CS451: Digital Image Processing – Spring 2020

**Assignment#2**

**Task 1:**

You will consider the effects of additive noise and the use of **DFT** to remove this kind of noise. The noisy image has been generated by adding noise in the form of a cosine function. Using **frequency domain** filtering, devise a procedure for removing the noise and show your results. For comparison purposes, remove the noise in the **spatial domain** by convolving the noisy image with Average filter (e.g., 7 x 7 and 15 x 15). Compare resulting images of both spatial and frequency domain filtering. Also, you can elaborate on differences in the jupyter notebook as a comment.

**Task 2:**

Write your own function to perform image sharpening on the same image supplied in Task 1. However, you will need to remove noise first before applying image sharpening.

Your script should apply the following steps:

**1)** Apply smoothing first to produce a denoised image.

**2)** Apply any edge detection filter (Implementation of **Laplace** for example) to generate edges to produce an edge image.

**3)** Add the edge image to the original image to produce a sharpened image.

**Deliverables:**

**1)** JupyterNotebook that include all your core function implementations as well as their test code

**2)** If you used test images which are not available in Anaconda environment, please attach them along with your submission file.

**Due Date:**

Sunday the 19th of April 2020 at 23:00 PM .

**Delay Policy:**

Each day of delay costs you 2 grades out of 10 and after three days of delay you lose full assignment grade. Submissions will be on Moodle not by email. Teams are not allowed.