CS 558 A

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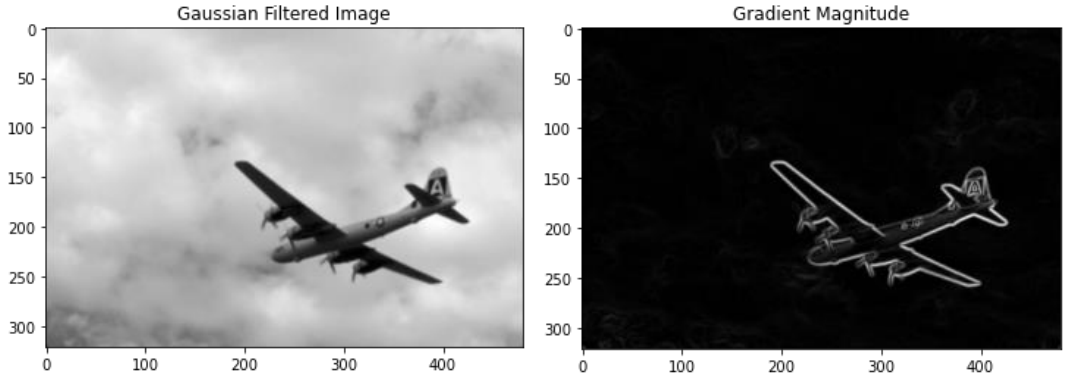
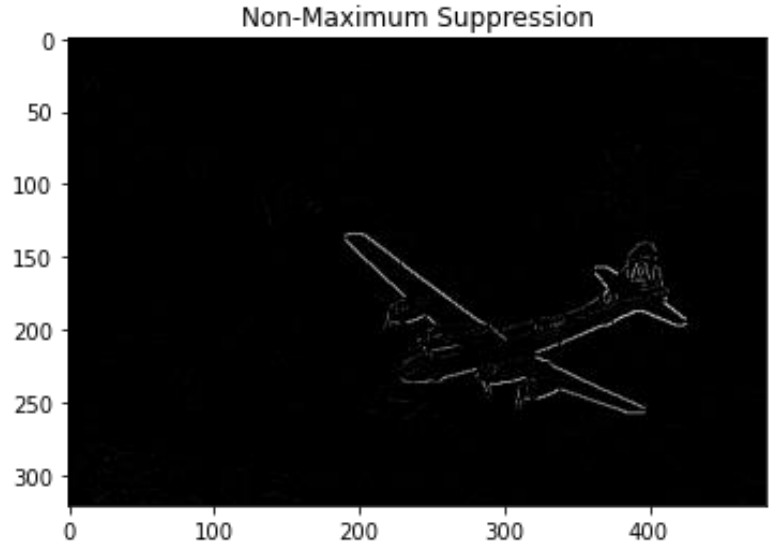
STEPS PERFORMED

