

Classes 8 - image filtering continued

Exercise 1

```
L=imread('krakow.jpg','jpg');
L =rgb2gray(L);
figure(1);
imshow(L);
[w k] = size(L);
n=125;
L2 = L(n:(w-n),n:(k-n));
L2 = double(L2)/255;
Kernel=[-1,0,1; -2, 0, 2; -1, 0, 1];
L3=filter2(Kernel, L);
L3=L3/255;
L3(n:(w-n),n:(k-n)) = L2;
figure(2); imshow(L3);
```

Exercise 2

```
L=imread('krakow.jpg');
figure(1);
L =rgb2gray(L);
imshow(L);
Kernel1=[-1,0,1; -2, 0, 2; -1, 0, 1];
L1=imfilter(L,Kernel1);
figure(2); imshow(L1);
title('vertical');
Kernel1=[-1,-2,-1; 0,0,0; 1,2,1];
L1=imfilter(L,Kernel1);
figure(3); imshow(L1);
title('horizontal');
Kernel1=[0,-2,-1; -2,0,2; 1,2,0];
L1=imfilter(L,Kernel1);
figure(4); imshow(L1);
title('diagonal');
```

Exercise 3

```
L=imread('krakow.jpg');
figure(1);
imshow(L);
Kernel1=[-1,-1,-1; -1,8,-1; -1,-1,-1];
L1=imfilter(L,Kernel1);
figure(2); imshow(L1);
title('LAPL2');
Kernel1=[1,-2,1; -2,4,-2; 1,-2,1];
L1=imfilter(L,Kernel1);
figure(3); imshow(L1);
title('LAPL3');
```

Exercise 4

```
L=imread('kwadrat.bmp');
figure(1);
imshow(L);
L =rgb2gray(L);
figure(2);
imshow(L);
L1=medfilt2(L, [5,5]);
L1=mat2gray(L1);
figure(3); imshow(L1);
title('kernel size 5 x 5');
L1=medfilt2(L, [15,15]);
L1=mat2gray(L1);
figure(4); imshow(L1);
title('kernel size 15 x 15');
L1=medfilt2(L, [45,45]);
L1=mat2gray(L1);
figure(5); imshow(L1);
title('kernel size 45 x 45');
L1=medfilt2(L, [75,75]);
L1=mat2gray(L1);
figure(6); imshow(L1);
title('kernel size 75 x 75 :');
```

Exercise 5

```
L=imread('krakow.jpg');
figure(1);
imshow(L);
L=rgb2gray(L);
L1=imnoise(L, 'salt & pepper', 0.3);
figure(2);
imshow(L1);
title('noise = 0.3');
L1=medfilt2(L1, [5,5]);
L1=mat2gray(L1);
figure(3); imshow(L1);
title('median filter 5 x 5');
L1=imnoise(L, 'salt & pepper', 0.8);
figure(4);
imshow(L1);
title('noise = 0.8');
L1=medfilt2(L1, [20,20]);
L1=mat2gray(L1);
figure(5); imshow(L1);
title('median filter 20 x 20');
```