

CS148 Summer 2022 - Final Project

Final Project Due: **THURSDAY** Aug 11th at 11:59 PM PST

Proposal Due: Saturday Jul 23rd at 11:59 PM PST



Luna Yang & Xuelin Yang, 21



May-Ann (Gray) Wong, 21



Po-Ya Wu, 21



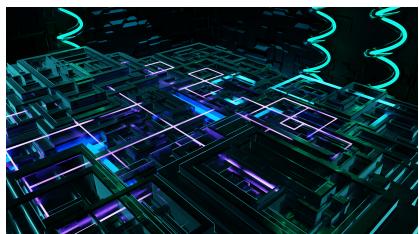
Sreya Halder, 20



Kent Vainio, 20



Lingjie Kong & Yanjia Li, 20



Anthony Xie, 21



Tassica Lim & Tatiana Wu, 20



Yifan Wang, 20

Larger versions of these images (and others) along with the project reports can be found under [the Showcase page](#) on the course website. Click on the images to see the reports.

1 Introduction

The final project is an image that you create using Blender's ray tracing engine: Cycles. You must put together a coherent scene using geometry, materials, and textures that you made and/or found online. Examples of exemplary projects from previous course offerings are shown above.

You can work with a partner or work on your own. We will grade both solo and partner projects on the same scale, primarily basing the grade on the quality and merit of the image. However, if

we get notice that one partner in a group might've done less work, then we may adjust grades for that group accordingly.

We recommend that you spend a lot of time asking for feedback from the CAs and instructors, as well as even friends, family, etc. A lot of the evaluation will be on the artistic aesthetic of your image, so the more opinions the better! Feel free to come to office hours and/or make private posts on Piazza to get feedback over the next month. We're always happy to look at your progress and help improve your project anyway we can. We want everyone to succeed and are here to help!

2 Project Proposal (DUE SAT JUL 23)

Find a motivational image (or a couple), and write 1-2 short paragraphs explaining the goals for your project as motivated by the reference image(s). This proposal is meant to give us, the CAs and instructors, an idea of what you're trying to do, so that we can give appropriate feedback on how to best complete your project.

The proposal will be **due on Gradescope Saturday Jul 23rd at 11:59 PM PST**. It will be graded on a 0-5 scale, and **count for 10% of your project grade**. If you are working with a partner, you will be allowed to submit a joint submission. Make sure to tag your partner on Gradescope so that the grade is recorded for both of you.

3 Final Project Requirements

- **Main geometry from scratch:** At least half of the main objects in your scene need to be modeled, sculpted, or simulated from scratch. We consider main objects as the objects that make up the focus of your scene.
- **UV mapping and texturing from scratch:** For at least one of the objects made from scratch in your scene, you must 1) UV unwrap the object yourself and 2) create a texture from scratch either via hand-painting or procedural generation with Blender's material nodes. These two requirements can be done on two different objects.
- **Blender/Cycles feature:** Use at least one advanced feature in Cycles or Blender, such as depth of field, motion blur, volumetrics, etc.
- **Cite your sources:** You are welcome to use any assets or Blender addons that you find online. In fact, we highly encourage you to do so, since it can be incredibly time intensive to construct your whole scene from scratch! **BUT**, you must cite your sources in your report!

Here are some resources that you might find useful (for obtaining .obj or .blend files). You'll need to make an account for some of these, but from there, you should be able to download models for free:

- General Objects: [Poliigon](#), [TurboSquid](#), [cgtrader](#), [3dsky](#), [Dimensiva](#), [Poly Haven](#)
- Blender Assets: [Blend Swap](#)
- Unique Scanned Objects: [Sketchfab CC0](#)
- Landscapes: [Quixel Megascans](#)
- 3D Map Models: [Map Models Importer](#)

4 Final Project Submission

All submissions will be done online via Google forms and Google drive, both of which you should have access to with your Stanford account. If for some reason, this is not an option for you, then please make a private Piazza post on the matter ASAP.

We will provide a link on Piazza for submission of your image and report on the last week of the quarter. You are welcome to submit multiple times; however, only your latest submission before the deadline will be graded.

4.1 Deliverables

Your submission should include the following. All the filenames should include the SUNet ID(s) of everyone in your group, concatenated by underscores (e.g. `winnielin_kevli016.xxx`).

1. Your image: `student1_student2.png`. The resolution along the short edge of your image should be at least 1080 pixels, but the resolution along the long edge should be no more than 1920 pixels.
2. Your report: `student1_student2.pdf`. Your report must clearly state:
 - How you met the project requirements
 - What each member of the group did
 - What assets you downloaded from online vs. what assets you made yourself
 - What tutorials (documents/videos) you referenced if any
3. A “Variant A” of your image: `student1_student2_a.png`. Render your image from a different camera angle. This image DOES NOT have to look nice. This “Variant A” is just for us to quickly confirm that you yourself made (and thus can edit) the Blender file for your image.
4. A “Variant B” of your image: `student1_student2_b.png`. Render your image with no textures. This image DOES NOT have to look nice. This “Variant B” is just for us to quickly confirm that you yourself made (and thus can edit) the Blender file for your image.
5. Link to your source Blender file: `student1_student2.blend`. Pack all the data into the Blender file (`File → External Data → Pack All` into `.blend`) and upload that file to a Google Drive. Provide the link to the drive file in the submission form. If you have some assets that are too big to upload (e.g. high-res geometry or textures), then you can leave them out. Be sure to keep all the assets that you manually created, since they will be checked against the list of requirements.

5 Grading

Your image will be graded qualitatively based on its artistic merit, aesthetic, and utilization of ray tracing. Since we are using Blender’s ray tracing Cycles engine, we expect your image to leverage the advantages of ray tracing, such as better illumination, shadows, reflections, transmissions, etc. Avoid submitting an image that looks like a scanline render!



Scanline Render

Ray Traced

Your image will be graded on a curve that separates all the images in the class into buckets:

- Bucket 10: This bucket is reserved for the best images of the class (“A++” images) that we want to feature on the class website showcase. These images have excellent scene composition, lighting, and utilization of ray tracing, plus artistic merit, with few to no visible artifacts. These might also have superior technical merit through the effective use of custom geometry, custom shaders, etc.
- Bucket 9: This bucket is for above average images (“A+” images). These images make amazing use of all the high-level concepts we’ve discussed in the class, with little room for improvement, but might lack that extra mile that puts it on the class showcase.
- Buckets 7-8: These buckets are for average images (“A” images). These images make good use of all the high-level concepts we’ve discussed in the class, but still have room for improvement to be even better.
- Buckets 5-6: These buckets are for slightly below average images (“A-” images). These images make decent use of all the high-level concepts we’ve discussed in the class, but may lack some scene complexity or have some lighting or texturing issues, etc.
- Buckets 1-4: These buckets are for images that leave a lot to be desired (“B-” to “B+” images). These images may have scene compositions that are too simple, suffer from serious lighting/texturing issues, have very noticeable artifacts, etc.

As noted on the class website, this final project makes up 40% of your overall grade.