Simple Histogram-Based Thresholding

Computer Vision: CS4984/5984 Assignment 1

Task

One of the most basic processing operations for computer vision is to separate an object from the image background. A common approach for an image with just object and background is to assume that there is a clear bi-modal distribution of the intensity values of the image, and to threshold the image (for image value Threshold T, all pixels values ≥ T belong to one class, and all pixels < T belong to the other). Write a program to read an image, extract its histogram, manually pick a threshold from the histogram, and threshold the image. Your program will produce a bi-valued (white & black/grey) image that you can print.

Since this assignment is also intended to introduce students to working with images, you are to make two versions of this program: One in Matlab, and the other in a programming language of your choice.

Deliverables

You are to write and test these programs on images that we will provide on the class web page. You are to turn in your program code and a 5 to 10-page report on what you learned in the project (e.g. programming issues, ease/difficulty in finding the thresholds, how you might automate the process of finding thresholds). You report should include thresholding result images.

Due Date and Grade

Self evaluated project. It is due on February 2.