EE 4211 Computer Vision

Tutorial 4

Semester A, 2020-2021

Example 1

- A 4*4 grayscale image is given by

1	2	1	3
1	2	2	4
1	0	2	5
0	2	3	6

- Filter the images with a median filter (3*3), after zero-padding.

0	0	0	0	0	0
0	1	2	1	3	0
0	1	2	2	4	0
0	1	0	2	5	0
0	0	2	3	6	0
0	0	0	0	0	0

0	1	2	0
1	1	2	2
0	2	2	2
0	0	2	0

Example 1

- A 4*4 grayscale image is given by

1	2	1	3
1	2	2	4
1	0	2	5
0	2	3	6

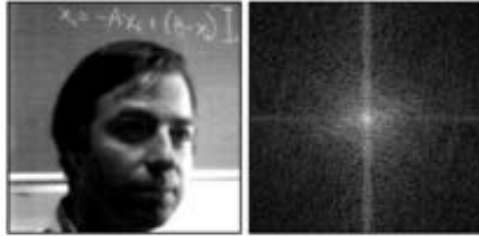- Filter the image with a mean filter (3*3), after replicate padding at the image borders with nearest neighbourhood.

1	1	2	1	3	3
1	1	2	1	3	3
1	1	2	2	4	4
1	1	0	2	5	5
0	0	2	3	6	6
0	0	2	3	6	6

12/9	1	14/9	24/9
10/9	12/9	21/9	29/9
8/9	13/9	26/9	37/9
6/9	8/9	29/9	42/9

Example 2

- Given an image and the corresponding Fourier Transform,

- Please match the following frequency processing and the corresponding images, explain the reason.
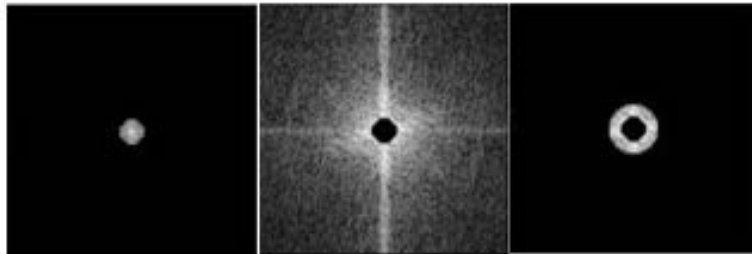
1   2   3

A   B   C

1->B, low frequency filter preserve only low frequency information.
2->C, High frequency filter preserve high frequency information, including the boundary information.
3->A band pass filter.