

## Requirements of assignment 2

### Assignment 2:

With his digital camera, John takes a picture of objects on a table. Write a program capable of analyzing such a picture and determining the number of objects.

### Requirements:

This assignment requires you to write a program, which can tell users the number of objects in an image (grey-level image).

The input of the program is a grey-level image (or color image if you know how to handle it). Then you segment this image into two regions, background and foreground, by using the otsu's threshold algorithm that we discussed in the lab. Your program should be able to output the value of the threshold that you obtained from otsu's method and used to segment the image.

After segmentation you have a binary image. The value of each pixel is either 0 or 1 indicating which region (background or foreground) it belongs to. By applying warshell's algorithm on those pixels belonging to the foreground (or background), you can identify connected objects on the foreground (or background) and count their number.

So actually this assignment consists of two parts: the threshold segmentation and the connected object recognition. And you are required to implement two algorithms corresponding to these two parts: the otsu's algorithm for segmentation and the warshell's algorithm for counting the number of connected objects.

### Demo program:

One demo program for assignment 2 has already been posted. So you can download and try it to get some general ideas about the assignment. In the demo program the segmented image and the image showing connected objects are both visually presented, but it is not necessary for the assignment.

Your program needs only output the value of threshold and the number of connected objects you find in the input image. But it will be great if you can also output the binary image and the connected object image, like what was done in the demo program.

More information about the assignment will be discussed in the next week's lab and I will hand out some documents that may help you.

Jni