CSE 573 Homework Set #4

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Problem(1):
file name: hw4_dog_log.py

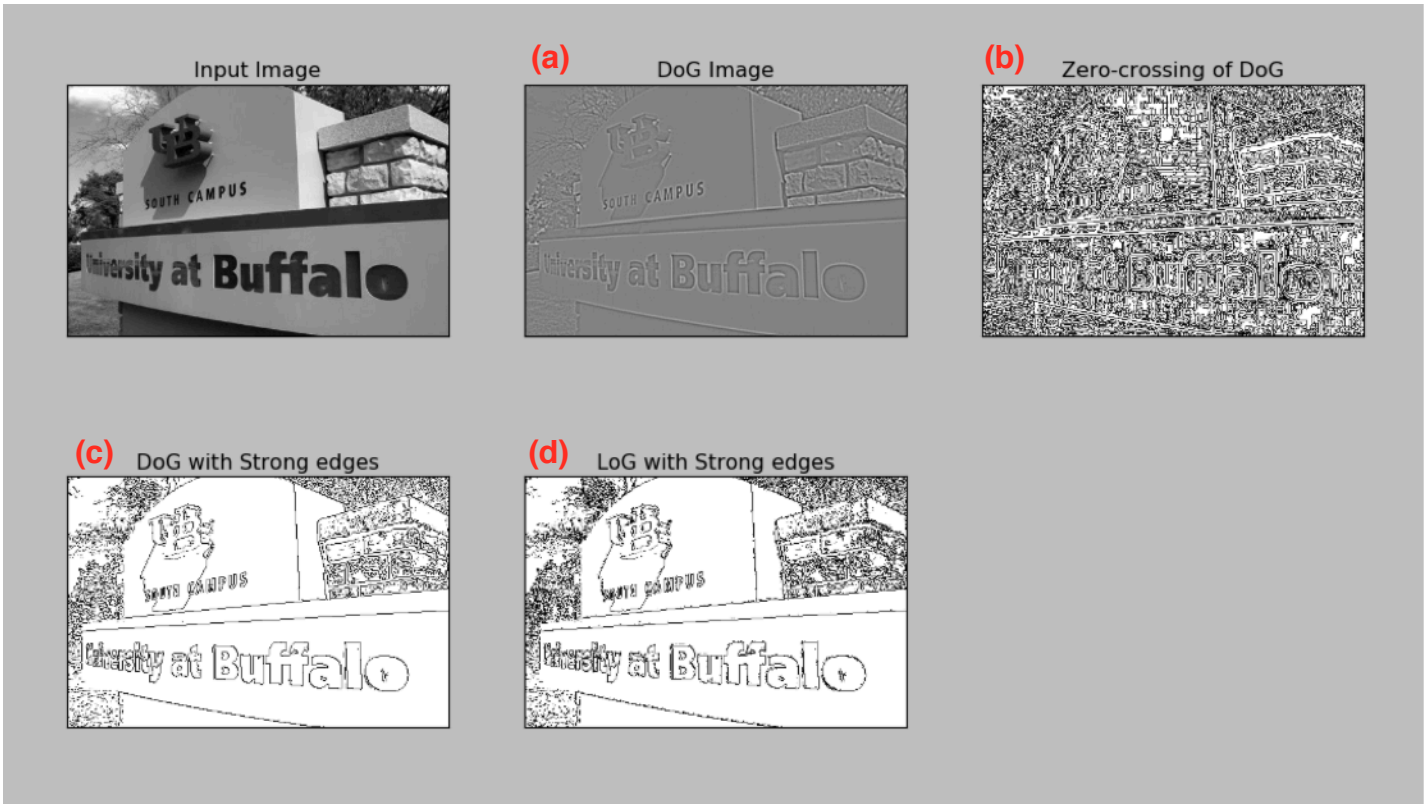
(a) DoG image
Use DoG mask to convolute with the test image, UBCampus.jpg

(b) Zero-crossing of the DoG image
If the two neighbor pixels is positive and negative value, then we mark one of the pixel to 0. 0 indicates the edge.

(c) Zero-crossing strong edges by removing weak edges
Use Sobel to find the first derivative of the original image. There are eight masks needed to convolute with the original image individually.
The threshold is 80. If the array values convoluted with the masks are smaller than the threshold and are marked as an edge, then they will be changed into background, value equal to 255.

(d) LoG zero-crossing edges
Do all the same option above, but use the LoG mask

The output image of (a) to (d):



(e) Explain why the edges obtained in (c) and (d) are different.
Is there any way that we may obtain the same results? Please explain in detail.

There are a little bit differences between (c) and (d), because they use different masks to convolute with the original image.

Yes, if we can let the masks become the same, then there will be same results. Also, we can do some calculation on the matrix to let them become the same mask.

Problem(2):

file name: hw4_region_merging.py

Output crack edge image: