VC. Exercise 5.1.

Image Segmentation: Histogram thresholding.

1) Given the image in Fig. 1:

i Calculate its histogram from scratch and make its plot with the pyplot package.

ii Do the same as i) by using the “seaborn” package for all.

iii Obtain a smoothed version of this histogram by using KDE from the “seaborn” package.

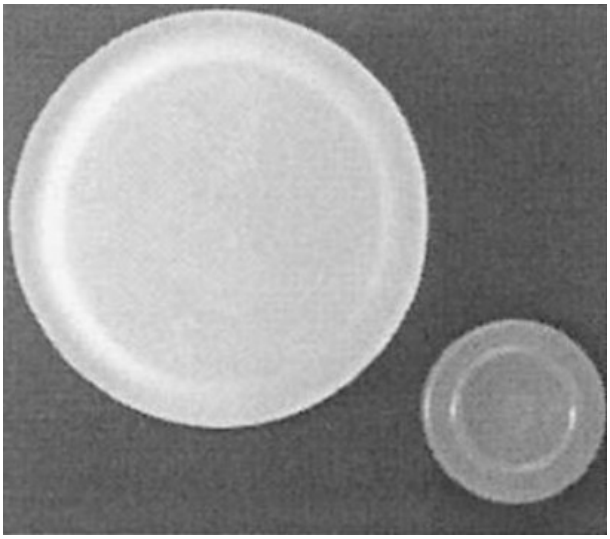

Figure 1

2) Given the image in Fig. 1, implement a multilevel threshold algorithm, for N different levels separated in the output image a distance inc.

3) Given the image in Figs. 2 and 3:

i Check the bimodal distribution of their pixels.

ii Perform the segmentation of the object (whitest part of the image), by using the Otsu method.

iv Do the same as ii) by using implementing the Otsu method from the scratch, and compare the results obtained.

iii Represent in a figure (superimposed) the plots corresponding to the smoothed histogram and the inter-class variance.

iv Save the resulting image for future use.

Figure 2

Figure 3