

# Shri Ramdeobaba College of Engineering and Management

## Nagpur, 440013

### Department of Computer Engineering

#### FDVIP Lab

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**AIM - To study and perform Histogram processing in image enhancement.**

1. Plot a Histogram of Grayscale and Color Image
2. Contrast and Brightness stretching of Grayscale image
3. Perform Histogram Equalization on Grayscale image

## Importing Dependencies

```
import cv2
import matplotlib.pyplot as plt
import numpy as np
import seaborn as sns

sns.set_style('darkgrid')
colors = ["#ffbe0b", "#fb5607", "#ff006e", "#8338ec", "#3a86ff"]
rgb = ["#118ab2", "#06d6a0", "#ef476f"]
```

## Reading the images

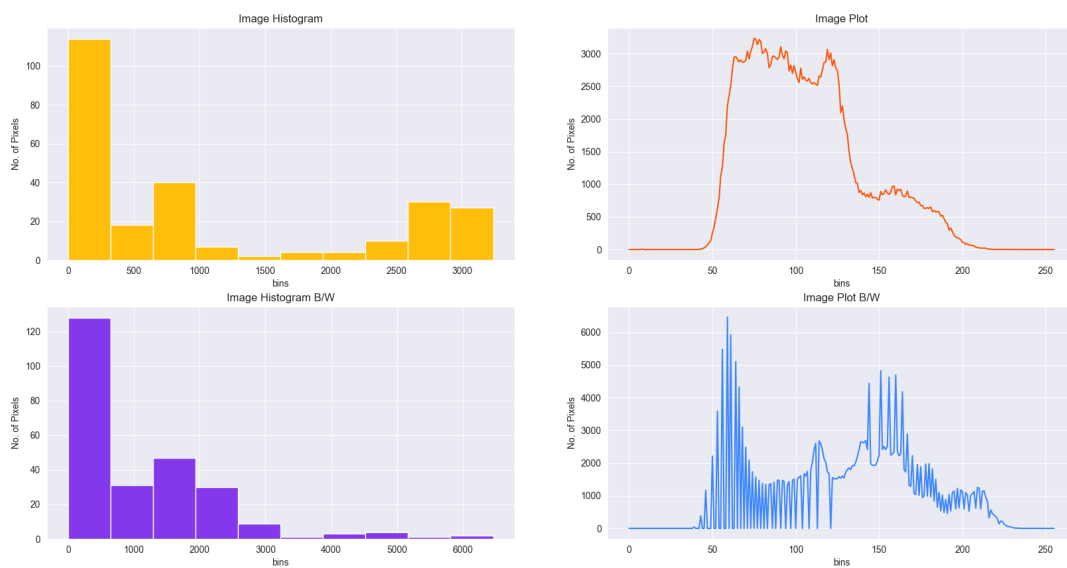
```
img = cv2.imread('../data/cameraman.jpg', 0)
img_color = cv2.imread('../data/cameraman.jpg')
```

# 1. Plot a Histogram of Grayscale and Color Image

## Grayscale Image

```
plt.hist(img.ravel(), 256, [0, 256])  
plt.show()
```

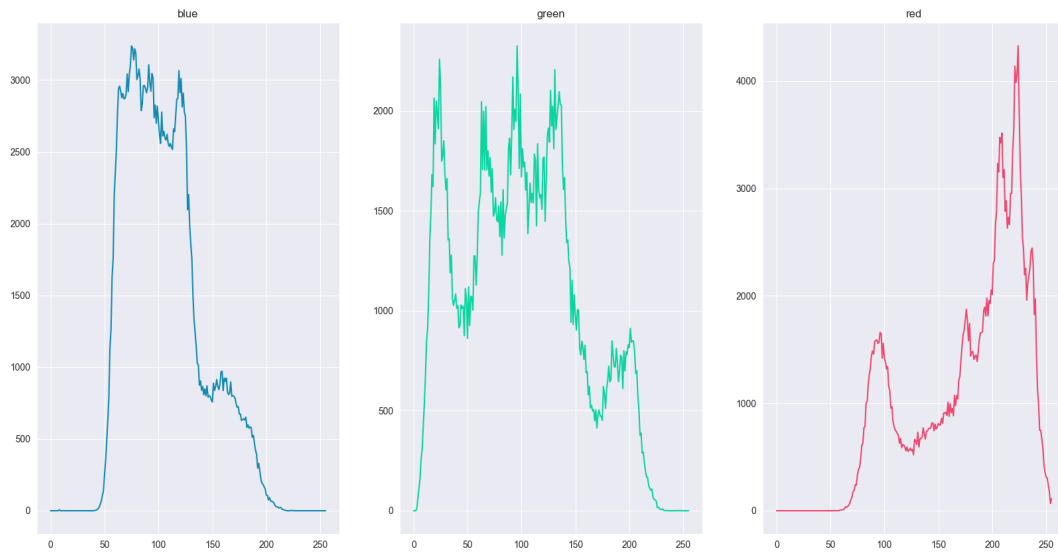
## Output



## Color Image

```
plt.figure(figsize=(20, 10))  
for i, col in enumerate(['blue', 'green', 'red']):  
    histogram = cv2.calcHist([lena_image], [i], None, [256], [0, 256])  
    plt.subplot(1, 3, i + 1)  
    plt.title(col)  
    plt.plot(histogram, color=rgb[i])  
plt.show()
```

