ECE5554 SU22 - Prof. Jones – HW 1

Due Wednesday, July 13, 2022 – 11:59 PM via Canvas

You are to write and test a Python/OpenCV program that will load a pair of images and perform some simple operations. Your program should:

1. Load the following two images: Stonehenge_1024x768.png, and animals.png.
2. Print out, to the Python console, the image sizes for each image.
3. Print out, to the Python console, the average values for the red, green and blue planes for each image.
4. Convert both images to grayscale.
5. Compute the pixel-by-pixel average of the two grayscale images. Display this result and write it to a new image file.
6. Compute the pixel-by-pixel max of the two grayscale images. Display this result and write it to a new image file.
7. Compute the pixel-by-pixel absolute difference of the two grayscale images. Display this result and write it to a new image file.

Be sure and obey proper practice for loading, converting and using image files. Use numpy functions for the image arithmetic.

Your submission will consist of a Word or pdf file and a .py file containing your code (do NOT put them into a zip file). Your Word file should contain:

- your complete Python code (pasted in as plain text, no screenshots or dark mode);
- the console output of your program as described above, pasted in as plain text;
- the three output images of your program, sized large enough to see the detail.