

CMPT 822 COMPUTATIONAL VISION ASSIGNMENT 1 REPORT

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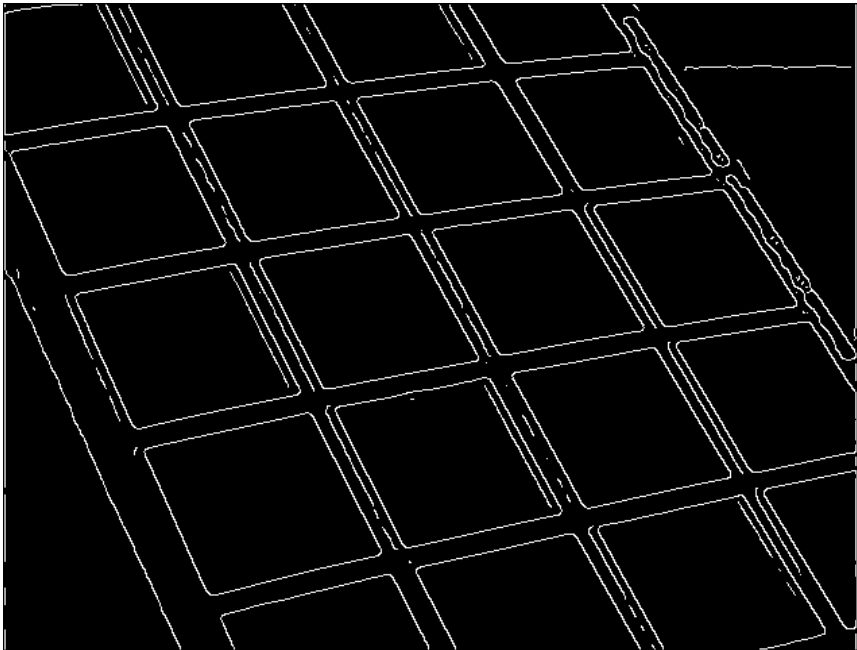
SFU ID- 301383459

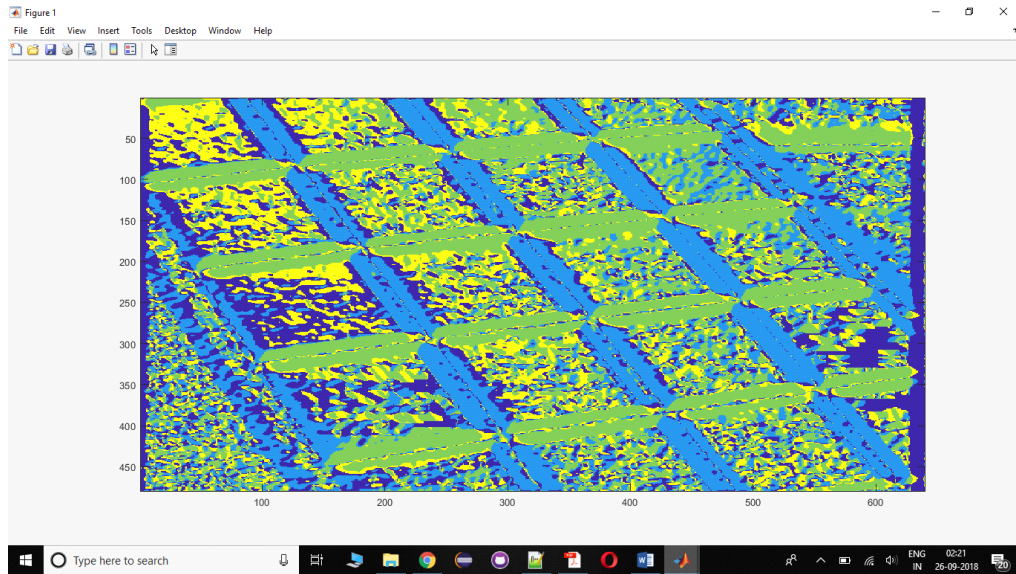
2.4 Maximal suppression :- I have used the `imregionalmax()` function for finding the maximum local.