1. Gaussian filter on the input Image
2. Gradient Computation - Sobel
3. Non – Maximum Suppression

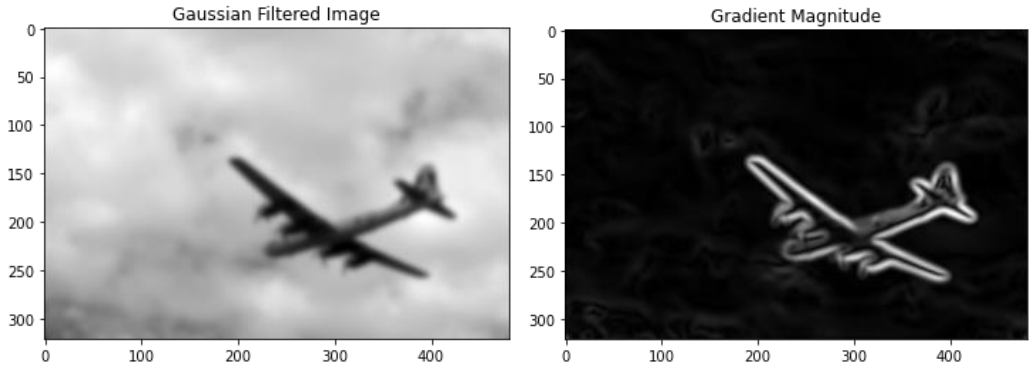
Sigma = 1

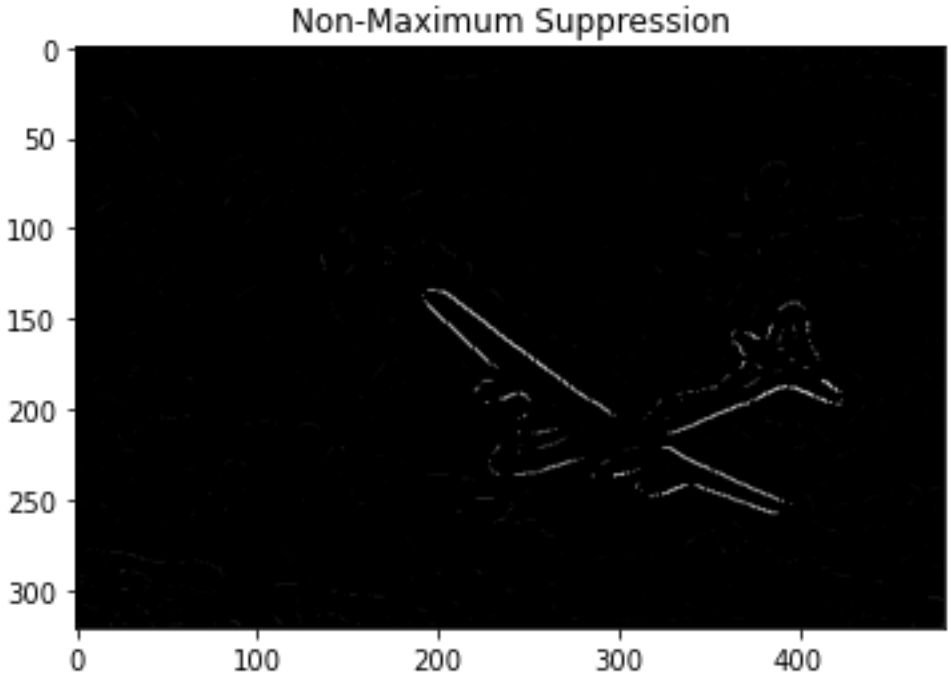




We can see that the lower the number of sigma the edges changes because of the behavior of Gaussian blur.

Let’s try for sigma = 3

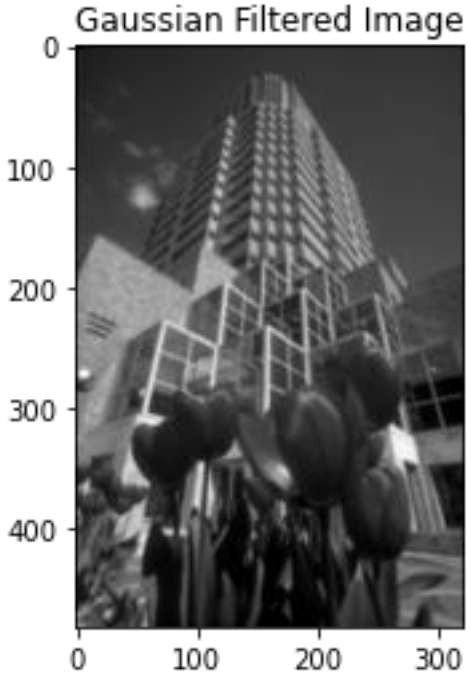


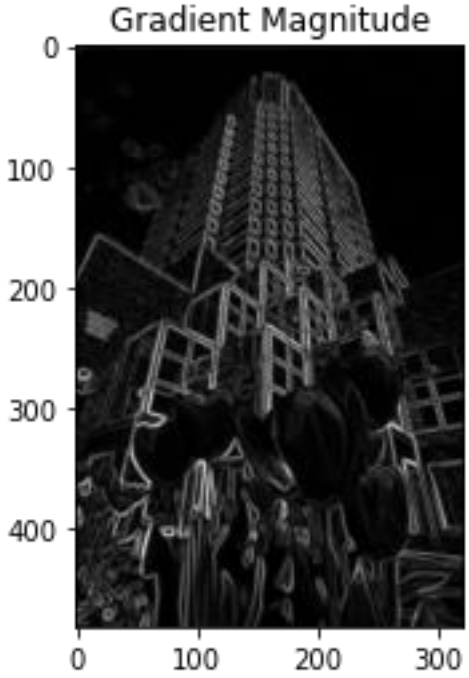


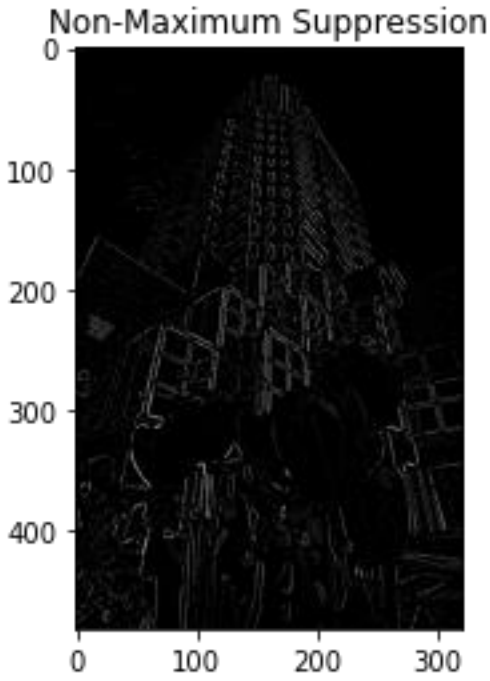
The observation is that Using a larger value of sigma generates more Blurred Gaussian filter which extracts dominant edges but note features.

