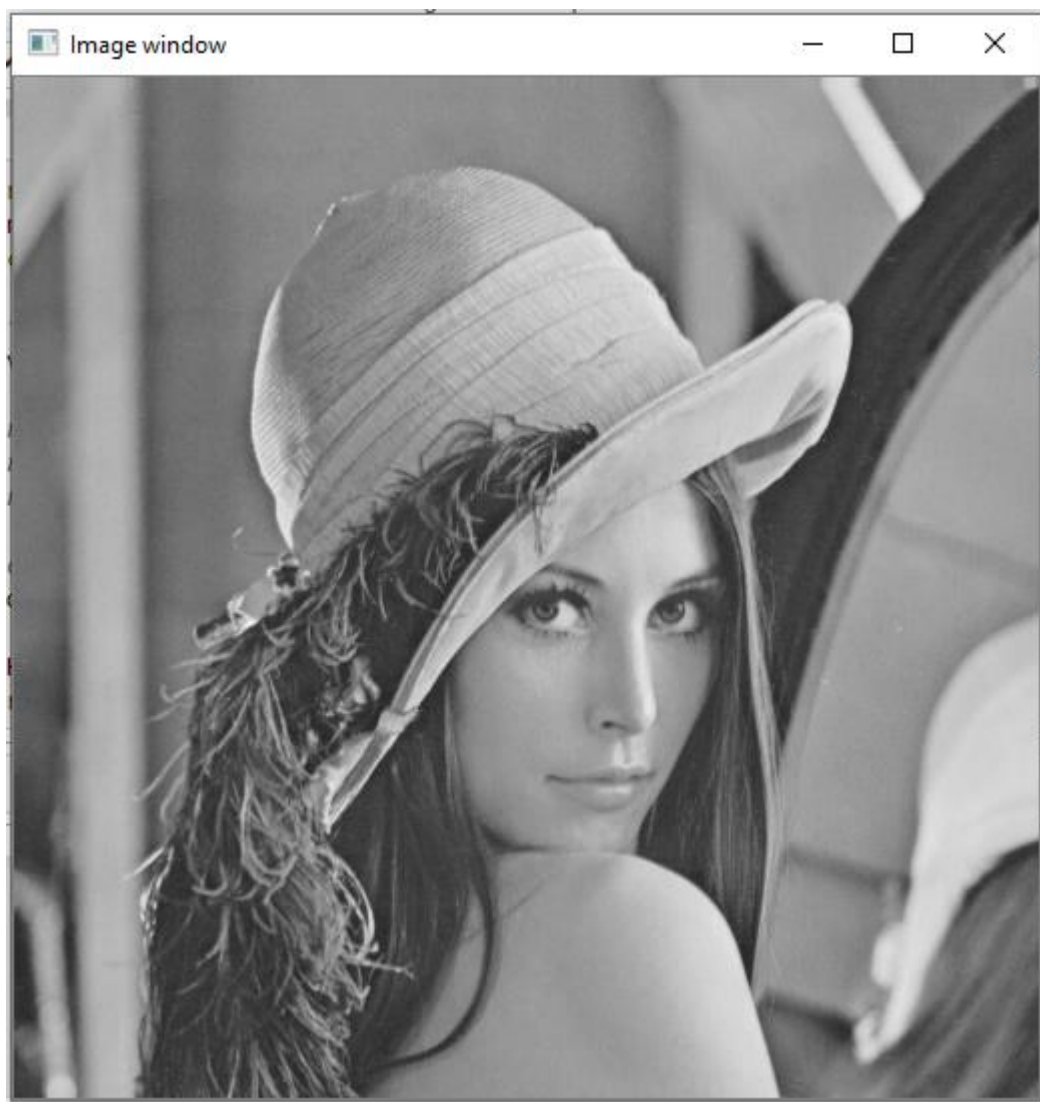
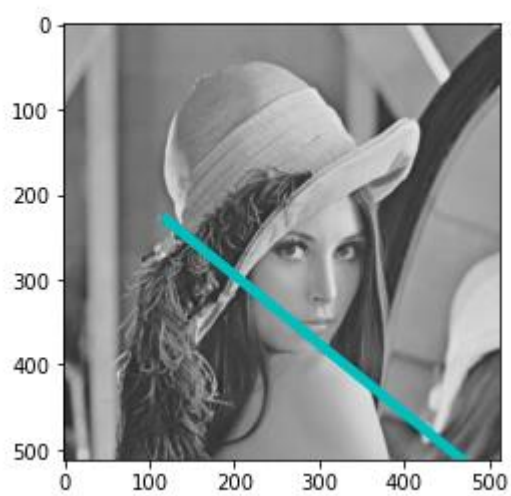**8. Percentage error (if any or applicable):**

NO error.

9. The command that we have learned today in the program :

- How to plot on an image.
- How to manipulate a video.

10. Result/Output/Writing Summary of the concept behind the experiment:

Out[2]: True

frame Window (Not Responding)

11. Graphs (If Any): Image /Soft copy of graph paper to be attached here

NO graphs.