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ECE1390

2d) The accumulator size I used was 180 different theta values from -90 to 90 degrees converted to radians for my columns and for my rho distance for the number of rows I calculated the diagonal size of the image and multiplied that by two to get the best results. The threshold I used was 20 for finding the best peaks and my neighboorhood size was one.

4c) I had to change the number of peaks to about 10 to receive the best result possible.

5b) In order to find circles I had to call both the hough_circles_acc() and find_peaks() functions in order to fill my accumulator array with the probability that a circle is centered at that image position and find those max values where the center of the circle may be located. I called both these functions for each possible radius value within the given range and returned the centers as the output from my hough_circles_acc() function and radii as the given radius.

6b) The problems present are the boundaries of the textbook being detected as edges since they are edges themselves along with the edges of the pens being detected. Since the image is cluttered and there are other edges besides the ones we would like to detect, there is no other option then to detect all edges shown in the image even with the filtering applied.

7b) I did get false reports due to the clutter in the background. I got rid of them by changing the radius selection values and the number of peaks to find using the find_peaks() function.

8b) I might fix the circle problem by applying better filtering in the image to eliminate the noise from the clutter in the background of the image to detect the edges of the circle better. I might also change the parameters for thresholding and the number of peaks to find for our circle centers.