ECE 5470 Digital Image Processing
Homework # 7
Due Date: March 15, 2020 4:00 pm

1. Smoothing Linear Filtering

Write a program to implement the Smoothing Linear filter on Fig7-1b.jpg, which has 6% Gaussian noise. You can make decision for the filter mask size.

Compare the results with the original image Fig7-1a.jpg.

2. Mean Filtering

Download the image Fig7-2a.tif and Fig7-2b.tif. Using 3x3 sub-mask size, apply the following filters, and show your results for the images:

a.   Arithmetic mean filter
b.   Geometric mean filter
c.   Harmonic mean filter

Analyze the results for each filter.

3. Contraharmonic Mean Filtering

Download the image Fig3-3a.tif and Fig3-3b.tif, using 3x3 sub-mask size, apply the Contraharmonic filter with

a. Q=1.5, and
b. Q=-1.5

Show your result images and analyze the results.

Your report should include your own MATLAB code, the original image, and the enhanced images. Use this information to explain what was enhanced as it was for an image.