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ECE472

HW7: Morphological Operations on Morpho1.gif

The purpose of this assignment was to eliminate the many small lines in Morpho1.gif, while more or less retaining the larger circular objects. To accomplish this, A disk closing of radius 1 was first implemented. This was done mainly to close a small hole in one of the circular objects in the upper left that could cause problems later on. The negative side of this operation was due to the nature of closing: it removes noise, here it was small holes. Across the image some of the thin lines became a bit thicker due to the operation. The disk option was selected so that the smoothness of the circular objects was retained. After this, a large disk opening operation of radius 9 was implemented to get rid of a large amount of noise, which in this case were the small lines throughout the image which were completely removed. Figure 1 below shows the full effect through the first two operations:

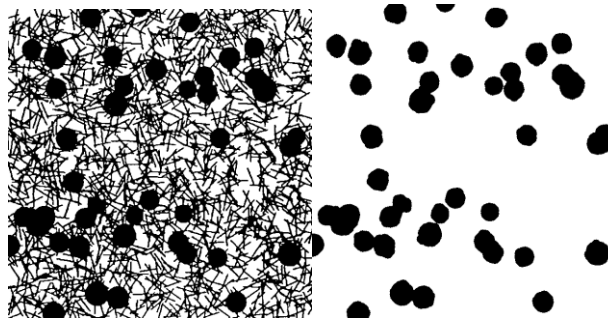


Figure 1: After disk closing of radius 1 and opening of radius 9

These two operations cleared most of the noise. The only downside were some of the circles retaining a few spears of pixels from the small lines. Lastly, an erosion operation was performed to shrink the circular objects back down to their original size (more or less). It was performed with a cross filter and a radius of 3 so that as many of the spears could be removed as possible, and to try and smooth the object a bit further in the process. Figure 2 shows the result of the operation, side by side with the original image. As can be seen, the circular objects remain intact:

