Andrew Kozempel

Professor Avanzato

CMPSC 497

14 September

**HW2: imopen() and imclose() Demonstrations**

**Objective:**

To demonstrate the use of the imopen() function to separate 12 objects (circles) that are connected by narrow channels and the imclose() function to connect 12 objects (squares) that are separated by gaps.

**MATLAB Script:**

| **%{ Andrew Kozempel CMPSC 497 Fall 2023 HW2 imopen() and imclose()  amk97@psu.edu  %}  %--------- % imopen() %---------  % load image im = imread('connected.bmp');  % print size fprintf('Size of connected.bmp (imopen() image): %d x %d\n', size(im,1), size(im,2));  % show image figure; imshow(im); title('Original: Before imopen()');  % separate the circles using imopen() se = strel('disk', 5);  im\_opened = imopen(im, se);  % show separate objects figure; imshow(im\_opened); title('New: After imopen()');  %---------- % imclose() %----------  % load image im2 = imread('separate.bmp');  % print size fprintf('Size of separate.bmp (imclose() image): %d x %d\n', size(im2,1), size(im2,2));  % show image figure; imshow(im2); title('Original: Before imclose()');  % separate the squares using imclose() se2 = strel('square', 20);  im\_closed = imclose(im2, se2);  % show separate objects figure; imshow(im\_closed); title('New: After imclose()');** |
| --- |

**Results:**

|  | **imopen()** | **imclose()** |
| --- | --- | --- |
| **Original Image** |  |  |
| **Processed Image** |  |  |
| **Size** | Size of connected.bmp (imopen() image): 600 x 600 | Size of separate.bmp (imclose() image): 600 x 600 |

**Conclusion:**

I was able to successfully use the imopen() function to separate 12 objects (circles) that are connected by narrow channels and the imclose() function to connect 12 objects (squares) that are separated by gaps.

I had to play around with the different values for the dimensions of the circle and square structuring elements (strel()) before using imopen() and imclose() to make sure everything worked properly. I finally decided on a radius of 5 for circles and 20x20 for the squares.