

High Level Computer Vision

Assignment – 1

Submitted By:

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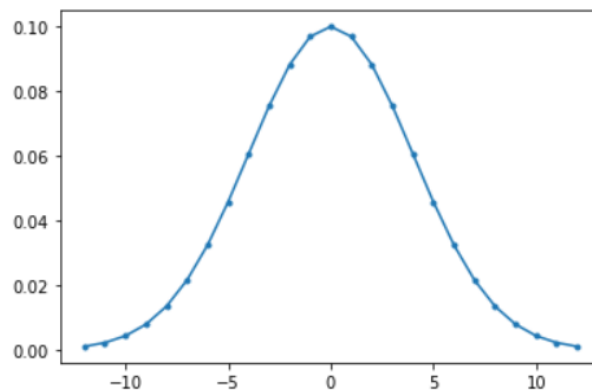
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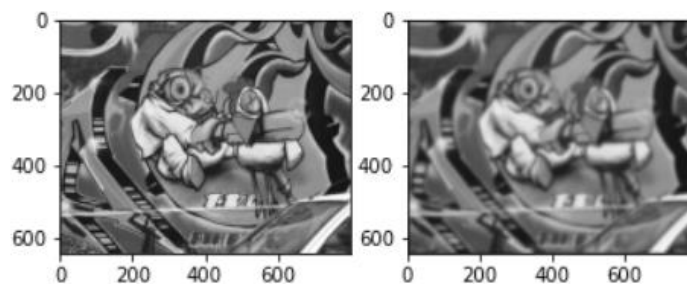
Exercise 1: Image Filtering and Object Identification

Question 1: Image Filtering

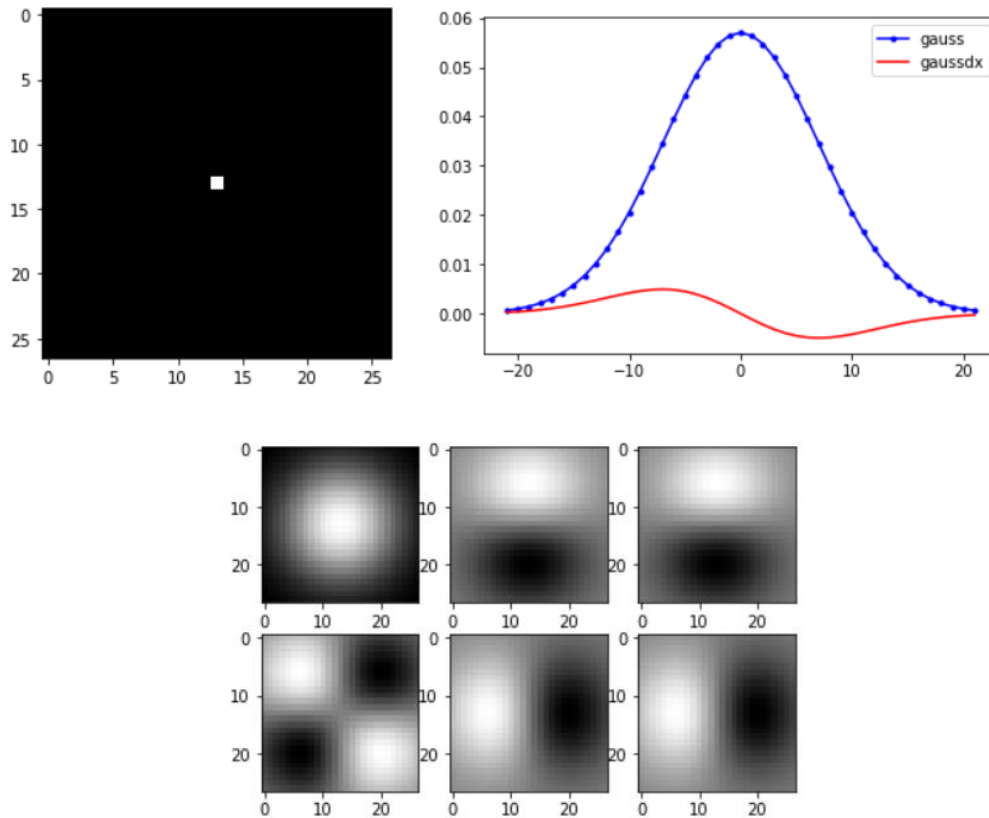
a) This Figure represents the plot for 1D Gaussian Kernel for the sigma value equal to 4 in the range [-12,12]



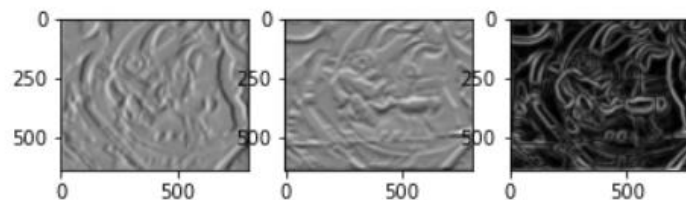
b) The following image is convolved first along 'y' axis and then 'x' axis using the 1D gaussian filter. This is shown on the right-hand side image as it blurs out.



