import cv2

import numpy as np

import matplotlib.pyplot as plt

image = cv2.imread('coins.jpg', cv2.IMREAD\_GRAYSCALE)

f = np.float32(image)

dft = cv2.dft(f, flags=cv2.DFT\_COMPLEX\_OUTPUT)

dft\_shift = np.fft.fftshift(dft)

rows, cols = image.shape

crow, ccol = rows // 2, cols // 2

mask = np.ones((rows, cols, 2), np.uint8)

r = 30

mask[crow-r:crow+r, ccol-r:ccol+r] = 0

fshift = dft\_shift \* mask

f\_ishift = np.fft.ifftshift(fshift)

img\_back = cv2.idft(f\_ishift)

img\_back = cv2.magnitude(img\_back[:,:,0], img\_back[:,:,1])

plt.subplot(131), plt.imshow(image, cmap='gray')

plt.title('Input Image'), plt.xticks([]), plt.yticks([])

plt.subplot(132), plt.imshow(img\_back, cmap='gray')

plt.title('Filtered Image'), plt.xticks([]), plt.yticks([])

plt.subplot(133), plt.imshow(mask[:,:,0], cmap='gray')

plt.title('Mask'), plt.xticks([]), plt.yticks([])

plt.show()