<https://www.mathworks.com/help/images/ref/imregionalmax.html>

2.6 Experiments :-

Please see below my sample Intermediate Output received. Kindly refer the results folder for the all the outputs received for all the images.





Questions:-

- Did your code work well on all the image with a single set of parameters?

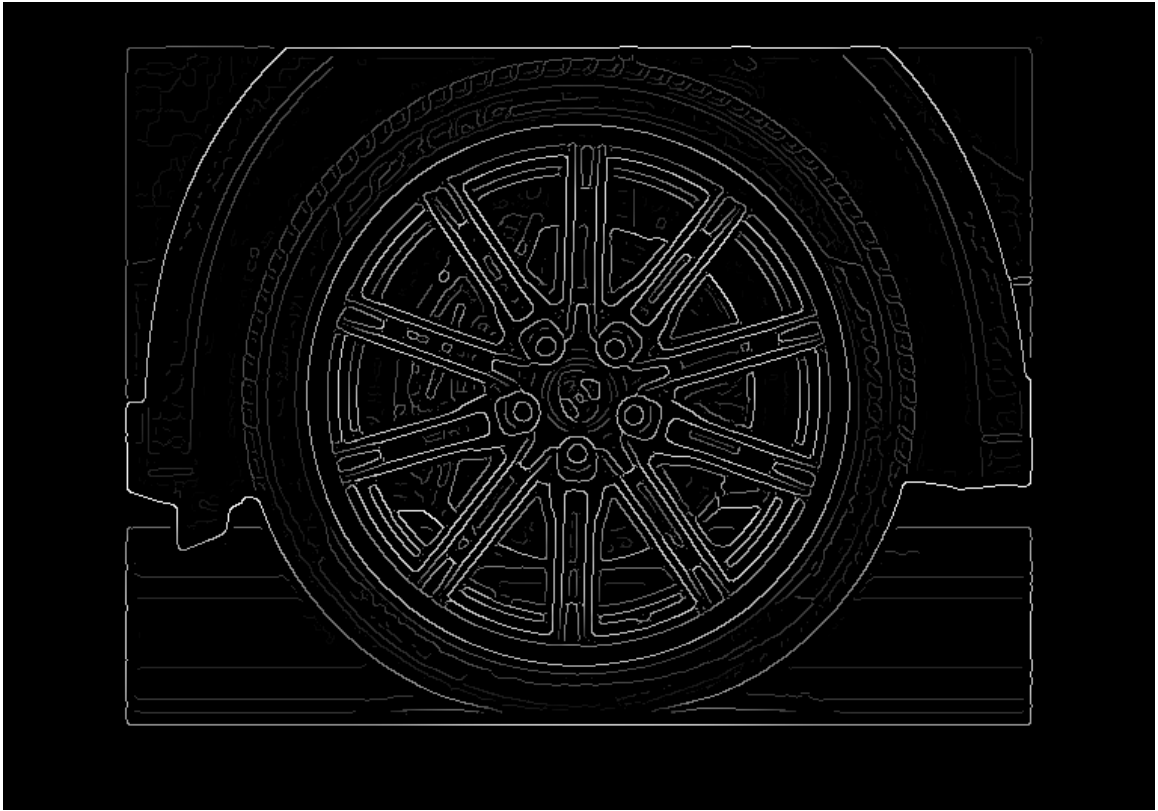
Ans:- Yes, the code worked well with the parameters provided.