Now trying the Same observation with values of sigma = 1 , 3 for images red.pgm and kangaroo.pgm

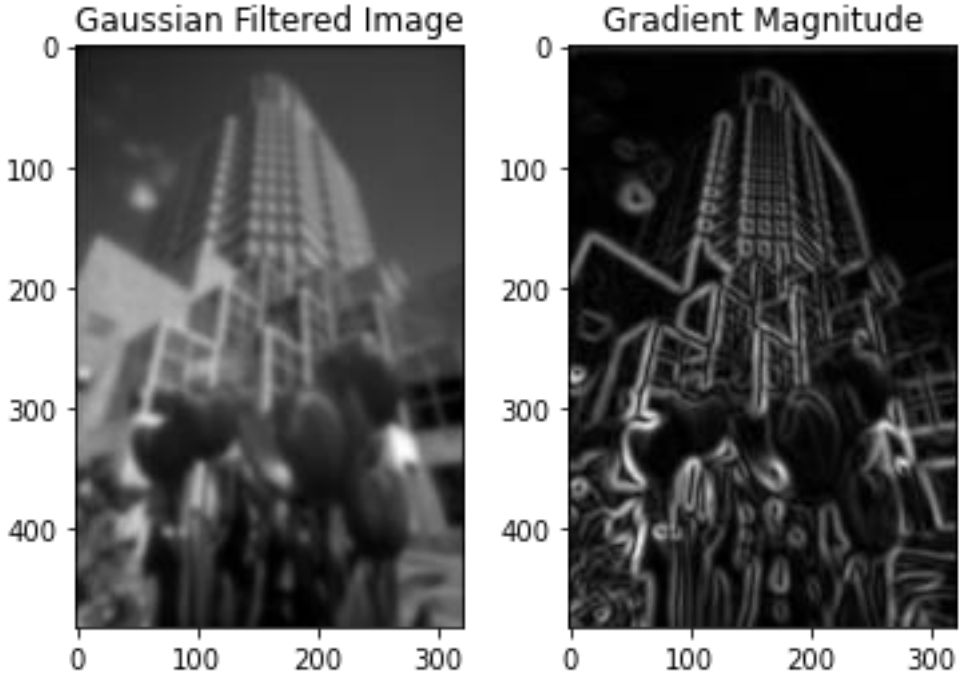
Sigma = 1

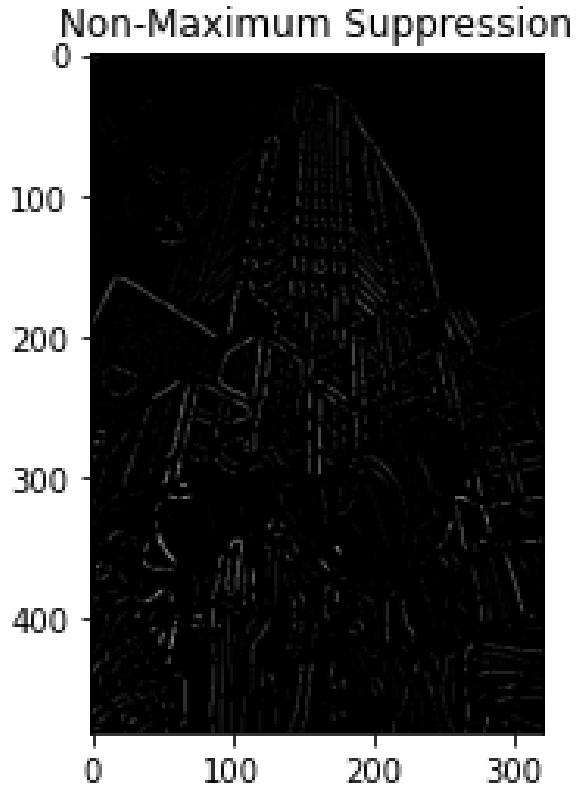

Gaussian Filtered Image
0
100
200
300
400
0
100
200
300


Gradient Magnitude
0
100
200
300
400
0
100
200
300


