



# Image Understanding and Processing (OpenCv-Python)

## Lab Exercise – 03

Year 4

Semester 1, 2025

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### 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