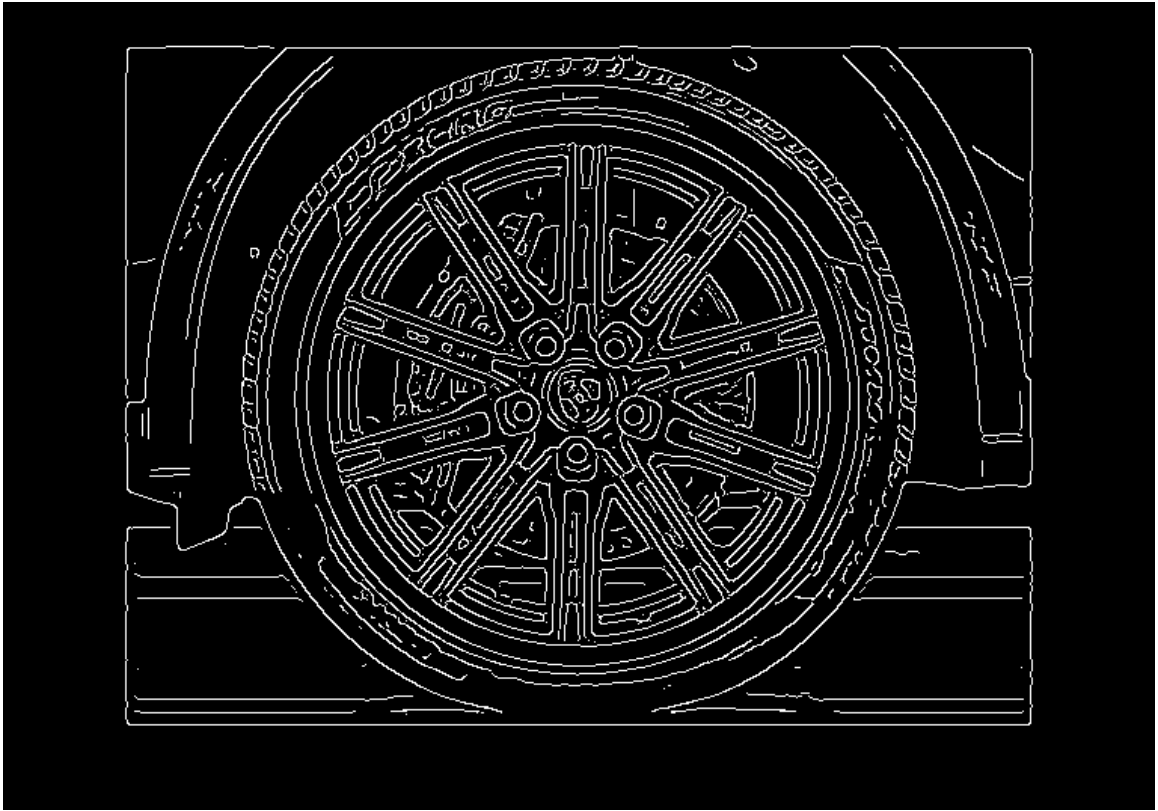
I used the convolution algorithm using the function `myImageFilter` and could see that the image is getting convoluted when multiplied with the kernel matrix(used `fspecial` function using the sigma value).

