CIS 565: Final Project

Spring 2012

The final project gives you an opportunity to embark on a large GPU programming endeavor of your choice. You are free to select an area in graphics, GPU computing, or both. You can reproduce the results of recent research, add a novel extension to existing work, or implement something completely original.

This is worth 40% of your final grade. As such, you should expect to spend 75 to 100 hours.

Guidelines

- We encourage, but do not require, you to work with a partner. We will take your team size, 1 or 2, into account when grading. When working with a partner, you will both receive the same grade.
- Use of github is required. Unless you are building on a homework solution, we encourage, but do not require, you to develop in a public repo as open source.
- You can code in any language (C, C++, C#, …), using any GPU technology (OpenGL, WebGL, CUDA, Thurst, OpenCL, WebCL …), on any platform (Windows, Linux, Android, Mac, …).
- You are allowed to use existing code and libraries. These should be properly credited and your own code should be easily identifiable.
- Bonus days cannot be used for any part of the project.

Deliverables

1. Pitch (5%)

    Your initial project pitch will consist of a writeup no longer than one page that includes an overview of your approach with specific, measurable goals. First, focus on why there is a need for your project. Then describe what exactly you are going to do.

    In addition to your writeup, you are encouraged to provide supplemental diagrams, images, or videos.

2. Blog (15%)

    Create a development blog and update it at least weekly. You are free to use any blogging site you like, but we suggest:

http://www.blogger.com/

The purpose of your blog is to show off your work and provide a place for you to write about your development struggles and victories. Here are a couple examples from last spring:

- http://smt565.blogspot.com/
- http://fastfluids.blogspot.com/

3. Midpoint Presentation (10%)

This is an in-class five minute presentation of your work in progress after three weeks of research, design, and development. Your presentation can include a few slides, videos, screen shots, architecture diagrams, or any combination of these. It must clearly state what you are trying to achieve, what you have done so far, and the challenges that lie ahead.

4. Paper (20%)

A paper up to three pages in length should include an abstract, overview, previous work, your approach, results, future work, and references. This must be written in LaTeX using the SIGGRAPH template provided here:

http://www.siggraph.org/publications/acmsiggraph.zip

On Windows, proTeXt can be used to edit LaTeX and build a pdf:

http://www.tug.org/protext/

If you are new to LaTeX, check out these tutorials:

- http://www.electronics.oulu.fi/latex/index.html
- http://www.tex.ac.uk/tex-archive/info/lshort/english/lshort.pdf

5. Video (10%)

A video up to four minutes in length should show off your work. You can do a voice over; play music and use descriptive text; or a combination of both. Your video should complement your paper and clarify anything that is difficult to describe in just words and images. Your video should both make us excited about your work and help us if we were to implement it.

On Windows, Windows Live Movie Maker can create videos compiled from other videos, images, and audio:

http://explore.live.com/windows-live-movie-maker

You can capture video with a tool of your choice, such as:

- FRAPS: http://www.fraps.com/
- Microsoft Expression Encoder: http://www.microsoft.com/expression/products/Encoder4_Overview.aspx

6. Final Presentation (10%)

   This is an in-class presentation on the last day of class showcasing your accomplishments and presenting your results. Life demos, performance numbers, and future work are encouraged.

7. Code (20%)

   We will pull your code from your github repo. It should be clean, documented, and tested.

8. Final Demo (10%)

   You will do a short demo of your project for Patrick and Varun with a brief Q&A session. Details TBA.

Timeline

Sunday 03/11: Pitch

   Email your one page pitch and any supplemental material to Patrick and Varun.

Monday 03/12: In-Person Pitch

   There is no class on 03/12. Instead project teams will sign up for a time slot between 8am and 1pm to pitch their project. Be prepared, clear, concise, and passionate.

Wednesday 03/14: Initial Blog Post

   Create your blog and write an initial overview post, which links to your one page pitch and supplements.

   Email a link to your blog to cis565-s2012@googlegroups.com anytime Wednesday.

Monday 04/02: Midpoint Presentation

After three weeks, you will give a five minute presentation in class. You do not need to send us your presentation beforehand.

Monday 04/23: Final Presentation

The last day of class is dedicated to your final presentations. Anytime before class, please post your final project submission to your blog, including:

- o Three page paper
- o Four minute video with sound
- o Link to your github repo. If the repo is privately, email Patrick and Varun separately.

TBA: Final Demo