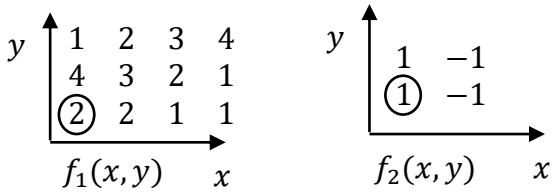
NTUT112-1 Digital Image Processing
Homework Assignment 2
Due Date: 10/30(Mon.) 2023

Question 1:

Calculating the results of the following convolution of $f_1(x,y) * f_2(x,y)$ and correlation of $f_1(x,y) \circ f_2(x,y)$. Draw the results in the X-Y plot with the coordinates of origin (0,0).

(Circular notation represents the origin (0,0).)



Question 2:

This is an image with grey levels between 0 to 15 (4-bit image), please perform Histogram Equalization procedures to the following image and show the corresponding new image.

1	2	3	3	3	3	3	3
1	2	3	10	10	5	5	6
1	2	3	10	11	5	5	6
1	2	3	11	12	5	8	9
2	2	3	11	12	7	8	9
2	2	3	11	12	7	8	6
2	2	4	5	5	7	6	6
2	2	4	5	5	7	6	6

Question 3:

Write m-files with mask size of 5x5 for the following image enhancement functions (only for 8-bit grey level images). O: OutImage ; I:InputImage;

(a) A noise removing filter for salt-and-pepper noise degraded images:

O = medianfilter(I, filter_size)

(b) A Gaussian filter for removing noise:

O = gaussfilter(I, K, filter_size, sigma)

(c) A high-boost sharpening filter for image enhancement:

O = highboostfilter (I, A, filter_size)