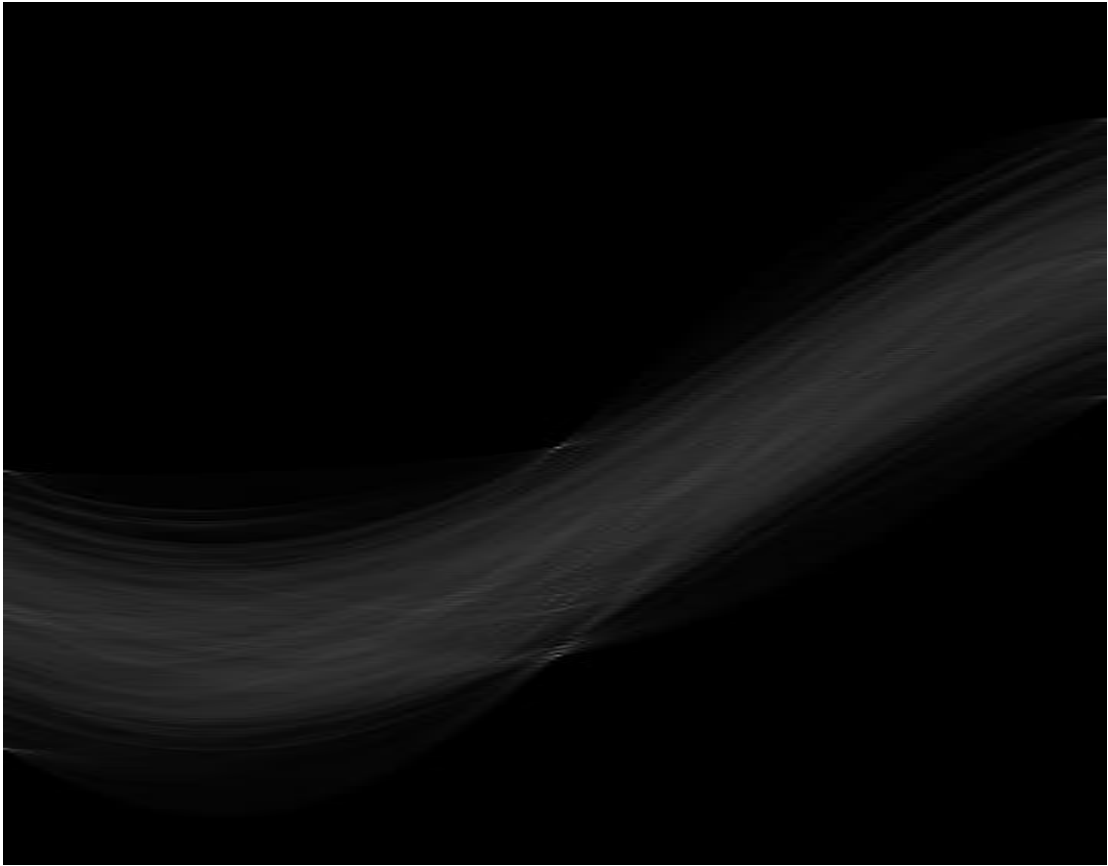
Original Image:-



Experimental Outputs:-









- How did the optimal set of parameters vary with images?

Ans:- Used the same set of parameters and hence it didn't vary to any of the images.

- Which step of the algorithm causes the most problems?

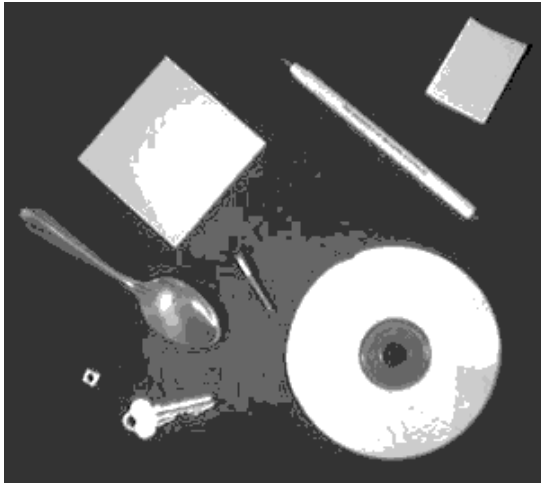
Ans:- I had two major challenges. One, got problems by the accumulator resolution being high and the execution time took more than expected. It was resolved by taking the correct accumulator resolution and hence received the correct output as provided in the example. Second, doing the convolution without using the default conv2 function and performing the NMS function comparing the pixels and finding the greater of the nearby neighbour pixels took a lot of time.

- Did you find any changes you could make to your code or algorithm that improved performance?

Ans:- Initially the accumulator H value was high and found and hence the no of votes for a line was getting multiple lines and hence my performance got reduced. The execution time took in a lot of time. Issue was with getting the correct rho and theta values and hence received the correct output improving the execution performance.