c) The first image is a 2D Gaussian Blurred Image. Images 2 and 3 are convolved using D transpose function. Image 4 shows the intensity of change along 'y' direction. Image 5 and 6 are convolved using D hence shows intensity of change along 'x' direction

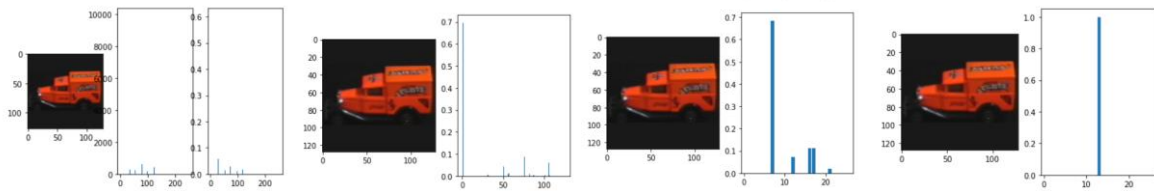


d) In the first image dy/dx of gaussian is applied along 'x' axis and hence the image detects edges along 'x' axis whereas, in the second image it is applied along 'y' axis hence detects edges along 'y' axis.



Question 2: Image Representations, Histogram Distances

a) After comparing the results we obtained without using the numpy package we can conclude that the only difference between both is that we unit normalize our custom normalization while the numpy package produces different results for different values of bin.

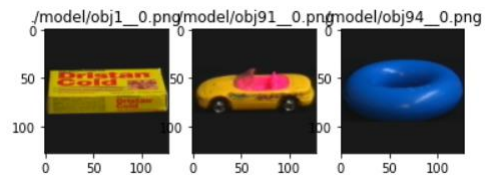


Question 3: Object Identification

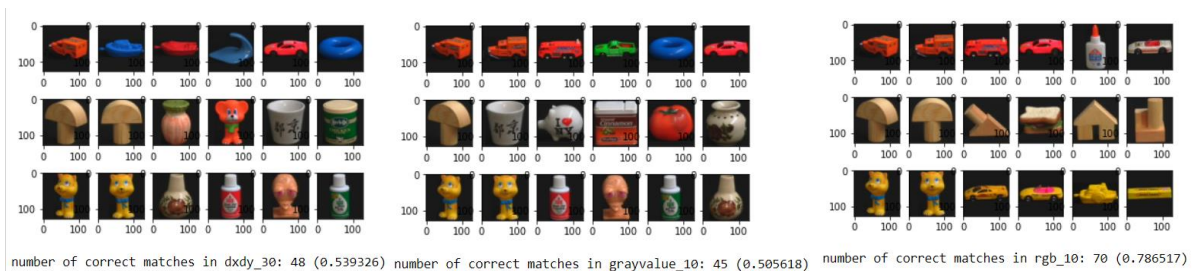
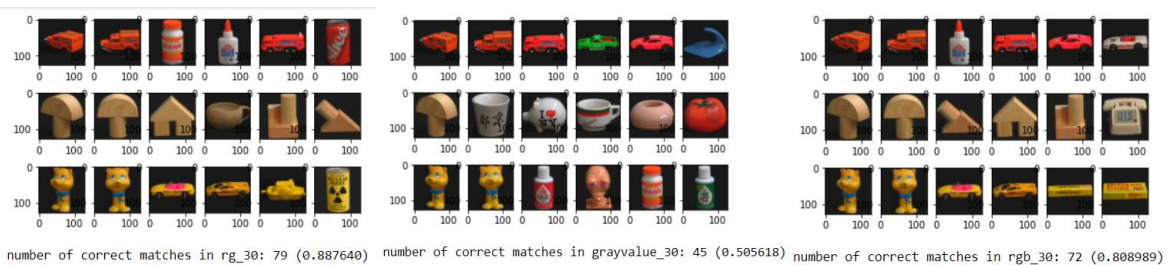
a)

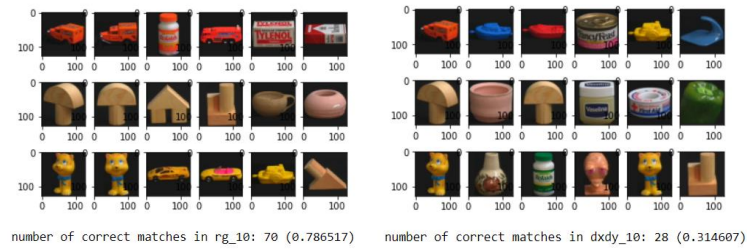
distance functions:
['l2', 'intersect', 'chi2']

b)



c) As clearly shown in the below images we tried for all functions with value of 30 and 10 and we concluded that 10 appeared to produce best results.





Question 4: Performance Evaluation

