

task-5-01-coin

January 12, 2024

Task 5.1 | 65011428 Papinwich Asnapetch

```
[44]: import cv2
      from matplotlib import pyplot as plt
      import numpy as np
```

```
[45]: # Load Image
      img = cv2.imread('coins.jpg')
      img = cv2.cvtColor(img, cv2.COLOR_BGR2GRAY)

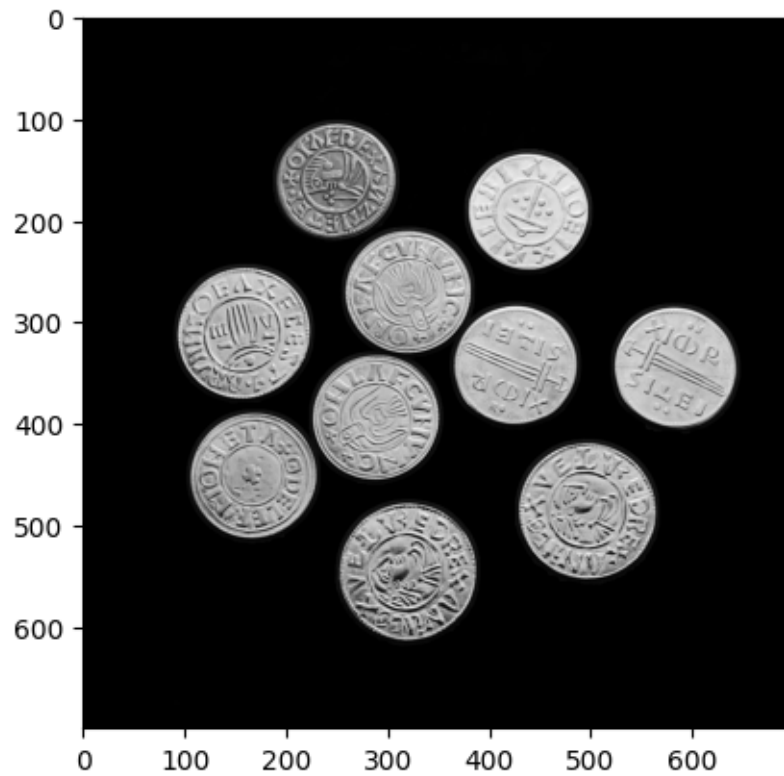
      plt.imshow(img, cmap='gray')

      def imgDisplay(localImg):
          plt.figure(figsize= (11, 11))

          plt.subplot(1, 2, 1)
          plt.imshow(img, cmap= 'gray')

          plt.subplot(1, 2, 2)
          plt.imshow(localImg, cmap= 'gray')

      plt.show()
```

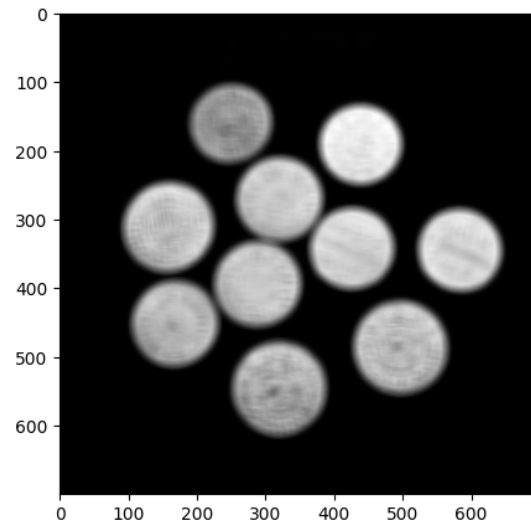
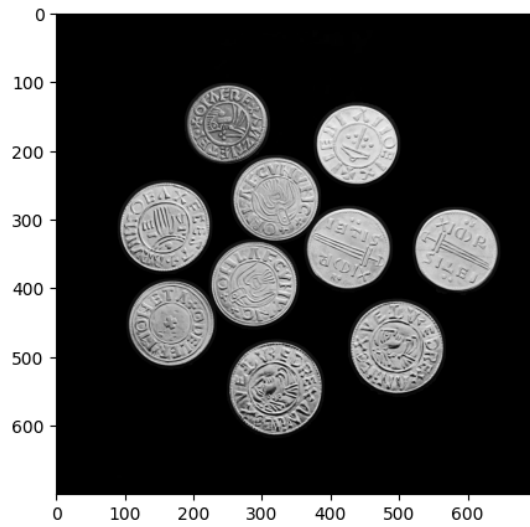


```
[46]: # Task 5.1.1 Average Kernel

# Define kernel
kernel = np.ones((15, 15)) / (15**2)

# Apply kernel
img_AvgKer = cv2.filter2D(img, -1, kernel)

# Display
imgDisplay(img_AvgKer)
```

