Project 1 Report

Decisions Made

When dealing with division by zero, I instead just assigned the value zero. This allows white pixels to convert correctly without throwing a runtime error.

If a value is out of range during a color conversion, I clipped the value into the correct range.

File Descriptions

convertColors.py – This file contains the functions to convert pixel values from RGB color space to Luv color space and vice versa.

modifyImages.py – This file contains the function for linear scaling on the Luv domain as well as the function for histogram equalization on the Luv domain.

proj1-a.py – This file is the script for the first part of the project. This script calls functions defined in convertColors.py.

proj1-b.py – This file is the script for the second part of the project. This script calls the functions defined in convertColors.py and modifyImages.py.

proj1-c.py – This file is the script for the third part of the project. This script calls the functions defined in convertColors.py and modifyImages.py.

proj1-d.py – This file is the script for the fourth part of the project.

Results

The result of the first part of the project is a display of colors that are smoothly distributed throughout the image. This display of colors does not change across different image sizes.

The result of the second part of the project is details in the image are more defined within the window that the user specifies. Details are better distinguished from each other within small windows of the image.
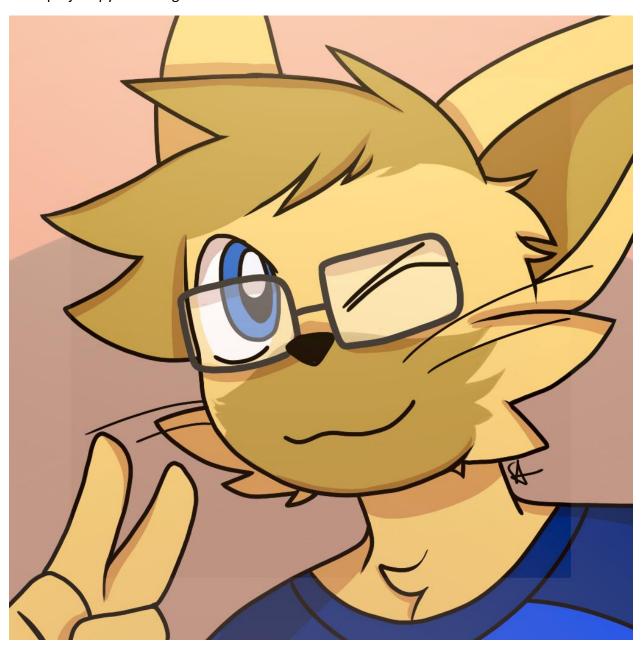
The result of the third and fourth parts of the project is similar to the results of the second part of the project; however in these parts, details are much more distinguished from each other.

The following is an example I found where performing histogram equalization resulted in an image that looks bad. I predict that this result is due to the high number of similar pixels in this cartoon image.

Original image – ori.png:

From proj1-b.py with range 0.1-0.9 on both axis:

From proj1-c.py with range 0.1-0.9 on both axis: