PSET 10
Salavon Style art - Matthew Tancik

Description:

I chose to manipulate large collections of images to extract information. The work was inspired by Jason Salavon's color wheel and his amalgamations. First I explored how color, language, and the Flickr database are intertwined. I pulled images from the Flickr database for different colors to create a hue chart. I did the same searches, but in different languages in order to attempt to extract regional differences in color associations. For each language, I searched [red, red orange, orange, orange yellow, yellow, yellow green, green, green blue, blue, purple].

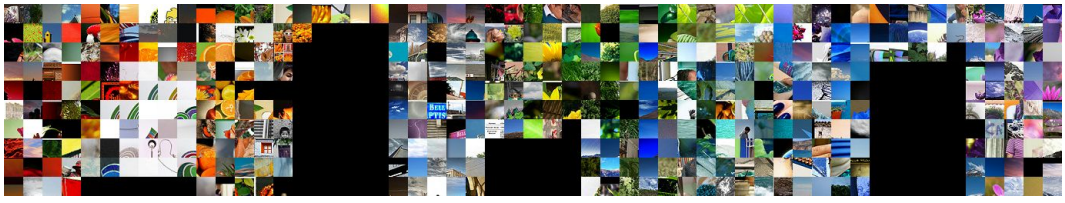
English

French

German

Italian

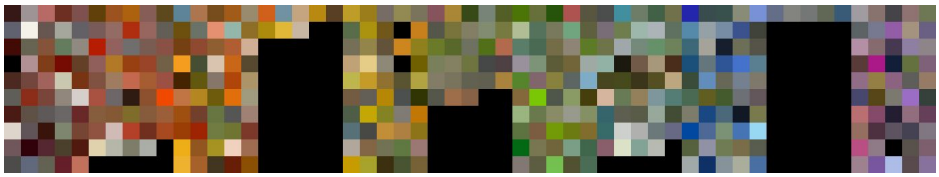
Spanish



The first point to make is that searching for the colors generally returns images that exhibit the color. However, the english image more closely follows the color pattern. A quite distracting difference between the languages is the black blocks. This is a result of lack of images in the Flickr database. For example, there are no results if you search “orange yellow” in Italian. This could be a outcome of different color meanings, but is more likely due to the number of users in each region. A difference in user, and thus photo density for each language would also explain why the english images exhibit more of a color pattern. Nevertheless, I thought it would be interesting to display the average color of each photo rather than the photo itself. Thus in a way we create a natural language color picker.

English

French



German

Italian

Spanish

For my next exploration, I played with amalgamations. The idea is to overlay many images with the goal of extracting the essence or commonality between them. Again, I used Flickr as a source of the data. My first image is the result of searching “MIT”.

Amalgamation of “MIT”

The results is surprisingly homogeneous. I was expecting to see a dome structure. I believe the homogeneity is a result of the non specific search. I’m not sure if it factored in, but “mit” is also the German word for “with”. Next I decided to do a search of “Massachusetts Institute of Technology” to see how the results compared.

Amalgamation of “Massachusetts Institute of Technology”

This time the resulting image was not as homogeneous. Again the dome is not prominent; however, the image seems to resemble the colors of the Stata center. For a final MIT test, I choose to search “MIT dome” to see if I could get the dome shape. It does indeed begin to emerge.

Amalgamation of “MIT Dome”

I also choose to analyze cities with this tool. I searched for both day images and night images to see how they differ. Then I compared different cities. The night images were darker as expected. They also tended to have more purples whereas the day images have more blues. The comparison of the cities was more interesting in my opinion. Nighttime in Las Vegas is significantly more bright and colorful compared to the calmer Boston night. This makes intuitive sense as Las Vegas is more lively at night. The daytime photos were the reverse; Boston was more vibrant, and Las Vegas was duller. I will leave it to the viewer to make additional associations.

	Boston	Las Vegas
Day		
Night		

Implementation:

The image manipulations were not difficult for this pset, they were straightforward and don't really require further elaboration. The difficult aspect was obtaining the image data. I choose to use Flickr as a source of the data. They have a REST API which easily opens up the data without relying on web scrapers. Because of this, I thought it would be easy to get the images. However, I underestimated C++'s shortcomings in interfacing with web technologies. I had to integrate a few libraries to make this doable; a surprisingly tedious task I was not familiar with. My first issues involved building the libraries. There were a number of libraries I was unable to build on my machine, this forced me to use different ones. One such library was flickcurl which is a C++ library for the Flickr API. I ended up using libcurl to download data from the internet. Jsoncpp is used to parse the JSON data. Finally Magick++ is used to convert the JPEG files into PNGs which can be modified by the Image class provided. Additional notes: I found that it is crucial to request the images by relevance (not the default) and to put the search query as a "tag" parameter. Otherwise the results will be meaningless.

Running the code:

The code will not run on the servers in the current state because of the additional libraries. To be honest, I'm not really sure what my makefile is using right now, I just tweaked it until it worked. I believe it is necessary to install ImageMagic (brew install imagemagic) then modify the LIB and INC variables at the head of the makefile to point to your installation.

Paper Summaries:

Viégas, Fernanda B., and Martin Wattenberg. "Artistic data visualization: Beyond visual analytics." ***Online Communities and Social Computing*****. Springer Berlin Heidelberg, 2007. 182-191.**

This paper describes the recent use of data driven scientific visualizations as art. They focus on a few artists, including Salavon, to show how collected data is being used to create captivating an informing artwork. The paper then tries to explain the difference between these artistic visualizations and true scientific visualizations. The primary difference is that the artists are biased and attempt to guide the viewer to a specific conclusion. They are also willing to modify the data to help emphasize the the conclusion. It is interesting how fine the line between science and art is in this case.

Zhu, Jun-Yan, Yong Jae Lee, and Alexei A. Efros. "Averageexplorer: Interactive exploration and alignment of visual data collections." ***ACM Transactions on Graphics (TOG)*** **33.4 (2014): 160.**

They present a method of averaging images in order to interpret large image databases. A naive averaging like I did above is too blurred out to obtain much information. To solve this problem, a user inputs a constraint. This is done by painting edges, painting colors, or selecting regions of interest. Then a clustering algorithm finds and aligns images to match the user's constraints. For example, if I painted a blue line in the sky of the "MIT dome" pictures, the averaged images would weigh the more relevant blue sky images higher.

Ginosar, Shiry, et al. "A Century of Portraits: A Visual Historical Record of American High School Yearbooks." ***arXiv preprint arXiv:1511.02575*** **(2015).**

In this paper the researchers look into a new way to analyze visual historical data. They do this by extracting small differences from large datasets. More specifically they choose to work with school portraits from different decades. By aligning and averaging the photographs over a decade timescale, it is possible to extract differences. One difference they were able to calculate was the rate that smiling became the social norm in school portraits. With the large dataset, the researchers were also able to perform machine learning and predict with good accuracy what decade a school portrait was taken.