

## Practical 04

Aim: Image Denoising

i) Program to denoise using spatial mean and median filtering.

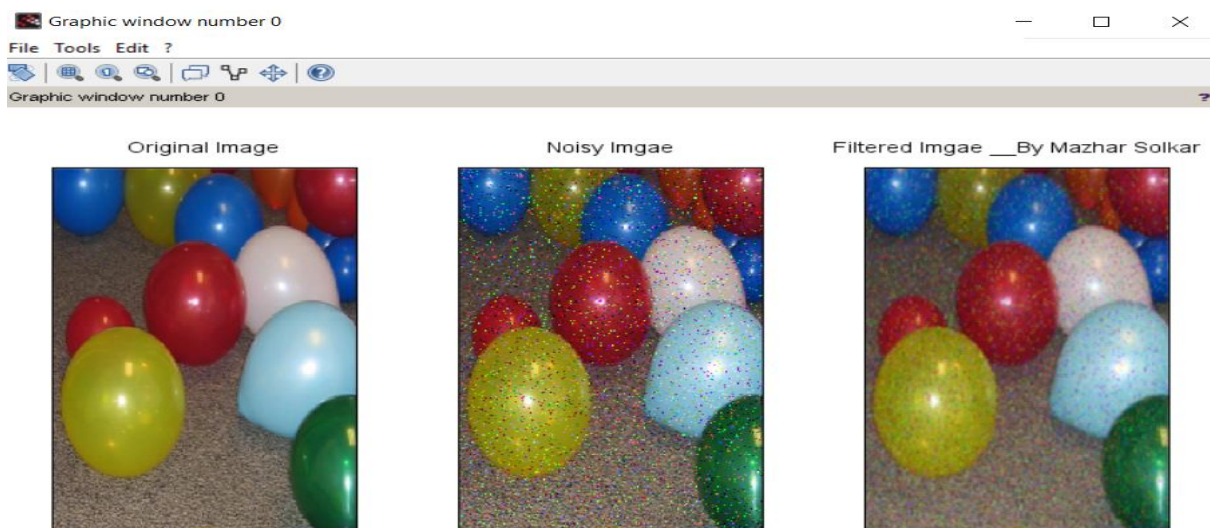
a) Spatial Mean

Code :-

```
File Edit Format Options Window Execute ?
Practical_04_i_a_program to denoise using spatial mean filter.sce (C:\0_MSc_IT_Notes\Image Processing\Practicals\Practical-04)
Practical_04_i_a_program to denoise using spatial mean filter.sce X

1 clc;
2 clear all;
3 Image = imread('C:\Program Files\scilab-6.1.1\IPCV\images\balloons.png');
4 NoisyImage = imnoise(Image, 'salt & pepper');
5 F1 = fspecial('average', 3);
6 FilterImage = imfilter(NoisyImage, F1)
7
8 subplot(1,3,1);
9 imshow(Image);
10 title('Original Image');
11
12 subplot(1,3,2);
13 imshow(NoisyImage);
14 title('Noisy Image');
15
16 subplot(1,3,3);
17 imshow(FilterImage);
18 title('Filtered Image __By Mazhar Solkar');
19
```

Output :-



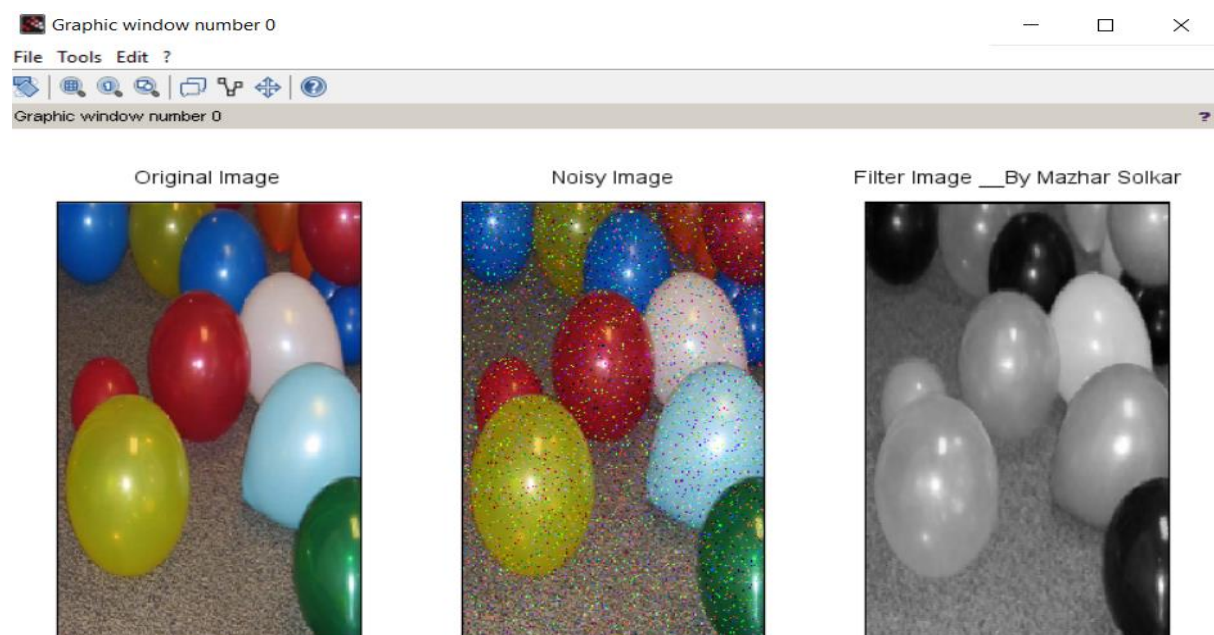
## b) Median(I)

