Notebook

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```
import numpy as np
import matplotlib.pyplot as plt
import matplotlib.image as mpimg
from PIL import Image


img = Image.open('lowcontrast.jpg')
img
```

```
img = np.asarray(img)
img = img[:,:,0]


img.shape
```

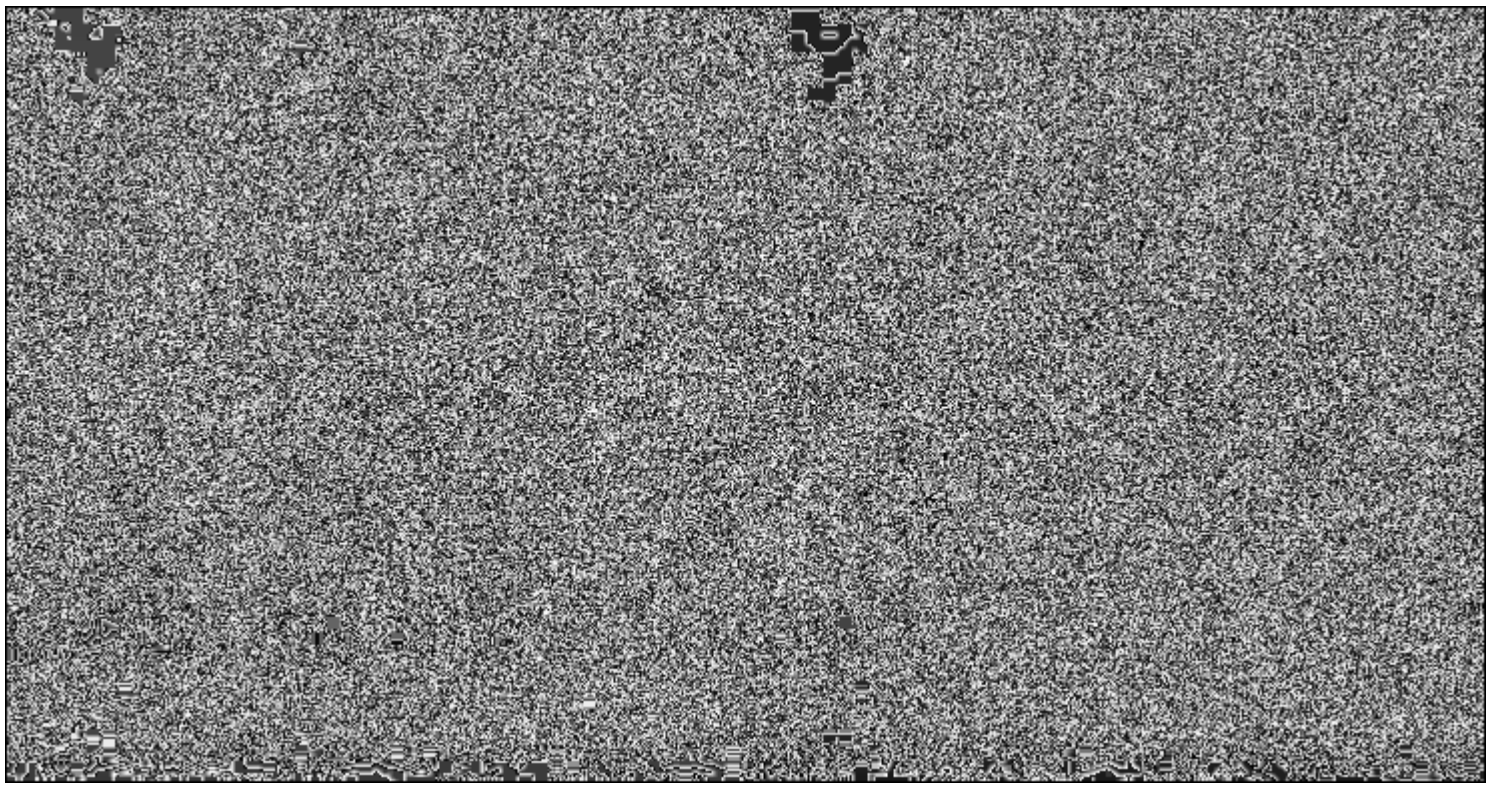
```
(388, 740)
```

Smothing Filter: Image smoothing is used to remove noise from the image and to blur the image.

```
m, n = img.shape

mask = np.ones((3, 3), dtype = int)
mask = mask/9
img_new = np.zeros((m, n))

for i in range(1, m-1):
  for j in range(1, n-1):
    temp = (img[i-1,j-1]*mask[0,0]
            +img[i-1,j]*mask[0,1]
            +img[i-1,j+1]*mask[0,2]
            +img[i,j-1]*mask[1,0]
            +img[i,j]*mask[1,1]
```



Sharpening Filter: Sharpening is used to detect edges of an image.

Low Pass Filter: A low pass filter allows to only those pixel values that are below a specified threshold.

High Pass Filter: A high pass filter allows only those pixel values that are higher than a specific threshold.