Assignment 1
EEL715
Due Date (26/1/17, 23:59)

1. Take 256 scale 100x100 gray image of your choice, add Gaussian noise of such that SNR is 0, 10, 20 30 dB respectively. Plot all the images.

   Apply smoothing operation using 5, 10, 15 images and evaluate the mean square error in all cases.

2. Image denoted as 1(x, y), is transformed to image g(x,y) using a 2D affine transform. After the transform, f(x,y) is 3 times larger along rows and 2 times larger along columns than f(x, y).

   Also g(x,y) is at 6 units horizontal and 7 units vertical distance from f(x,y).

   Computer h(x,y) third image by rotating pixels of image 2 g(x,y) by 75∘ degrees counter clockwise.

   Compute the 3 × 3 affine transform matrix. And apply it to above rectangle.

3. Write the expressions of bilinear interpolation for computing all pixel values of f(x,y). Give equation to evaluate the pixels.

   Repeat and compare with Bicubic interpolation

   Write a MATLAB code for zooming and shrinking an image using the bicubic/bilinear interpolation. The input to your program is: (i) image, (ii) transformation parameters, and (iii) interpolation method.

   Apply these interpolation when the input image is to enlarged by 2.6 along rows, shrunk by 1.7 along columns, and rotated by 33.5 degrees clockwise

   Show the difference from the original image applies zero padding.

4. Write a matlab code to plot a histogram of the image to do histogram equalization and matching to the given histogram. Although Matlab has a histogram function, write your own code to calculate the histogram.

   Apply histogram equalization to any gray scale 100x100image of 16 level image of your choice
   Further transform the image so that the histogram is uniform from [8-15] only.
   What are the mean and standard deviation of the image as recorded on the disk ?