

## CSCI 8820 Computer Vision and Pattern Recognition

### Assignment 4, Due Monday, April 5, 2021 by 11.59 pm (23:59 EDT)

For the three given gray scale test images from the previous assignment implement the multi-scale *Laplacian-of-Gaussian* (LoG) edge detection (i.e. edge focusing) technique starting with  $\sigma = 5.0$  and ending with  $\sigma = 1.0$ . When submitting the assignment include the following:

1. A well documented hardcopy of the source code.
2. Hardcopies of the gray scale images and the edge maps of each image for  $\sigma = 5.0, 4.0, 3.0, 2.0$ , and  $1.0$ . (**Note:** Although you will display the edge maps at  $\sigma$  intervals of  $1.0$ , the step size  $\Delta\sigma$  needs to be  $= 0.5$  in the multi-scale LoG edge detection algorithm). You may sample the LoG in the range  $[-4\sigma, +4\sigma]$  to ensure that the resulting masks are odd in size.
3. Comments on the results obtained. **In particular, show how you can experimentally verify that the multi-scale LoG operator is indeed superior to a single-scale LoG operator?**

The three images can be downloaded from the following URLs:

<http://cobweb.cs.uga.edu/~suchi/test1.img>

<http://cobweb.cs.uga.edu/~suchi/test2.img>

<http://cobweb.cs.uga.edu/~suchi/test3.img>

The above files are also available in ELC in the *Images* subfolder within the *Assignments* folder. These image files are in the same format as the image file `comb.img` that you used in Assignment #1.