CSci 5108: Final Project

proposal due: 9pm, Thursday, April 26
oral presentation: 10:30am, Thursday, May 10
project due: 9pm, Thursday, May 10

For your final project you may extend one of the assignments that you have already done in this course or you may explore a rendering technique that hasn't been covered in the homework. The choice of what you do is up to you. I will, however, review your proposed project to make sure that its both challenging and doable in the time available. Some things you might consider include:

1. Implement the radiosity method. You can employ `pbrt` both to determine form factors and to render the final image from the computed radiosities. Use your implementation to make a picture of a radiosity environment.

2. Implement a level-of-detail algorithm such as vertex-clustering. Make pictures of both an original mesh and the decimated version of that mesh.

3. Use `pbrt` to experiment with complex surface reflection phenomena. Make pictures by using a reflection model that is *not* built into `pbrt` or by employing a BRDF that is constructed from a set of measurements.

4. Write a program that does grammar-based modeling. Broaden the scope of turtle graphics to include orientations and movements in three-dimensional space. Draw three-dimensional primitives including branches, leaves, and flowers.

5. Experiment with pre-computed radiance transport. In this approach to realistic image synthesis, the global illumination is computed as a pre-processing step and the final rendering is produced interactively. `pbrt` includes software that can be employed to produce pictures using this method (see Chapter 17).

6. Develop a program that allows you to experiment with the use of quaternions for describing the motion of an object. Create a short animation using your software.

7. Given a set of pictures of a scene, implement a simple image based rendering technique that allows the user to create a view of the scene that is not included in the original group of pictures.

By Thursday, April 26, I would like to have a description (sent via email) of the project that you are attempting and the name of any references that you might read. This will let me give you feedback by the following Monday if I see any major problems with what you have selected.

The class will meet during the final exam period (10:30am to 12:30pm, Thursday, May 10) so that each student can give a brief 5 minute presentation of their project. The project itself and its documentation will be due at 9pm on Thursday, May 10. At that time please turn in the following items:

1. A written description of the new feature that you implemented

2. The source code for your program and instructions for how to compile and run it.

3. An image or two that shows off your new feature to best advantage.

To turn in your assignment, touch the button labeled Submit Assignments on the course web page and follow the directions.

To insure that grading can be completed in time, all late homework must be turned in by 9pm on Thursday, May 10. No grace days may be used for the Final Project.