



Department of IT and Computer Science
Pak-Austria Fachhochschule: Institute of Applied Sciences
and Technology, Haripur, Pakistan

Digital Image Processing

Semester: 5th

Submitted to: Mam Aneela Habib

❖ Submittted by

Hassaan Shiraz

Muhammad Ali Turk

Hakim Jan

Instructor Signature

.....

Code Relevant to Medical image processing :

Here we applied different filters as shown in following code

- Low-pass filter
- Smoothing filter
- High-pass filter
- Sharpening filter

% Enter the Scanned Image File (e.g .tif,.jpeg)

image = imread('input'); % Please replace the 'input' with the image file.

% Display the original image

subplot(2, 2, 1);

imshow(image);

title('Original Image');

% Apply a 5X5 low pass filter to smoothen the image

Low_pass_filter = [1,1,1,1,1;1,1,1,1,1;1,1,1,1,1;1,1,1,1,1;1,1,1,1,1]/5;

smoothed_image = conv2(Low_pass_filter, double(image));

% Display the smoothed image

subplot(2, 2, 2);

imshow(smoothed_image);

title('Smoothed Image');

% Apply a 3X3 high pass filter to sharpen the image

High_pass_filter = [-1,-1,-1;-1,9,-1;-1,-1,-1];

sharpened_image = conv2(smoothed_image, double(High_pass_filter));

% Display the sharpened image

subplot(2, 2, 3);

imshow(sharpened_image);

title('Sharpened Image');

```
% Apply an edge detection filter to detect the edges of the lungs
edge_detection_filter = [-1,-1,-1;-1,5,-1;-1,-1,-1];
edge_image = conv2(smoothed_image, double(edge_detection_filter));
```

```
% Display the edge detection image
subplot(2, 2, 4);
edge(edge_image);
title('Edge Detection Image');
```

```
% Display the color bar showing the intensity
colormap(gray);
colorbar;
```

```
% Remove pixels outside the range [200, 700]
removed_pixels_image = smoothed_image;
removed_pixels_image(removed_pixels_image < 200) = 0;
removed_pixels_image(removed_pixels_image > 700) = 0;
```

```
% Display the removed pixels image
figure;
imshow(removed_pixels_image);
title('Removed Pixels Image');
colormap(gray);
colorbar;
```

.....
Date: 09-Nov-2023