Code :-

```
File Edit Format Options Window Execute ?
practical_04_j_b_program to denoise using median_I.sce (C:\0_MSc_IT_Notes\Image Processing\Practicals\Practical-04\practical_04_j_b_program to denoise using median_I.sce)
practical_04_j_b_program to denoise using median_I.sce X

1 clc;
2 clear all;
3
4 Image = imread('C:\Program Files\scilab-6.1.1\IPCV\images\balloons.png');
5 a = imnoise(Image, 'salt & pepper');
6 [m,n] = size(Image);
7
8 for i=2:m-1
9     for j=2:n-1
10        Output(i,j)=median([a(i-1,j+1),a(i,j+1),a(i+1,j+1),a(i-1,j),a(i+1,j),a(i-1,j-1),a(i,j-1),a(i+1,j-1)]);
11    end
12 end
13 subplot(1,3,1);
14 imshow(Image);
15 title('Original Image');
16
17 subplot(1,3,2);
18 imshow(a);
19 title('Noisy Image');
20
21 subplot(1,3,3);
22 imshow(Output);
23 title('Filter Image __By Mazhar Solkar')
24
```

Output :-



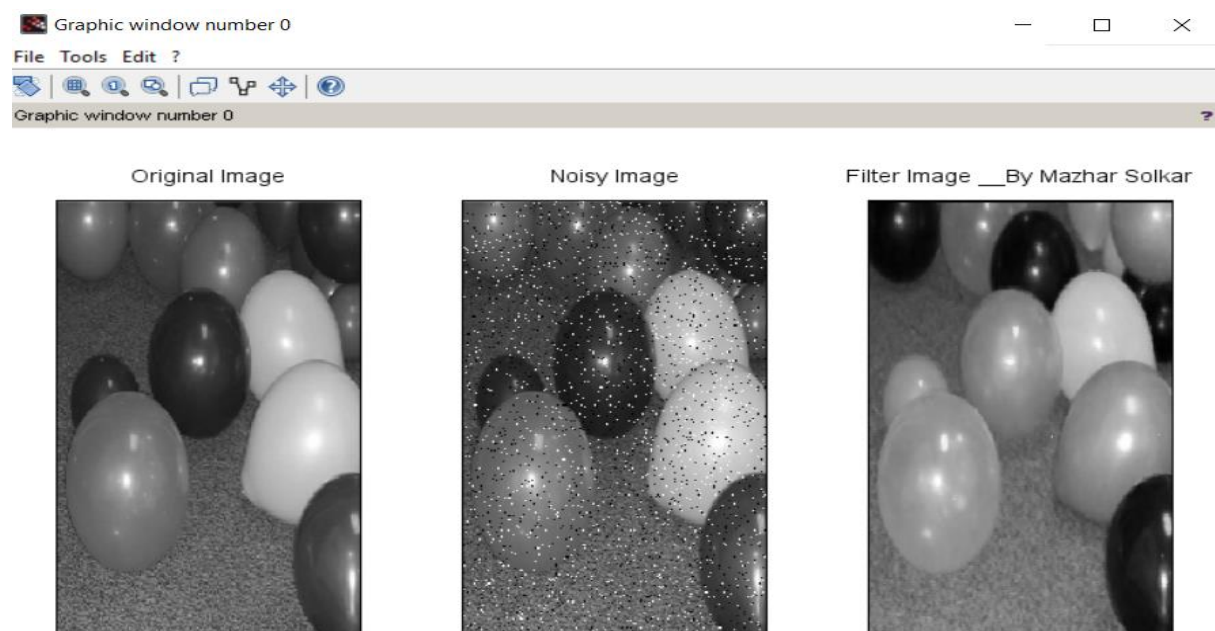
## b) Median(II)

Code :-

```
File Edit Format Options Window Execute ?
practical_04_i_b_program to denoise using median_I.sce (C:\0_MSc_IT_Notes\Image Processing\Practicals\Practical-04\practical_04
practical_04_i_b_program to denoise using median_I.sce X

1 clc;
2 clear all;
3
4 a = imread('C:\Program Files\scilab-6.1.1\IPCV\images\balloon
s.png');
5 Image=rgb2gray(a);
6
7 NoisyImage = imnoise(Image, 'salt & pepper');
8 output = immedian(NoisyImage, [3,3]);
9
10 subplot(1,3,1);
11 imshow(Image);
12 title('Original Image');
13
14 subplot(1,3,2);
15 imshow(NoisyImage);
16 title('Noisy Image');
17
18 subplot(1,3,3);
19 imshow(Output);
20 title('Filter Image __By Mazhar Solkar')
```

Output :-



ii) Program for Image deblurring using Wiener filters.

Code :-

```
File Edit Format Options Window Execute ?
practical_04_i_b_program to denoise using median_II.sce (C:\0_MSc_IT_Notes\Image Processing\Practicals\Practical-04\practical_04
practical_04_i_b_program to denoise using median_I.sce X practical_04_i_b_program to denoise using median_II.sce X
1 clc;
2 clear all;
3 Image = imread('C:\Program Files\scilab-6.1.1\IPCV\images\balloons.png');
4
5 NoisyImage = imnoise(Image, 'gaussian', 0.02);
6
7 wienerfilter = imwiener2(NoisyImage, [5,5], 0.2);
8
9 subplot(1,3,1);
10 imshow(Image);
11 title('Original Image');
12
13 subplot(1,3,2);
14 imshow(NoisyImage);
15 title('Noisy Image');
16
17 subplot(1,3,3);
18 imshow(wienerfilter);
19 title('Wiener Image __By Mazhar Solkar')
20
```

Output :-

