Project: 1.4.7 Image Artist

PLTW | Computer Science

Introduction

Digitized images become a larger part of our lives every year. Consider
- magazines and websites,
- movies and TV,
- security cameras and satellite images,
- astronomy telescopes and climate satellites,
- MRIs and X-rays, and
- fine art to 3D print.

Computers produce, analyze, and manipulate more and more of what we see in the world.

How will computation change your visually creative work?

Image courtesy Rolfes
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Procedure

1. Log-in to Cloud 9 and determine whose account will be used for this Project. Create a new folder titled *1.4.7*. Then make a python file named *Last_Last_1.4.7.py* and a subfolder titled *Project_Images*. Once you have done that, please load 4 images of different shapes, sizes, and quality from the `1.4.5_Images` folder from the previous activity.

2. In the Bash terminal tab don't forget to start your iPython session.

3. For this assignment you will be working with your partner to get everything done, please record all answers in both the code editor document as comments as well as the google doc Project Log.

4. For this assignment, it is going to be extremely important to tell Cloud 9 exactly where to be, therefore, change your working directory to the folder *Project_Images* and stay in that directory for this entire project.

5. For this assignment you might want to build from *Last_Last_1.4.5.py*, therefore, feel free to copy and paste all of the code from that assignment into your *Last_Last_1.4.7.py.* You and your partner might decided to get rid of most of that code, however, for this project you must keep all of the file/directory navigation code from 1.4.5 due to grading limitations.

6. Now that you are all set-up, choose a problem following the constraints introduced by one of the clients below. Define the problem and review the criteria from the rubric for the problem.

   a. Document thoroughly. Starting with this problem definition, record your work in the Google Doc project log.

   b. Brainstorm to generate ideas based upon the client requests, make sure to record this information in you project log.

7. Develop one of your ideas to create a proposal for the client. Get client feedback before digital production.

8. Develop the product.

   a. Review each member's understanding of navigator and driver roles.

   b. Strategize, code, and test. Your record of your development process is an important artifact. A reminder of some tools you can use.:

   - Use unique file names to save successive versions of *Python* files in the code editor after each significant success (ex. _Last_Last_1.4.7_v1.py_, _Last_Last_1.4.7_v2.py_ , etc.)
   - While working toward each success, retain a record of what you tried that did not work, perhaps by commenting out and annotating abandoned code.
   - Keep a project log with dated entries summarizing your work each day (make sure you include image progression results). Also include notes about the problems you encounter, what you tried that did not work, and how you solved each problem encountered along the way.

9. Prepare **deliverables.** Prepare your artwork to present to your client. Your work should include all of the following components documenting your collaborative product.

   i. A cover page with all of the following: your group name, a visual display comparing the images used as input to those produced as output by your algorithm, the developers, and a link to your cloud 9 workspace.
   ii. Credits for raw images used as input or as part of your algorithm
   iii. Brainstorming notes and a sketch of proposed idea
   iv. Visual display of raw images used in the algorithm
   v. Array of images showing results from a range of values for a parameter of the manipulation
   vi. Gallery Walk Table with all information needed to run and execute the code. And a link to your Google Slides Image Artist Presentation (see #10)
   vii. Conclusion: Reflect on the team dynamic and on the design process. What were areas for improvement? What steps could you take next time to make those improvements?
   viii. A daily project log that has sequence of images showing stages of manipulation reflecting intermediate stages of data during the algorithm's execution

10. For the Gallery Walk you will also need a Google Slideshow on the center computer screen that will be on a loop that shows your chosen client as well as your image manipulation art (aka before and after images in a nice and meaningful way).

Client # 1: A Cause

Your client is a group that advocates for a political cause. It could be the environment, education, anything. The client needs a consistent branding for images that will be used to promote their cause – images that are memorable and will have a lasting impact on people. The client could be a real or fictitious student organization, community group, or state/ national/global advocacy group. The client's cause should be a true potential cause even if the client is fictitious.

The client wants an automated process to apply to images. They want the process to use some combination of masking, shading, or combining the images with a consistent logo or superimposed image. The client enjoys abstract art as well and might like geometric shapes incorporated in the image – drawn on, as a border, or as a mask. The client enjoys participating in the creative process and will appreciate being offered a range of options (as a parameter) for one of the image operations you perform.

Client # 2: A Family

Your client is a family that would like a standard frame applied to a large number of pictures that feature one or more of the family members. They want the composite image to be memorable and to incorporate some personalized symbol, image, or silhouette that represents the interests of the family member(s). The client enjoys abstract art as well and might like to see geometric shape incorporated in the image—drawn on, as a border, or as a mask.

The client enjoys participating in the creative process and will appreciate being offered a range of options (as a parameter) for one of the image operations you perform.

Client # 3: A Product

Your client is a company that manufactures or distributes a product. The client needs an image that is memorable and has a lasting impact on people to increase sales or brand loyalty to their product. This could be a real or fictitious product.

The client wants to be able to apply their brand image as a frame, overlay, or silhouette to a large number of images to be used in the marketing campaign. The client enjoys abstract art as well and would like to see geometric shape incorporated in the image—drawn on, as a border, or as a mask.

The client enjoys participating in the creative process and will appreciate being offered a range of options (as a parameter) for one of the image operations you perform.

Client # 4: A Developer *(Do not attempt unless you want to spend hours working on this outside of class)*

You work for a software company that is producing a photo editing tool similar to Photoshop® software. The selling point of your flagship product is a large number of detailed algorithmic photo manipulations. Your team is to create a script to manipulate images into one composite in a unique way, ideally one not possible through simple Photoshop workflow.

Your team wants the end product of the manipulations to be a photomontage made from at least two distinct original images. They believe that an exciting feature will result if you surprise the user by allowing them to combine two images that do not naturally occur together, especially if one of the images is then changed in some way to emphasize the effect of the combination. You know that your geometric patterns often are a selling point of your software, so your team is also considering how to incorporate geometric shape into the image – drawn on, as a border, or as a mask.

Since this script will work as part of a cohesive software package and you have no way of knowing in advance what images a user is going to choose to manipulate with your company's product, you cannot make any assumptions about the images that you will have to work with. However, your team plans to offer a range of options (as a parameter) for one of the image operations you perform to allow the user to customize the operation.