

## Homework 2

Write a program to do the following requirement.

- (a) a binary image (threshold at 128)
- (b) a histogram
- (c) connected components (regions with + at centroid, bounding box)

The requirements above are accomplished by Python and the process is done by for loops pixel by pixel with the assistance of numpy, pandas, cv2, matplotlib, and PIL. The results of (a) and (c) are shown in Fig. 1, and the result of (b) is shown in Fig. 2. In requirement (c), the efficient run-length implementation of the local table method is used for the time and space efficiency,

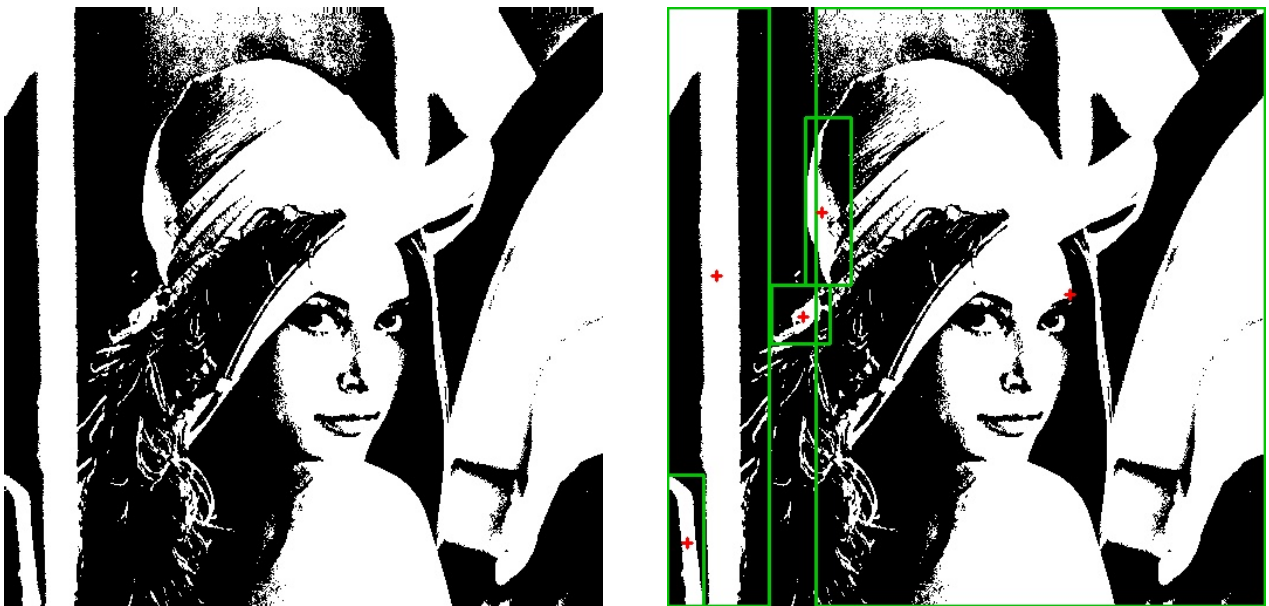


Figure 1. The left image is the binary image with threshold at 128. The right image is the image with connected components processing.

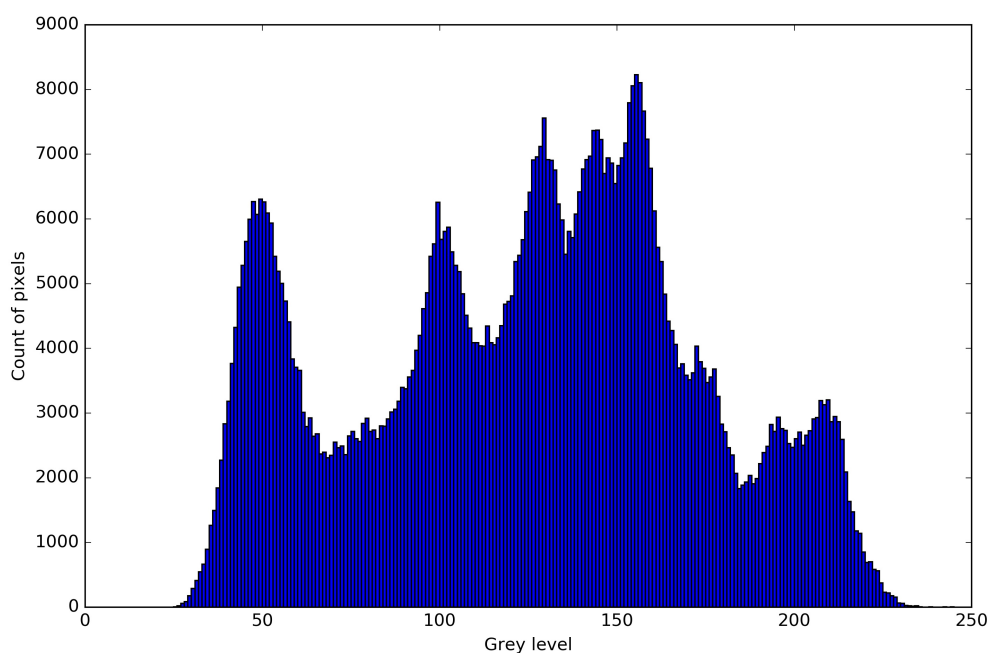


Figure 2. The grey level histogram of lena.bmp.