Non-Maximum Suppression
0
100
200
300
400
0
100
200
300

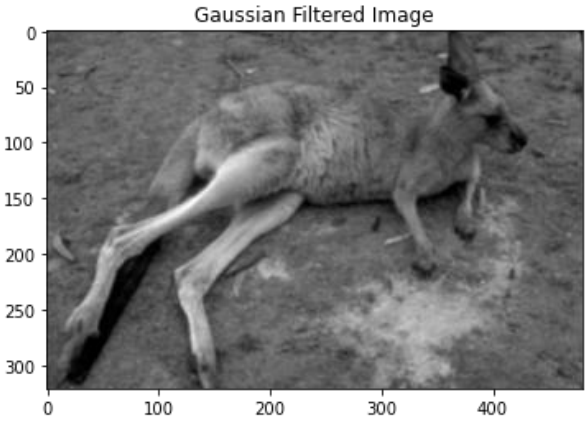
Sigma = 3

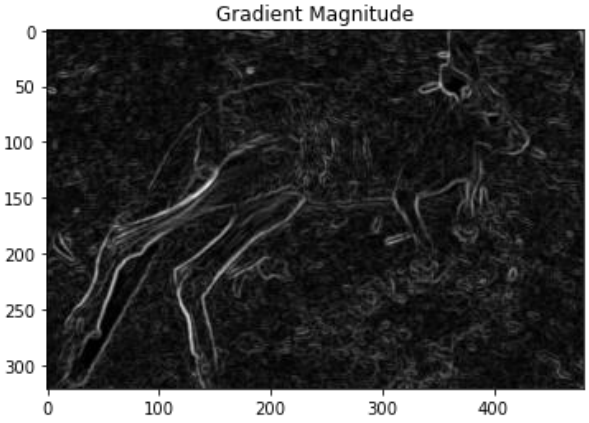


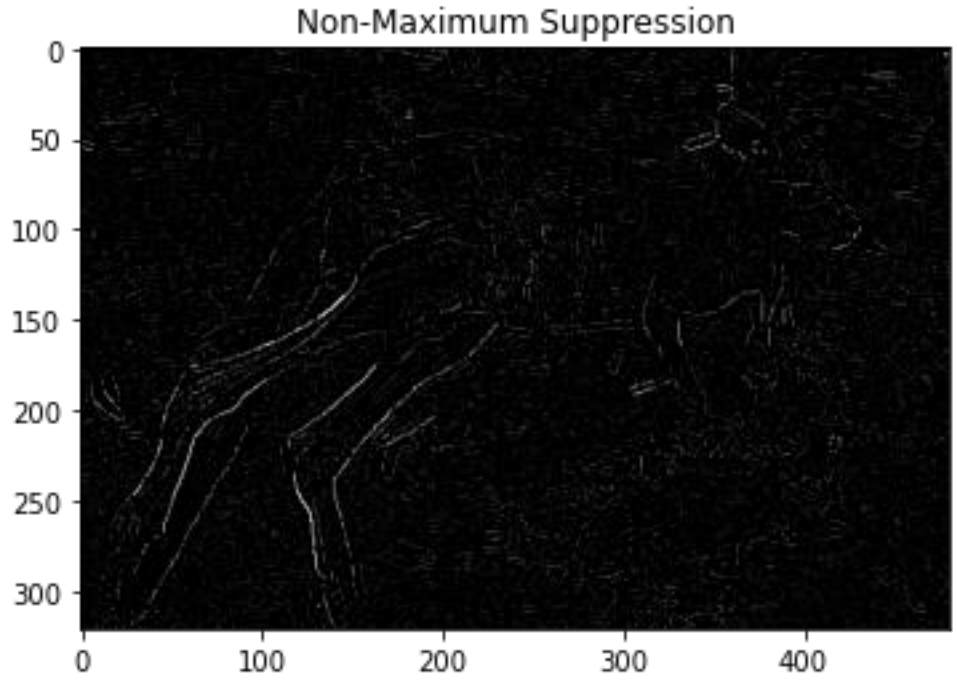


The Observation shows again that edges were not observed perfectly but maybe if we tune the sigma to 1.7 should be good.