Example Experimental Image and Results :-

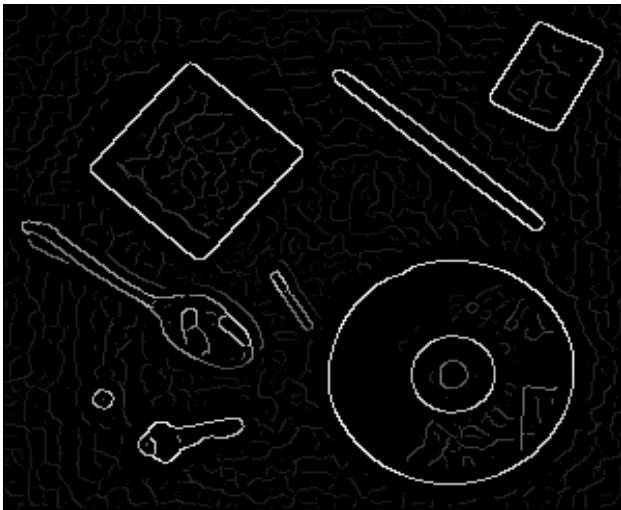
Original Image experimented:-

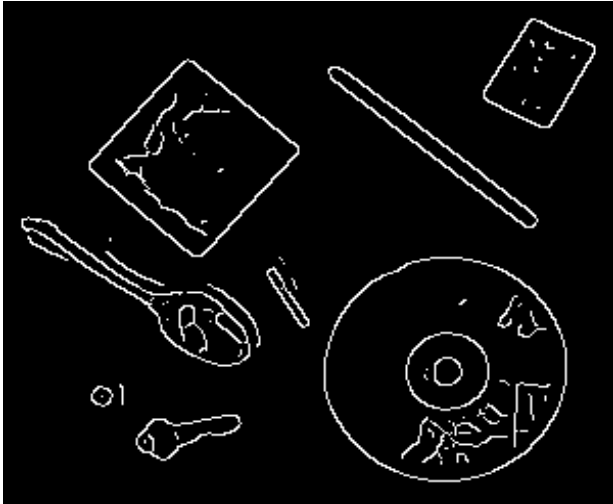


Results:-

Edge detection observed for the image

Padded the image using the padarray function and for every row and column size of the image multiplied the kernel with the image and summed for every for loop.





H curve observed for the image

rhos and thetas are calculated and for every pixel the H curve is observed and hence received the below curve.



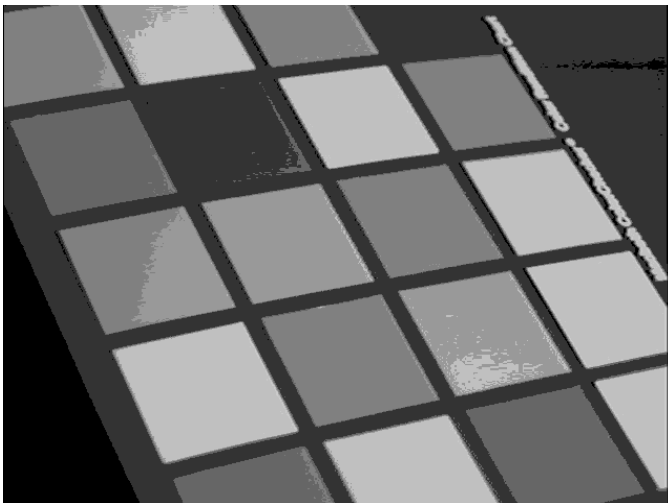
Fitting the line segments for the image:-

The lines are identified finding the regional maximum value using the imregionalmax function and hence received the below result.

