Lab Goals

- Pick appropriately saturated colors to improve an image
- Try to create a better Google Maps

Assignment Details

This lab consists of two separate parts that will let you explore some of the color theory ideas that we discussed in recent classes. In the first part, you will take a terribly oversaturated image and create a fresh version that isn’t horribly painful to the eyes of a viewer. In the second part, you will try to improve upon the color scheme used by Google Maps.

Desaturating an Image (20 points)

Recall that the HSV color scheme describes a color based on three different parameters: a hue that gives a base color, a saturation that describes how “washed out” or saturated the color is compared to its base, and a value/brightness that describes the “lightness” of the color similar to dimming the lights in a room. We also discussed that saturated colors are a poor choice for backgrounds, since the human eye is naturally drawn to colors with high saturation. Placing saturated text or other information on top of a saturated background is typically a bad choice.

In this part of the lab, you will use Processing to load the first image stored on BitBucket at labs/Lab7Images/lab7part1.png, and then desaturate it in a style that you choose to make the image more visually pleasing and informative. You can desaturate by:

1. Switching the colorMode to HSV
2. Drawing the image and calling loadPixels()
3. Reading the color stored in each pixel
4. Reducing the saturation amount
5. Replacing the pixel
6. Calling updatePixels()
There are several options for how you could choose to desaturate your image. For example, you could:

- Desaturate every pixel by the same amount
- Desaturate every color by a different amount
- Desaturate every color except for one that you choose to highlight
- Only desaturate the background

Explore around with various saturation/desaturation levels until you find something that you think is visually pleasing and worthy of submission.

A Better Google Maps (30 points)

During lecture, we looked briefly at the saturation level of the background of Google Maps and saw that it was by default quite unsaturated, as we would hope. It turns out that the good folks at Google put a lot of thought into the colors that they selected when creating the tiles that Google Maps uses. In this part of the lab, you can try to do better.

The labs/Lab7Images/lab7part2.png file contains a screenshot of Google Maps with a number of different features. You can load this image with Processing and modify the pixel colors in the same manner that was sketched out in Part 1. You should try to modify each of the following items in the image to some different color, while still keeping the semantic meaning of the color (as in, water probably shouldn’t be orange):

1. The background
2. The rivers
3. The parks
4. Three levels of streets: interstate, main routes (yellow), primary roads (white), side streets (grey)
5. The universities (brown) and hospitals (pink)

You can find the original color values of these different map components by writing a function using the mousePressed variable or function. Design it so that the Processing sketch will detect the (mouseX, mouseY) position of a click, look up that location from the pixels[] array (remember i = y*width + x), and print the HSV values to the console.

See if you can come up with something better than Google was able to create!
Submission Details

For this assignment, please submit the following items which you have followed while completing this lab to your cs382f2015-<your user name> repository. Your submission should include the following:

1. Print: Interesting source code that you wrote, or representative sections of your solutions
2. Upload: All of your commented source code for your Desaturation program
3. Upload: All of your commented source code for your Better Google Maps program
4. Upload: A screenshot of the output from your Desaturation program
5. Upload: A screenshot of the output from your Better Google Maps program
6. Print and Upload: An Assignment Information Sheet

Additional Group Requirements

You are welcome to submit this assignment on your own, or in a group with one other person. In cases of groups, I would prefer one experienced programmer and one inexperienced programmer in the group, but this is not an absolute requirement. Additionally, each group need only submit one paper copy of their work, but each member of the group should push all items to their own repositories.

Finally, each group must create a short document (0.5-1 pages) detailing the work breakdown of the group members: who worked on which components, which lines of code belong to each group member, etc. Comments in the code will help here too.