電腦視覺 HW1

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Part 1.

source code : src/img_process.py
using language : python
using material : numpy, PIL, pyplot
* following images are resized to fit in the page

(a). binarized lena

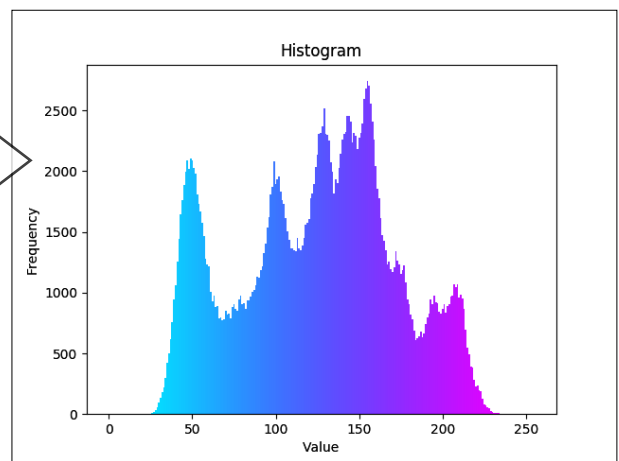src/lena.bmp

src/b_lena.bmp

(b). histogram

src/lena.bmp

src/histogram.png

(c). connected components (bounding box and centroids)

src/lena.bmp   src/bounding.bmp

The method for (a) was also used in the last homework, but this time in module-style.
Process in (b) was simply done by traverse the image-array and count all the pixels, then plot the table into bars.
The algorithm in Week2's powerpoint was used in (c), grouping all the pixels in b_lena, filter out the groups with size > 500, then calculate / plot their centroids (r, c). P_8 strategy was used in my code.

Reference:
https://stackoverflow.com/questions/54059767/problem-plotting-a-histogram-of-grayscale-image-in-python
https://www.youtube.com/watch?v=9D2sJ8G-nvE
https://stackoverflow.com/questions/42656585/barplot-colored-according-a-colormap
https://note.nkmk.me/en/python-pillow-imagedraw