

Lab 03

Submitted By:

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Section: 02

Course Code: CSE438(Image Processing)

Submitted To:

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**Problem No: 1(a)**

**Code:**

I1 = imread('tumor.jpg');

shrp1 = imsharpen(I1,'Radius',2,'Amount',1);

subplot(1,2,1);imshow(I1);title('Input Image')

subplot(1,2,2);imshow(shrp1);title('Unsharp masked Image')

**Output:**

A picture containing timeline

Description automatically generated

**Problem No: 1(b)**

**Code:**

I1 = imread('tumor.jpg');

laplacianKernel = [-1, -1, -1; -1, 8, -1; -1, -1, -1];

deltaFunction = [0, 0, 0; 0, 1, 0; 0, 0, 0];

scaleFactor = 1;

kernel = laplacianKernel + scaleFactor \* deltaFunction;

kernel = kernel / sum(kernel(:))

filteredImage = imfilter(I1, kernel);

subplot(1,2,1);imshow(I1);title('Input Image')

subplot(1,2,2);imshow(filteredImage);title('High Boost Filtered Image')

**Output:**

A picture containing text

Description automatically generatedChart

Description automatically generated

**Problem No: 02**

**Code:**

I2=imread("Spine\_CT.jpg");

lap=[-1 -1 -1; -1 8 -1; -1 -1 -1];

lap1=imfilter(I2,lap);

subplot(1,2,1);imshow(I2);title('Input Image')

subplot(1,2,2);imshow(lap1);title('Laplacian Filtered Image')

**Output:**

A picture containing text

Description automatically generated

**Problem No: 03**

**Code:**

I3 = imread('Head\_CT\_Scan.jpg');

x\_mask = [1 0; 0 -1];

y\_mask = [0 1;-1 0];

rb1 = imfilter(I3,x\_mask,'conv');

rb2 = imfilter(I3,y\_mask,'conv');

add1 = imadd(rb1,rb2);

subplot(1,2,1);imshow(I3);title('Input Image')

subplot(1,2,2);imshow(add1);title('Robert-cross Image')

**Output:**

A picture containing timeline

Description automatically generated

**Problem No: 04**

**Code:**

I3 = imread('Head\_CT\_Scan.jpg');

x\_mask = [-1 -2 -1;0 0 0; 1 2 1];

y\_mask = [-1 0 1; -2 0 2; -1 0 1];

sobel1 = imfilter(I3,x\_mask,'conv');

sobel2 = imfilter(I3,y\_mask,'conv');

add2=imadd(sobel1,sobel2);

subplot(1,2,1);imshow(I3);title('Input Image')

subplot(1,2,2);imshow(add2);title('Sobel Filtered Image')

Output:

A picture containing diagram

Description automatically generated

**Problem No: 05**

**Code:**

I3 = imread('Head\_CT\_Scan.jpg');

x\_mask = [-1 -1 -1;0 0 0;1 1 1];

y\_mask = [-1 0 1 ; -1 0 1; -1 0 1];

pre1 = imfilter(I3,x\_mask,'conv');

pre2 = imfilter(I3,y\_mask,'conv');

add3 = imadd(pre1,pre2);

subplot(1,2,1);imshow(I3);title('Input Image')

subplot(1,2,2);imshow(add3);title('Prewitt Filtered Image')

**Output:**

A picture containing diagram

Description automatically generated

**Problem No: 06**

**Code:**

I3 = imread('Head\_CT\_Scan.jpg');

subplot(2,2,1);imshow(I3);title('Input Image')

subplot(2,2,2);imshow(add1);title('Robert-cross Image')

subplot(2,2,3);imshow(add2);title('Sobel Filtered Image')

subplot(2,2,4);imshow(add3);title('Prewitt Filtered Image')

**Output:**

Qr code

Description automatically generated