ECE 5470 Digital Image Processing
Homework # 5

Due Date: March 2, 2020 4:00 pm

1. Fourier Spectrum and Average Value

(a) Download Fig4-1a.jpg, Fig4-1b.jpg, Fig4-1c.jpg, and Fig4-1d.jpg compute their Fourier spectrums.
(b) Centered their Fourier spectrums and display them
(c) Enhance the Centered their Fourier spectrums and display them.

2. Low-pass Filtering

(a) Implement an ideal low-pass filter. You must be able to specify the radius of the filter D_0 for 20 and 60.
(b) Download Fig5-2a.jpg and Fig5-2b.jpg, apply an ideal low-pass filter with two different D_0 to show Ideal low pass filter results on the output images and analyze.

3. Butterworth Low-pass Filtering

(a) Implement a Butterworth low-pass filter. You must be able to specify the radius of the filter D_0 for 20 and 60.
(b) Download Fig5-2a.jpg and Fig5-2b.jpg, apply a Butterworth low-pass filter with two different D_0 to show Butterworth low pass filter results the output images and analyze.

3. Gaussian Low-pass Filtering

(a) Implement a Gaussian low-pass filter. You must be able to specify the radius of the filter D_0 for 20 and 60.
(b) Download Fig5-2a.jpg and Fig5-2b.jpg, apply a Gaussian low-pass filter with two different D_0 to show Gaussian low pass filter results the output images and analyze.