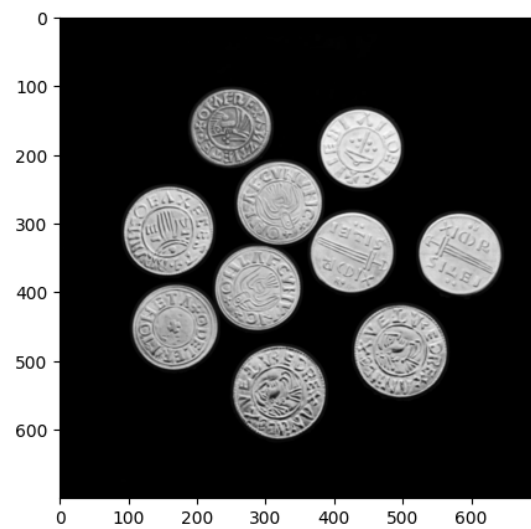
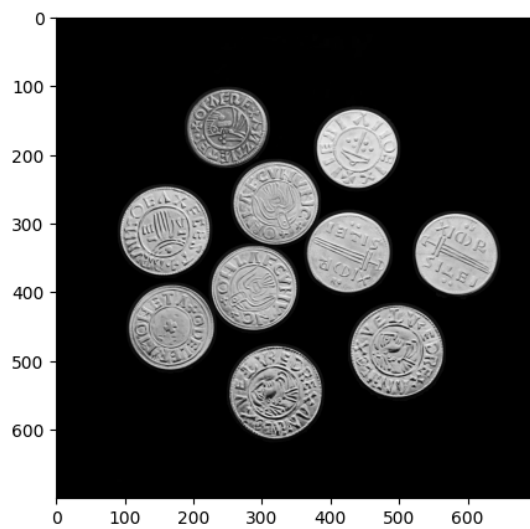


```
[47]: # Task 5.1.2 Gaussian Kernel

# Define kernel
Gx = cv2.getGaussianKernel(15, 0.7)
Gy = np.transpose(Gx)
kernel = Gx * Gy

# Apply kernel
img_GausKer = cv2.filter2D(img, 0, kernel)

# Display
imgDisplay(img_GausKer)
```



```
[49]: # Task 5.1.3 Sharp Kernel
```

```
# Define kernel
kernel = np.float32([[1, 4, 6, 4, 1],
                    [4, 16, 24, 16, 4],
                    [6, 24, -476, 24, 6],
                    [4, 16, 24, 16, 4],
                    [1, 4, 6, 4, 1]]) / (-256)

print(kernel)

# Apply kernel
img_SharpKer = cv2.filter2D(img, -1, kernel)

# Display
imgDisplay(img_SharpKer)
```

```
[[-0.00390625 -0.015625  -0.0234375 -0.015625  -0.00390625]
 [-0.015625  -0.0625   -0.09375  -0.0625   -0.015625 ]
 [-0.0234375 -0.09375   1.859375  -0.09375  -0.0234375 ]
 [-0.015625  -0.0625   -0.09375  -0.0625   -0.015625 ]
 [-0.00390625 -0.015625  -0.0234375 -0.015625  -0.00390625]]
```

