

Import libraries

```
In [1]: import numpy as np
import cv2 as cv
import matplotlib.pyplot as plt
global cnt
```

Read Image

```
In [2]: def read_image():
    path = "/media/rifat/STUDY/4-1/LAB/Image_Processing/image/tiger.png"
    img = plt.imread(path)
    grayscale = cv.cvtColor(img,cv.COLOR_RGB2GRAY)
    return img, grayscale
```

Noise Add

```
In [3]: def Noise_add(img):
    print("shape = ",img.shape," size = ",img.size )
    r,c = img.shape
    print(r,c)
    cnt = 50000;
    x= np.random.randint(r, size=(cnt))
    y= np.random.randint(c, size=(cnt))
    p = np.random.randint(1, size=(cnt))
    img1 = np.copy(img)
    for i in range(cnt):
        img1[x[i]][y[i]] = p[i]* 255
    #cv.imshow("Noice", img)
    #cv.waitKey(0)
    #cv.destroyAllWindows()
    return img1
```

Filtering

```
In [4]: def filtering(grayscale,noise_image):
        gray = np.copy(grayscale)

        gray_average = cv.blur(gray,(5,5))
        noise_average = cv.blur(noise_image,(5,5))

        noise_gaussian_blur = cv.GaussianBlur(noise_image,(5,5),cv.BORDER_DEFAULT)
        noise_median_blur = cv.medianBlur(noise_image,5)

        image = [grayscale,gray_average,noise_image,noise_average,noise_gaussian_blur,noise_median_blur]
        titles = ['grayscale','gray_average','noise_image','noise_average','noise_gaussian_blur','noise_median_blur']
        plt.figure(figsize=(30, 30))

        for i in range(1,7):
            plt.subplot(3,2,i)
            plt.imshow(image[i-1],cmap = 'gray')
            plt.title(titles[i-1])

        plt.show()
```

Main

```
In [5]: if __name__ == "__main__":  
        img, grayscale = read_image()  
        noise_image = Noise_add(grayscale)  
        filtering(grayscale, noise_image)
```

```
shape = (422, 655) size = 276410  
422 655
```



