University of Utah
School of Computing

CS 1060 Homework #3 Spring 2016

Due March 10, 2016 at the start of class.

For each question, you would need to submit the screen output of your code and your answers in a PDF, together with your Python code (as Python files).

If you use CADE lab (you should if you do not have SciPy and NumPy on your own PC), please read carefully the instruction on how to run HW3 in the CADE lab in a separate PDF named: HowToRunHW3InCadeLab.pdf.

Question 1 (6 points). Apply Gaussian filter to an image. Modify two lines within plot_blur_hw3.py program such that the middle image is visibly more blurry than the original image on the left, and the right image is visibly more blurry than the middle image (4 points). Explain in one sentence why these parameters make the images more blurry (2 points). Hint: You only need to modify the parameter values of my_sigma1 and my_sigma2.

Question 2 (6 points). Apply Mean filter to an image. Modify two lines with in plot_meanfilter_hw3.py program such that the middle image is visibly more blurry than the original image on the left, and the right image is visibly more blurry than the middle image (4 points). Explain in one sentence why these parameters make the images more blurry (2 points). Hint: You only need to modify the parameter values of my_size1 and my_size2.

Bonus Question (2 points). Apply Mean filter to an image. Replace the following two lines in in plot_meanfilter_hw3.py program:

```
local_mean1 = ndimage.uniform_filter(face, size=(my_size1, my_size1, 1))
local_mean2 = ndimage.uniform_filter(face, size=(my_size2, my_size2, 1))
```

with the two lines:

```
local_mean1 = ndimage.uniform_filter(face, size=my_size1)
local_mean2 = ndimage.uniform_filter(face, size=my_size2)
```

Now modify the parameter values of my_size1 and my_size2 such that the middle image is visibly more blurry than the original image on the left, and the right image is visibly more blurry than the middle image (1 point). Explain in one sentence why the images loose their color along the way (1 point).