

4/24/17

The first part of the assignment given to us was to determine the ratio of the area occupied by the bubbles to the total area of the image. To do this, I used `imbinarize` to make the image logical and called this `BWr` as this was going to be used to find the ratio. I made a separate structuring element to find the ratio called `SE` and used disks of size 10. I used this structuring element in `imclose` to get rid of the holes in the bubbles. The reason I wanted to get rid of the holes in the bubbles was because although the black and white image has them as black, they are still parts of the bubbles. After using `imclose` to fill in the bubbles, I found the sum of the area being taken up by white pixels and called it `W`. To find the ratio, I divided `W` by the total number of pixels in the image to get approximately 0.11. This number means that around 11% of the image was taken up by the bubbles.

The second part of the assignment was to count the number of distinct bubbles in the image. To do this I thresholded the image to a value greater than 160 to isolate the bubbles. Since there were large clusters of bubbles in the bottom, I eroded the image with a structure element, called `se`, of size 8 diamonds to separate the bubbles from each other at the bottom. Diamond size 8 gave me the best results, and then after that I used a separate structuring element, called `se2`, of disks size 5 to dilate the image. After that I used `bwconncomp` on the image that was eroded and dilated to find the number of objects found. The best result I could obtain that seemed reasonable was 29.