Assignment-3
CS419/619: Computer Vision (Spring 2025)
Submission Deadline: 30/March/2025

Problem 1: (Spatial Domain Filtering)

Add salt and pepper noise to an image and filter the image with a fixed mask size (use 9 × 9) using (Filtering in Spatial Domain)

(i) Box filter
(ii) Median filter
(iii) Max and Min filter
(iv) Gaussian filter

Plot the results with appropriate titles and store them in a folder named "1".

Problem 2: (Edge Detection)

(I) Implement an instance of an edge detection algorithm with the following steps (without using a built-in function):

(a) First, smooth the image to reduce number of edges detected from the noise (use gaussian filter).
(b) Gradient calculation: Using Prewitt, Sobel, and Robert cross operator.
(c) Perform the thresholding on the resultant gradient magnitude.

(II) Use the built-in function edge() to compute the edge map using LoG, DoG, and Canny edge detection algorithm and plot the results with a proper title of the figures. Also, plot the results for at least 2-3 combinations of low and high threshold values in the case of Canny.

Store the results plot with the appropriate title in a folder named "2" for all three operators separately.

Note: Use the image "cameraman.tif" available inside the assignment folder.

Problem 3: (Corner Detection)

Write the program without using the built-in function to detect corner points in the file "**corner.jpg**" available in the assignment folder.

Compare and plot the output of your code with that of the inbuilt function.

Plot the results with appropriate titles and store them in a folder named "3".

How to Submit

To submit the assignment, please follow these steps:

1) Store your code and output plots (stored in folders “1”, “2”, “3”.) in a folder named "<Enroll.no.>_<Name>_A3" and upload the zip file of this folder through the Google form the link is given below.

2) Google form link: https://forms.gle/K9Zdn44zA8x5fL7u7