Image Understanding and Processing (OpenCv-Python)

Lab Exercise – 03

Year 4 **Semester 1, 2024**

Goal

- Calculate histograms, using both OpenCV and Numpy functions
- Plot histograms, using OpenCV and Matplotlib functions
- Apply mask operations on histograms

1. Histogram calculation/plotting in OpenCV

```
import cv2
import numpy as np
import matplotlib.pyplot as plt
img = cv2.imread('F:/Python/sunflower.jpg',0)

# find frequency of pixels in range 0-255
histr = cv2.calcHist([img],[0],None,[256],[0,256])

# show the plotting graph of an image
plt.plot(histr)
plt.show()
```

2. Histogram calculation/plotting in Numpy

```
import cv2
import numpy as np
import matplotlib.pyplot as plt
img = cv2.imread('F:/Python/sunflower.jpg',0)

# alternative way to find histogram of an image
hist,bins = np.histogram(img.ravel(),256,[0,256])

# show the plotting graph of an image
plt.plot(hist)
plt.show()
```

3. **BGR histograms – Complete the code below**

```
import cv2
import numpy as np
import matplotlib.pyplot as plt
img = cv2.imread('F:/Python/sunflower.jpg',1)
color = ('b','g','r')
for i,col in enumerate(color):
   #complete the code here
plt.show()
```

4. **Application of a mask – Try to obtain the outputs below**