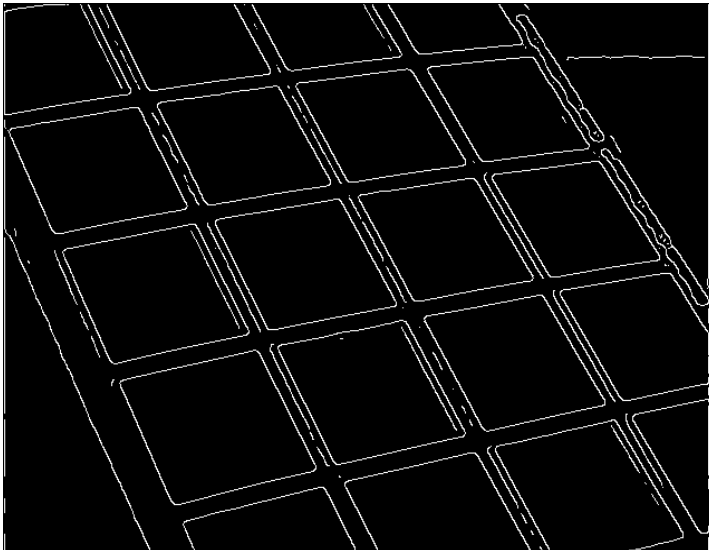
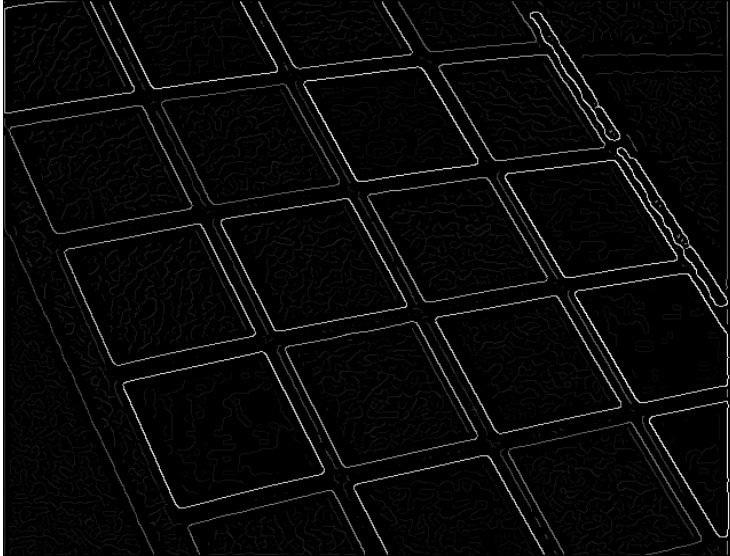


Example 2:-

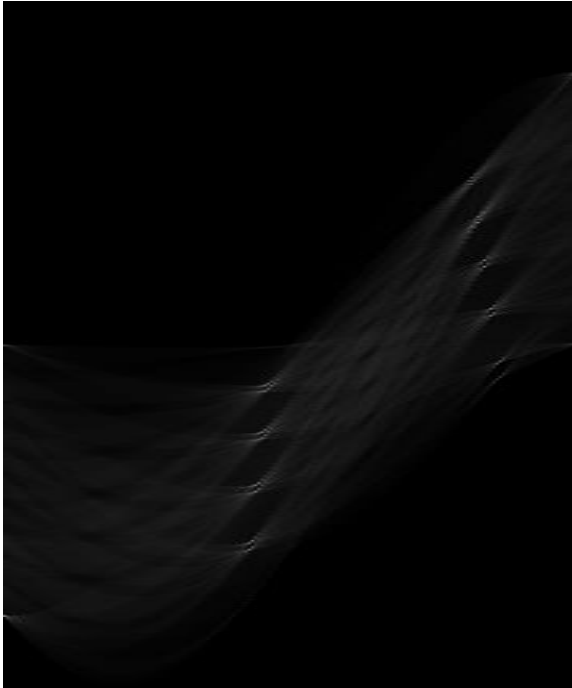
Original Image:-



Edge detection observed for the image



H curve observed for the image



Fitting the line segments for the image:-

