Georgia Tech
CS 6475 Computational Photography

End of Term, Student Choice Project

Goal

Undertake an effort (2-3 weeks of work) in Computational Photography that is completely your own, building on ideas that you have learned in class, and/or related to what excites you about computational photography. (*Secondary Goal: Have fun computing with photographs!*).

This project can be completed by yourself or with up to one other classmate who is also working on a very similar idea. We will have a thread in Piazza to discuss ideas. The project proposal is meant to be a single paragraph overview of your project direction and can be submitted before you finalize your potential teammate arrangement.

Details

The real premise of this assignment is to give you an excuse to do something fun and exciting with computational photography.

Simple ideas could be:

- How would I merge two (or three) of the assignments together to do something novel?
- I saw this cool effect on the web last year, let me see if I can recreate it...
- I read this nice research paper, can I try to build something similar?
- There is a need at my current job to do X with images, can I try to build it?
- Can I do this as a mobile app on iOS/Android, I already know how to develop on it
- I hated Python/OpenCV, I want to try to do something in my favorite development environment

In the past students have build trial systems to do *motion blurring*, *image mosaics*, *image morphing*, *colorization*, *image blending*, *producing cinemagraphs*, *image seam-carving*, *hole-filling*, *simulating tilt-shift*, *capturing images to get a different output from photosynth*, *simulating how a picture would appear rendered on wood, steel, etched papers (etc.)*, *generating non-photorealistic / painterly / sketch images*, *photo mosaics*, *photo montages, photo collages, averaging and aligning faces, etc*. Feel free to share more ideas on Piazza. You can also see a list of past projects in the Google Folder with Class Resources (http://bit.ly/GT-CP-Res).

Bottom-line

The range of what you can do is limitless. Discuss (as you have been) on Piazza and recommend ideas and resources.

Collaboration and Sharing

Collaboration, discussing, even code sharing is permitted. However, you must be explicit in your final report who helped you. It is also permitted to use code from the Internet, or wherever else, again making sure you mention what you did and what you got from somewhere else.

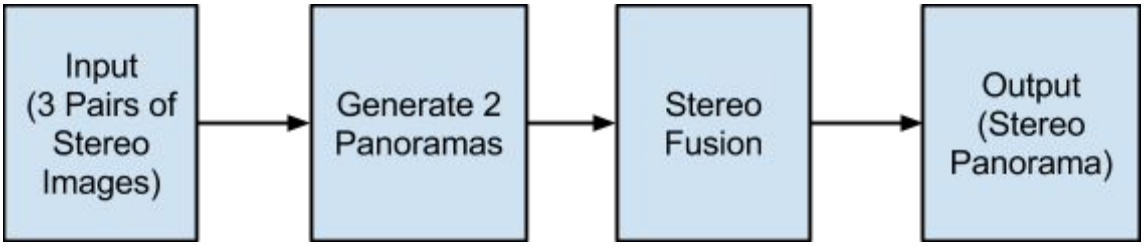
What will be evaluated (ie. what is the Rubric)?

1. **Completion**: Propose something and get it to completion, show some results
    a. You can show results by putting a bunch of input/output in the final report and something you will submit as a presentation.
    b. If your results are best shown as a video, then record it and share that too.
    c. We don't care how how you showcase the results. As long as we can see them.
    d. Although you don't have to fully succeed, you should definitely have some results to showcase.

2. **Computational**: There has to be a computational aspect to your project. That is, you can't take a bunch of images and produce one artifact. It has to be repeatable and applicable to a different set of images.

3. **Pipeline**: Please specify a simple workflow or pipeline for your effort. For example:
    a. Input Images (3 pairs of stereo images) -> Make 2 Panorama for each of the left/right eye images -> Generate a Stereo Pair -> Output (Stereo Panorama).
    b. Explain each of the steps in some detail.
    c. Given another set of input, your pipeline should still work. Demonstrate with several examples.
    d. Use a flow diagram like below (this is just a sample, please be detailed and thorough as needed for us to fully understand your process)

4. **Details**: Details of what was done, what worked, what didn't, and showcasing results.



What will be required (submitted)

1. Proposal via T-square
    a. A short description of what you are planning to to do
    b. 2% of the entire class grade
2. Presentation Slides/Demo/Report via T-square
    a. Something to show what you did (We will provide a template)
    b. 9% of the class grade

Frequently asked Questions

What programming language / development platform is required?

A. You may choose. We will not run or test your code. We are interested in seeing the input and the output. We trust you will not fake the results.

I can't think of what makes an appropriate final project, can you suggest one?

A. Feel free to ask for ideas and suggestions on Piazza. We will provide some suggestions, but we really do want you to think about one. We suggest searching for Computational Photography Projects and look for classes on this topic at other universities.

Are we allowed to share our ideas, code, output with other students?

A. Yes.

Are we allowed to use code from others?

A. Yes. You may use code from others as one of the boxes in the pipeline (workflow), but it would be good to also generate a module/functionality yourself. When using from others, please do acknowledge them.

I have made a very cool effect to do X, can I make a short video to showcase it?

A. Absolutely, we would love to see it. Make sure to also describe the details of your effect (see www.cc.gatech.edu/dvfx for examples).

I have taken on a very hard project and it seems I may not finish. What should I do?

A. Change the scope;, find some parts you can complete and get to the end. We want to see something and your attempt at it.

I have taken on a very simple project, what can I do?

A. Increase the scope; do more, apply it to harder input, to video, etc.

What is the desired outcome of this project?

A. Having fun computing with photographs!