Netrokona University
Department of Computer Science and Engineering

Course Code: CSE 3213
Course Title: Digital Image Processing Lab
Semester: 3rd Year 2nd Semester

LIST OF EXPERIMENTS

Lab No.	Lab Contents
Lab 1	Basic introduction of digital image fundamentals and its application, introduction to MATLAB software tool: graphical user interface (GUI) of MATLAB. Comparison of MATLAB with other open source similar platform e.g. Octave. More details introduction to Python, C++, C, Java along with standard image library OpenCV. Simple experiment like image reading, writing with MATLAB.
Lab 2	Basic image conversation, RGB to gray, RGB to binary, Gray to binary. Using built-in function, introduction to writing MATLAB script. Conversation using luminosity, chrominosity from RGB to Gray. Converting Gray to Binary using threshold. Separation of different channels, represent RGB channels separately with their effects.
Lab 3	Image transformation using log transformation, linear transformation, power law transformation, negative image generate. Differentiate different types of transformation and their performance evaluation. Real world application like medical image processing (X-ray imaging).
Lab 4	Image Histogram: Histogram representation, histogram stretching, histogram equalization, histogram matching with user-defined function. These user defined functions would be evaluated with respect to the built-in function.
Lab 5	Introduction to image noise: Gaussian noise, salt and pepper noise, additive, impulse, multiplicative. Adding noise manually detects and compare with respect to image histogram.
Lab 6	Image Correlation and Convolution. Perform correlation and convolution with different size kernel. Check and compare the outputs.
Lab 7	Introduction to different image quality measurement algorithm like MSE, PSNR. Adding noise manually, measure such scale then perform noise remove using different kernels. Compare reconstructed image quality.
Lab 8	Color Space, color space conversation, RGB to CIE Lab, CIE Luv color space conversation.

Lab 9	Graphical User Interface (GUI), generating GUI with MATLAB, image processing with GUI.
Lab 10	Introduction to video processing with MATLAB. Import video, do different manipulation, frame rate.
Lab 11	Introduction to mid-level image processing with different attributes as output.
Lab 12	Lab Final followed by group project presentation, demonstration and report submission.

Assessment and Marks Distribution
❖ Attendance (10%) ❖ Regular Assessment (RG) (20%) ❖ Project (P) (20%) ❖ Lab Test 1 (LQ) (20%) ❖ Lab Final +Viva (LF) (30%)

Abullah Al Shiam
Assistant Professor, Dept. of CSE
Netrokona University, Netrokona