## Output

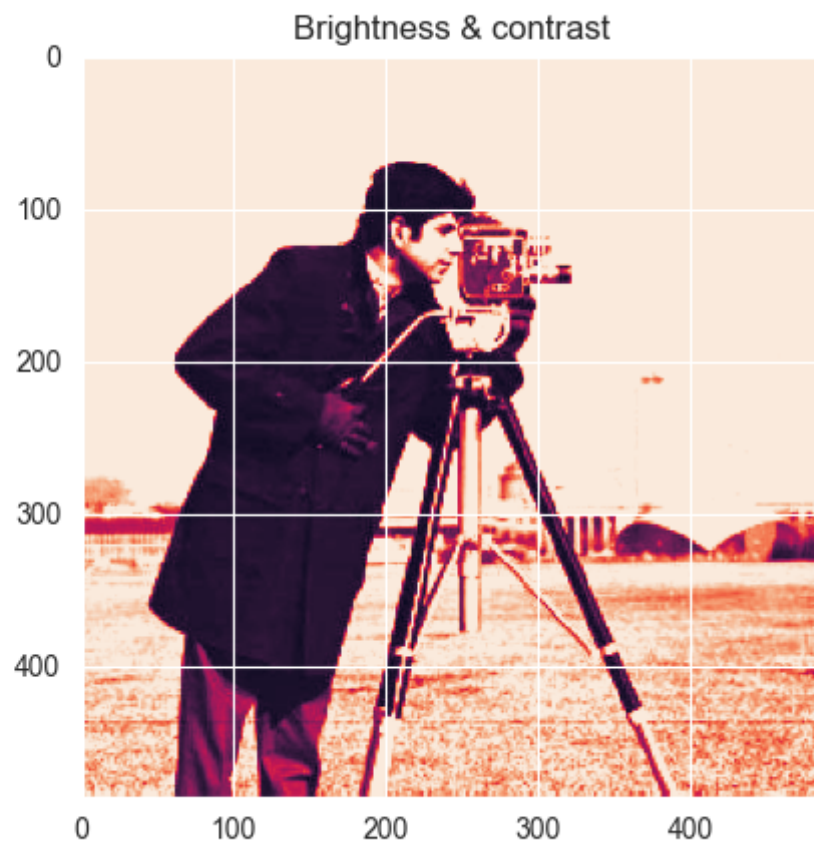


## 2. Contrast and Brightness stretching of Grayscale image

### Contrast Stretching

```
img_stretch = cv2.normalize(img, None, 0, 255, cv2.NORM_MINMAX)
plt.hist(img_stretch.ravel(), 256, [0, 256])
plt.show()
```

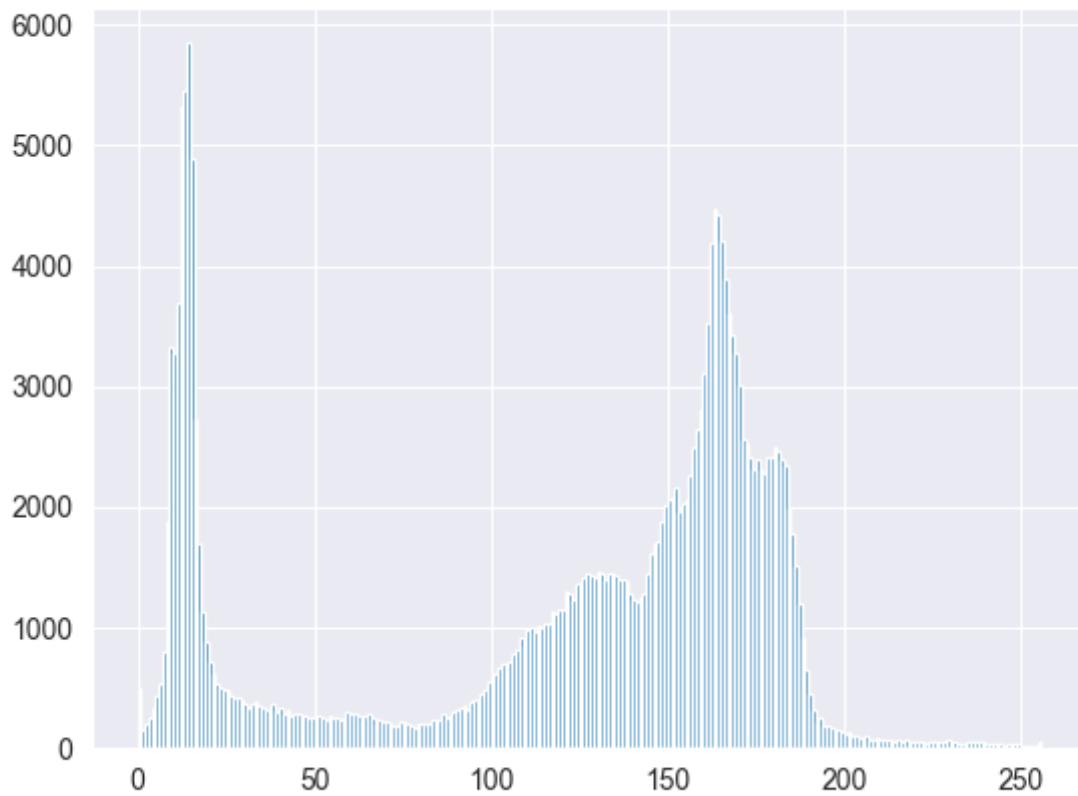
### Output



## Brightness Stretching

```
img_stretch = cv2.convertScaleAbs(img, alpha=1.5, beta=50)
plt.hist(img_stretch.ravel(), 256, [0, 256])
plt.show()
```

## Output



### 3. Perform Histogram Equalization on Grayscale image

```
img_eq = cv2.equalizeHist(img)
plt.hist(img_eq.ravel(), 256, [0, 256])
plt.show()
```

Output

