From Neurons to Picasso Final Project Script

Hello, my name is Peter Kosir, and this is my final project.

For my project I created a program that was able to take any image in and output a reduced version of that image. To be more specific, the program would read the pixels of an image and if the colors of surrounding pixels were similar, it would average them all together so that all the pixels in that region were now the same color. The idea is that it could take any image and turn it into cubism.

From there, I would take these images and explore the concept of the 4 Color Theorem. What the 4-color theorem basically states, is that you can take any map and color it so that the color of every neighboring region is different with only four colors. The story of this proof is very interesting because for many years, map makers knew this to be a fact the proof was only discovered in the 1970s using a long list of networks and was the first ever computer assisted theorem. So, what I wanted to do was take all my reduced images and recolor them all as if they were maps using the 4-color theorem. Given the complexity of this theorem was unable to right a program that could flawlessly color the entire map, so I had to export each image into Microsoft paint and manually color the images. This was not too much of an issue however because though it was time consuming, I was able to use the bucket tool to fill entire areas at once and it gave me more control over how the images looked so that I could strategically color the regions to keep some continuity with the original image.

Here you can see a world map and a map of all continental America’s counties illustrating the 4-color theorem. One thing worth noting, when the image is too detailed like in the American counties, the 4 colors blend into one and do not make a very good image. Because of this and the fact that I would manually be coloring the regions, gainer images were used and at times its easy to see individual pixels, making the images appear more like pixel art than cubism. On the right is an image using the 4 Color theorem but to make art similar to what I was trying to accomplish.

The first image I used was one that I took of the Triglav mountain range in Slovenia. I used this one more as a proof of concept and to test the program. An important thing about the program is that I could adjust the threshold of what pixels the program would group together to either create a more detailed or grainy image. For each image I created I adjusted this value to create an image that had the desired quality.

Here is a progression of this image as it is getting filtered with different thresholds. It starts out detailed and progressively becomes grainier.

This is the final image created after the coloring process. This was a good start and showed a lot of promise because while the image looks entirely different you are still able to tell what the original image was. The house is very clear, and you can still even see the lines where the field was plowed. Another interesting thing is how the mountain blends with the sky making it less of a focal point.

The next image I tried was a painting by James McNeill Whistler called Arrangement in Grey and Black number 1, also known as Whistler’s Mother. I chose this image because it is relatively simple as far as coloring is concerned. I was inspired by Andy Warhol’s images of Marilyn Monroe where each image was exactly the same but just with different colors. So, what I did is I colored four different versions with different color schemes and combined them so that it looked like all the women are sitting back to back. Tessellating my images will become a theme. I like this one because together all the women make a cool shape. Also, it is interesting how when the program created the regions, it removed the wrinkles from her face making her look like a younger woman.

Next, I wanted to combine an image with a color scheme that matches, moving away from just using red, blue, yellow, and green. I chose to combine The Great Wave off Kanagawa with Rothko Number 14 because of their similar colors.

Here is the final product. Since the change in colors is not a far departure from that of the original image it is very easy to tell what it is supposed to be of. However, the boat gets swallowed by the water as there is nothing to distinguish it against the blue waves. I then tessellated this image to make a cool banner.

Trying to find an image and colors to match gave me the idea of exploring juxta position between the original and final image. First, I decided to try to make a happy image more menacing. I choose this picture of a peaceful shoreline and found a dark color palette.

Here is the final image. You can still kind of tell that it is of a shore line but now it has a much haunting attitude.

For this next one, I want to show you the final image first to see how you reach when you see the original. So far, I’ve shown you the original first making it easier to tell what the final is. To give you a hint, this is a decently famous painting and also an exploration of juxta position.

And here is the original image. This is from Francisco Goya’s series known as the Black Paintings known for being some of the most disturbing works of art created as Goya descended into madness. This one is called Saturn Devouring His Son. My goal was to shock you by realizing the picture with happy colors you were just looking at is actually very gruesome.

Here is the image that I created again. Now it may be easier to see what it is of. This is an example of how it was beneficial to manual color the images. I tried to keep the person getting eaten the same color and Coronus’ body all blue and pink as the background. A fun idea would be to hand this in your office or somewhere people will see it and become acclimated to it thinking that it is just some abstract work and then switch the images to freak people out and then put the altered image back forever changing everyone’s perception of it.

One thing I noticed when I could tessellate the images, they tended to have a psychedelic nature, so I decided to learn into that for the next piece. For this I chose Van Gogh’s Starry Night because I though to it could tessellate well.

Inspired by the fantastically psychedelic posters for the Fillmore, I grabbed my colors from this poster of the Jimi Hendrix Experience to create the image on the right.

I then used 24 of these images rotating them in different ways to make this cool image. This one really achieved the desired affect and I am happy with how it turned out.

While working on it however, I realized that orange, yellow, red and pink aren’t a very common color combination for a reason and the final image is a little abrasive so I decided to make another version using more calming colors.

Here is the final version of the calm version. This reminds me of old wall paper which may be a cool application of these images.

Finally, I wanted to conclude with an image that could describe this class, From Neurons to Picasso. A combination of art and the brain using reductionism. For this I grabbed in an image of a brain and for the color scheme, what better than the Rothko painting on the front cover of Reductionism in art and brain science by Eric Kandel.

Here is the final image. I like this one because while there are four separate images the whole image itself only contains four colors. It is also cool because it looks like different areas of the brains are lighting up in each image.

This concludes my presentation, thanks for watching.