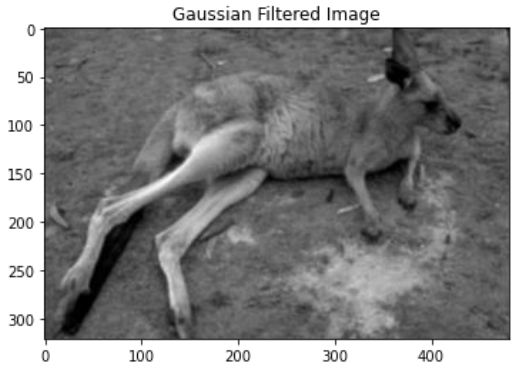
Sigma = 1 .7

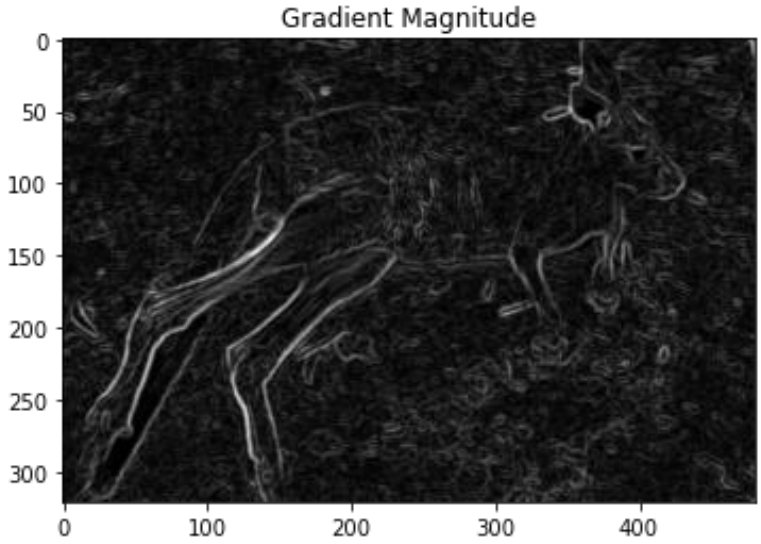

Gaussian Filtered Image
0
50
100
150
200
250
300
0
100
200
300
400

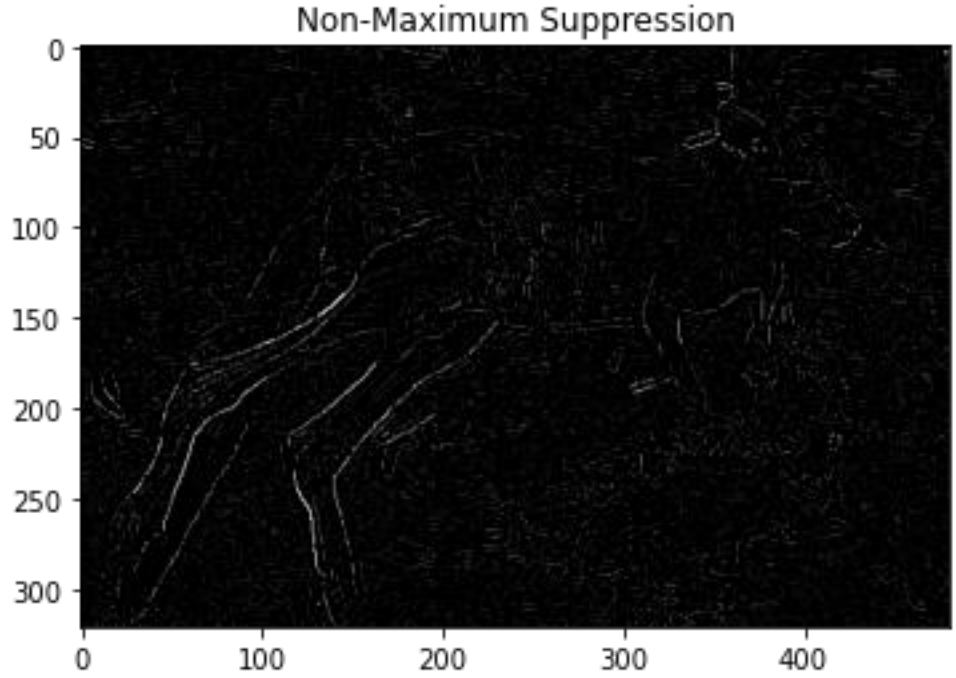

Gradient Magnitude
0
50
100
150
200
250
300
0
100
200
300
400


Non-Maximum Suppression
0
50
100
150
200
250
300
0
100
200
300
400

Sigma = 1


Gaussian Filtered Image
0
50
100
150
200
250
300
0
100
200
300
400


Gradient Magnitude
0
50
100
150
200
250
300
0
100
200
300
400


Non-Maximum Suppression
0
50
100
150
200
250
300
0
100
200
300
400

Conclusion – The changes in filter size, sigma changes the way concepts are extracted from the image. It can be tunned in order to extract either more detail or defined edges from the images.