Georgia Tech

Computational Photography Class

Final Project Instructions

This document provides report content information, template link, and instructions for other deliverables (images and code), and FAQs.

Refer to the [Final Project Description and Proposal](https://docs.google.com/document/d/1gYvzVuGJkl51Jmp6wRvar6jVqIgHrdthX34TW_xbXhQ/edit?usp=sharing) for project requirements. That information is **not** duplicated here.

**Project Proposal:**

You should have already chosen a project subject and submitted it using the Google form. Feedback on your proposal will NOT be given on T-Square. If you want feedback, post your idea on Piazza (look for an appropriate thread) or message the Instructors on Piazza if it takes us longer than 24 hours to reply.

# **What will be evaluated?**

**Important Note**: This is **NOT** an Above & Beyond assignment; your basic score will be calculated out of the full 100 points.

1. **Completion**: Take your proposed project and take it to completion, with working code, a final report, and image artifact results. You may choose how you showcase the results, just as long as we can see them. (e.g., if your results are best shown as a video, then record it and share that). Results may be hosted on other sites, with links shared. Input images and output results must be shown as a minimum. Intermediate steps that demonstrate your process are valuable, as well.

Although you don’t have to fully succeed, you should definitely have some results to showcase.

1. **Multiple sets of results from a minimum of three (3) input image examples.**  **That is, you can’t take a bunch of images and produce one artifact. Your project must be repeatable and applicable to a different set of images.** If your project is extremely complex and you can’t do three examples, contact us in advance on Piazza for approval. In the past, this had happened when students could only arrange one flight with an instrumented plane, or one trip on a ship to obtain video for ship detection. We expect your examples to vary - different people, scenes, etc.
2. **Computational Code**: This is the center of your project. See the *Final Project Description and Proposal* document for specific requirements and warnings concerning code.
3. **Pipeline**: Specify a workflow or pipeline for your effort and explain it in good detail. Further guidance for the pipeline is in the template. For example:

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1. **Details**: Details of what was done, what worked, what didn't work, and showcasing intermediate and final results. Give detailed descriptions and explanations. Show images from your steps, and discuss them. Submit at least three entire examples in the report (inputs/outputs) to demonstrate the functionality of your project. The template provides guidance.

## Submittal Requirements

[Final Report Template](https://docs.google.com/presentation/d/1rxBQ6PFiFPOhBgmUVW-bhpYFpNXMMsjxGAYJrlgZEU4/edit?usp=sharing)

The Final Project will be submitted via Bonnie and is subject to a total limit of 12 MB.

1. ***Proposal via Google Form*** *(2% of course grade); this was previously completed in the Final Project Description and Proposal document and form. No action required here.*
2. **finalproject.pdf** -Report (13% of course grade)
   1. Your project report using the template above. You may use a different page format, but you must follow the order and content requirements from the template.
3. **resources.zip**
   1. Folder with your code file(s).
   2. A file named README.txt that contains basic instructions on running your code, including what libraries, languages etc. to use, and in what version, as well as what command to use to run your code. This doesn’t need to be extremely detailed as long as we can successfully run your code based on your instructions.
   3. Input images and final artifact sets. Reduce your image sizes to fit the report limit. Name the images so that it is clear which ones go together (i.e. set1\_input.png, set1\_output.png). Your images must be one of the following types: jpg, jpeg, bmp, png, tif, or tiff.

*If you are working with video or you are incorporating image recognition work, this content may be posted on a secure drive, and a link provided in the report, viewable to anyone with the link.*

* 1. Any additional files that you wish to submit in support of your project. The total file size for ALL files must be less than the limit.

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## Submittal Instructions

Make sure that files named **finalproject.pdf** and **resources.zip** containing your above materials are in the assignment folder -- both files will be uploaded. (These names are important because the submission script searches the current working directory for exact matches to the filenames).

Note: Make sure that you have completed all the steps in the [instructions](https://github.gatech.edu/omscs6475/assignments/blob/master/README.md#virtual-machine-setup) for installing the VM & other course tools first. Follow the [Project Submission Instructions](https://github.gatech.edu/omscs6475/assignments/blob/master/README.md#submitting-projects) to upload your report from the course VM to [Bonnie](https://bonnie.udacity.com) using the omscs CLI.

* Submit your report with the CLI on the VM from within the project folder:

omscs submit project

Note: The total size of your project (report + resources) must be less than 12MB for this project. If your submission is too large, you can reduce the scale of your images or report. You can compress your report using [Smallpdf](https://smallpdf.com/compress-pdf).

**Caution:** Make sure that ALL links you include in your report are viewable by anyone with the link. We can’t grade what we don’t see. Test your links from another computer, or have someone else test them for you from your report, before you turn it in. *Remember to double check everything before and after submitting to make sure everything looks good and works as expected.*

Verify your submission is as you expected at [Bonnie](https://bonnie.udacity.com/login).

# **Frequently asked Questions**

**What programming language / development platform is required?**

1. You may choose. We are interested in seeing the input and the output. We trust that you will not fake the results, but you are required to submit your code.

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

1. 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. Review the technical papers included in Resources. Many of these can be recreated.

**Are we allowed to share our code with other students?**

1. You may NOT share code with other students before the project deadline. You may share ideas and/or outputs (i.e. image results), but make sure to cite your sources if you get ideas from elsewhere. Once the project closes, you may share your code if you choose.

**Are we allowed to use code from other sources?**

1. Yes - In small amounts, (e.g., neural network recognition projects will score poorly if your project relies primarily on ML library calls.) You may use small amounts of code from external sources in your project, but you must compose the computational pipeline (workflow) on your own. You must also acknowledge the authors of any libraries/code you use in your report.

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

1. Absolutely, we would love to see it. Make sure to also describe the details of your effect (see [www.cc.gatech.edu/dvfx](http://www.cc.gatech.edu/dvfx) for examples (rather old)).

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

1. Reduce the scope; find some parts you can complete and get some results. We want to see something and your attempt at it. You **do not** need to get re-approval.

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

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

**I would like to apply threshold edge detection and several filters to an image, as part of an app, Is that enough?**

1. This is usually not enough, as filtering is extremely simple. You would need to apply additional processes involving computation for this project.

**My project is very complex, and I can’t show three examples. What do I do?**

1. If you have a really good reason, we can agree to use one or two examples. Contact us via private Piazza post ahead of time. For example: We had a student who arranged to put markers on an airplane wing, and then did video measurements during flight. He could only arrange for one flight. Someone else did ship detection in limited visibility. Both of these had significant issues with getting data and used single examples; both submitted edited video data.

**What is the desired outcome of this project?**

1. Having fun computing with photographs!