

CSE4007- Digital Image Processing Lab

List of Experiments:

1. Introduction to MATLAB and Image Processing.
 - a. MATLAB Onramp: <https://matlabacademy.mathworks.com/details/matlab-onramp/gettingstarted>
 - b. Image Processing Onramp: <https://matlabacademy.mathworks.com/details/image-processing-onramp/imageprocessing>
2. Study of different transformation techniques.
 - a. Image type conversion
 - b. Image resize
 - c. Image rotation
 - d. Image negative
3. Spatial domain filtering of image.
 - a. Contrast stretching for image enhancement
 - b. Histogram equalization for image enhancement
4. Spatial domain filtering of image.
 - a. Averaging (Mean) filter
 - b. Median filter
5. Study of sharpening filters.
 - a. Laplacian for image sharpening
 - b. Unsharp masking
6. Frequency domain filtering of image.
 - a. Lowpass (smoothing) filter in frequency domain
7. Image restoration process: Handling noise in image.
 - a. Arithmetic, Geometric, Harmonic, Contra harmonic Mean filtering
 - b. Median filtering
 - c. Max filter, Min filter
 - d. Alpha-trimmed mean filtering
8. Image restoration process: Handling noise in image.
 - a. Wiener filter
 - b. Adaptive Mean local noise reduction filter
 - c. Adaptive Median filter
9. Image compression methods.
 - a. Compress an image using DCT, then calculate PSNR to evaluate quality of the compressed image

10. Image segmentation through edge/boundary detection.
 - a. Sobel edge detection
 - b. Canny edge detection
 - c. Laplacian of Gaussian (LOG)
11. Region based Image segmentation.
 - a. Bi-level thresholding
 - b. Multi-level thresholding
 - c. Active Contour
12. Image segmentation using Basic Global thresholding and Otsu thresholding (Without using inbuilt functions).