Image Processing Lab
Sem 1
Lab 6: Image Transforms,Histogram Equalization and Specification,Filtering
13/09/2018

1.Try to complete the lab questions during the lab time (in lab submission)
2.Please do not copy programs.
3.Please find the cameraman,horizontal and vertical images in the Resources folder

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1. **Log Transformation**
   (use cameraman,horizontal,vertical images)
   $s = Clog(r + 1)$ where s and r are the pixel values of the output and the input image and C is a constant.

2. **Power Law transformation (Gamma Correction)**
   (use cameraman,horizontal,vertical images)
   $s = Cr^{\gamma}$ where C is the constant and γ is the gamma value (10,8,6,. . .)

3. **Perform histogram equalization of an image.**
   Compare the histograms of input and output images. Comment on what happens if we equalize an already histogram equalized image.

4. **Histogram Specification**
   Implement a program to match the histogram of the output image for '0.png' to the histogram provided in histG.mat.
   Compare and comment on the histograms of the input image, equalized image, histogram given for matching and the histogram of the matched image.
   Steps:
   (a) Equalize histogram of input image.
   (b) Equalize histogram of specified image (If the specified histogram is already equalized, skip this step).
   (c) Relate the two equalized histograms.

5. **Filtering**
   Perform high pass and low pass filtering in a noisy image and comment on your observations.
   Steps:
   (a) Select a noisy image (with any noise).
   (b) Take the fft of the image.
   (c) Select two suitable kernels (one for low pass filtering and other one for high pass filtering).
   (d) Zero pad it to make it to the size of image.
   (e) Multiply it with the fft of your noisy image.
   (f) Take the inverse fft.

   Display the noise,noisy image,filter used,multiplied fft and inverse fft.