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In [1]: import cv2 as cv
import numpy as np
from matplotlib import pyplot as plt
plt.style.use('dark_background')
%matplotlib inline
```

Computer Vision

Roll No: AA.SC.P2MCA2107434

CV LAB ASSIGNMENT -1

- A. Perform histogram equalization of a gray scale image.
- B. Perform image smoothing using Gaussian filtering.
- C. Apply median filtering to remove noise from given image. Week2_Q3_image.tif

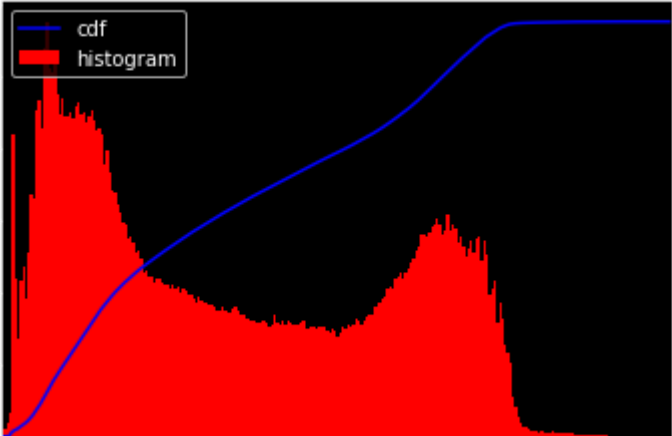
```
In [2]: import cv2
path = "R.jpg"
img = cv2.imread(path)
img = cv.cvtColor(img, cv.COLOR_BGR2GRAY)
```

```
In [3]: plt.imshow(img, cmap=plt.cm.gray)
plt.title("Original Image")
plt.show()
```



```
In [4]: def plot_histo_image(img, title):
hist,bins = np.histogram(img.flatten(),256,[0,256])
cdf = hist.cumsum()
cdf_normalized = cdf * float(hist.max()) / cdf.max()
plt.plot(cdf_normalized, color = 'b')
plt.hist(img.flatten(),256,[0,256], color = 'r')
plt.xlim([0,256])
plt.legend(('cdf','histogram'), loc = 'upper left')
plt.title(title)
plt.show()
```

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In [6]: plot_histo_image(img, "Histogram Respresntation of Input Image")
```



```
In [7]: equ = cv.equalizeHist(img)
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In [8]: plt.imshow(equ, cmap=plt.cm.gray)
plt.title("Equalized Histogram Image")
plt.show()
```

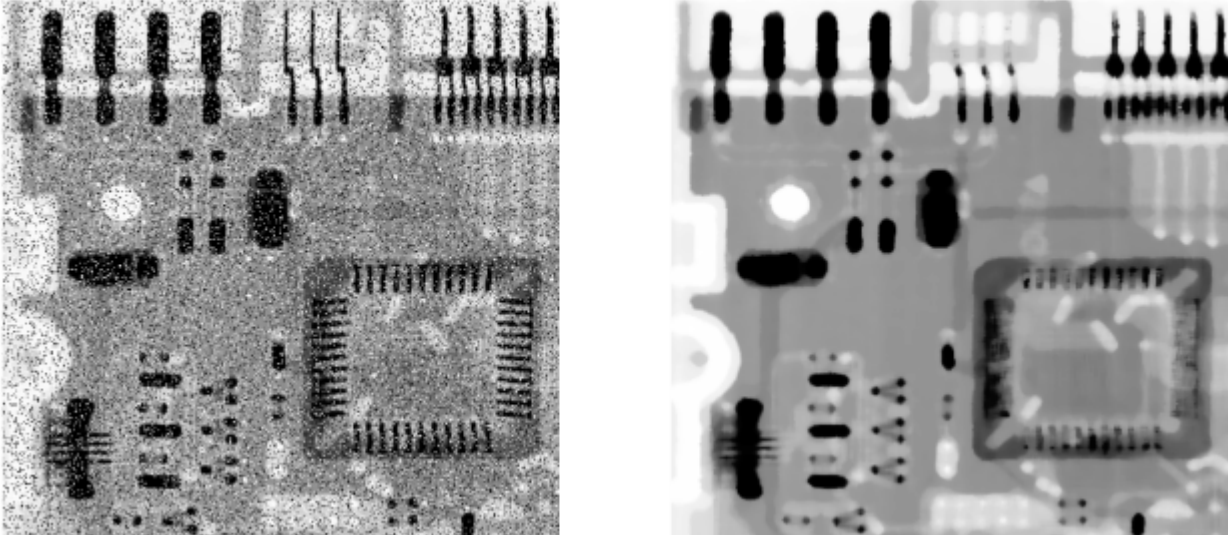


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In [9]: src = cv.imread('Ra.jpg', cv.IMREAD_UNCHANGED)
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In [13]: from PIL import Image, ImageFilter
# apply gaussian blur on src image
dst = cv.GaussianBlur(src, (5,5),cv.BORDER_DEFAULT)
blurred_image = Image.open('Ra.jpg')
blurred_image = blurred_image.filter(ImageFilter.GaussianBlur)
plt.figure(figsize = (15,15))
plt.imshow(np.hstack((src, dst, blurred_image)))
plt.title("Gaussian Smoothing")
plt.show()
```



```
In [14]: image = cv.imread('cv.tif')
image = cv.cvtColor(image, cv.COLOR_BGR2HSV)
image2 = cv.cvtColor(image, cv.COLOR_HSV2BGR)
image2 = cv.cvtColor(image2, cv.COLOR_BGR2GRAY)
median_blur_image = cv.medianBlur(image2, 9)
plt.figure(figsize=(11,6))
plt.subplot(121), plt.imshow(image2, cmap='gray'),plt.title('Original')
plt.xticks([], plt.yticks([]))
plt.subplot(122), plt.imshow(median_blur_image, cmap='gray'),plt.title('MedianFilter')
plt.xticks([], plt.yticks([]))
plt.show()
```



In []:

In []: