

**School of Computing
National University of Singapore
CS4243 Computer Vision and Pattern Recognition
Semester 1, AY 2017/18**

Lab 3 – Contrast Stretch and Edge Detection

Objective:

To understand the materials covered in the lecture through

- Implementing contrast stretch for image enhancement in Matlab
- Implementing edge detection in Matlab

Preparation:

- Download the file pic_lab3.zip from IVLE into your working directory. Uncompress the file and you should find the following pictures: leaves_gray.jpg, flower_pot_gray.jpg, orchid_gray.jpg.

Contrast Stretch to Enhance Images

In the previous lab, you had done histogram equalization to enhance images. In this lab, you will try to do contrast stretching to enhance images. In practice, you should plot the histogram of a picture and observe how you should stretch the histogram. For this lab however, you will use the cut-off gray values at 10 (lower bound) and 150 (upper bound) for all the pictures.

Edge Detection

This is an exercise to make sure you understand edge detection and the concept of convolution. For edge detection, you will use the Sobel edge operator.

General instructions for this lab:

- You are not allowed to use any matlab built in functions for image processing, except reading, writing and displaying images.
- You must implement contrast stretch and edge detection by writing Matlab codes by yourself (i.e. you cannot get the codes from elsewhere).

Submission Instruction

Submit the softcopy of your Matlab codes and the resultant image files to IVLE.

Please put your Matlab codes and images in a folder and submit the folder. Use the following convention to name your folder:

StudentNumber_yourName_Lab3. For example, if your matriculation number is A1234567B, and your name is Chow Yuen Fatt, for this lab, your file name should be *A1234567B_ChowYuenFatt_Lab3.*