EE 5356 - DIGITAL IMAGE PROCESSING - PROJECT 4

NON-LINEAR FILTERING

Read any 256x256 or 512x512 grayscale image. Add the following types of noise to it to generate 4 noisy images:

1. Gaussian noise
2. Poisson noise
3. Salt & pepper noise
4. Speckle noise

Apply the following spatial filters to the noisy images:

1. Arithmetic mean
2. Geometric mean
3. Harmonic mean
4. Contra-harmonic mean
5. Median filter
6. Min
7. Max
8. Mid-point
9. Alpha trimmed mean filter

Submit the following with your code:

1. Print
   1. the original image,
   2. the noisy images, and
   3. the results of all the filters on each noisy image.
2. Determine which type of filtering worked well for each type of noise.

References:

1. Rafael C. Gonzalez and Richard E. Woods, “Digital Image Processing”, III edition, Prentice Hall, pages 322-325, 2008.
2. Gonzalez, Woods and Eddins, “Digital Image Processing with MATLB”, I edition, Prentice Hall, pages 160-164, 2009.
3. Practical image and video processing using MATLAB by Marques, Oge