ELL-715

ASSIGNMENT 3

Note: Last date of submission is Feb 8th, 2019

1. Take an 8-bit gray scale image of some buildings and perform the following operations using MATLAB/Pyhon to estimate the edges using
   a. Laplacian filter with and without diagonal terms
      i. Apply Laplacian in x and y direction separately
      ii. And than jointly
   b. Roberts cross gradient operator
   c. Sobel gradient operator
   d. High-boost filtering

   Use different size operators to find the suitable size.

   Combine these operators to define *your best edge detection operator* for your image.

   Comment on the results and give the motivation and reason out *your best edge detection operator*.

2. Extract two consecutive frames from a video clip, detect the changes in these over time (take snapshots).

   Can you use this information for edges detection?

3. Noise effect.. Add salt and pepper noise of 0 , 10, 30, 60dB SNR to the above image
   a. Apply the best edge detection filter
   b. Apply the best edge detection filter after removing the noise by
      i. Harmonic filter,
      ii. Median filter
      iii. Optimal median filter