

**CS 537/CPE 537: Final Project Proposal**  
**Must be approved by: November 4, 6:15pm**

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**Collaboration Policy.** Projects will be done individually. It is acceptable for students to collaborate in understanding the material but not in solving the problems. Use of the Internet is allowed, but should not include searching for previous solutions or answers to the specific questions of the assignment. I will assume that you will be taking the responsibility of making sure that you personally understand the solution to any work arising from collaboration.

**Late Policy.** The penalty for late submission is 20% of the grade per day, enforced at 6:15 each day after the due date. If urgent or unusual circumstances prohibit you from submitting a homework assignment in time, please send me an e-mail explaining the situation.

## **Final Project Requirements**

The final project must show your mastery of the fundamentals of computer graphics covered in the course:

1. Modeling and scene hierarchy
2. Smooth animation of objects and camera motion
3. Easy interaction
4. Pleasing and engaging appearance using: appropriate illumination, materials and texture mapping.

In addition to the required components listed above you may include at least one of the following effects:

1. transparency
2. refraction
3. shadows
4. object reflections

5. use of stencil buffering
6. environment mapping (shiny objects reflecting their surroundings).

**You can select any project that meets the above requirements and email me a short description. This may begin a negotiation to agree upon an appropriate level of difficulty and effort. Alternatively, you can select the following project. You still need to email me before November 4 stating what you will be doing.**

## **Suggested Final Project**

The project builds on the homework assignments. It should have either both of the following elements, or just one but executed in more detail and with more features.

**Travel:** The user travels to a village in a car. During the trip the user is allowed to toggle viewpoints using the keyboard command V. Available viewpoints:

- Fly over: A moving viewpoint above the car that follows the car in the scene. It allows the user to view the car's path and the scenery.
- Driver: A moving viewpoint inside the car, from the driver's seat. It allows the user to view the road ahead (and part of the scenery) through the windshield.

*Minimum scenery:* A road leading to the village (the village may be visible during the whole trip or become visible eventually - your choice); some terrain, including texture mapped grass.

**Exploration:** The user is identified with the flying camera. The scenery can be built as in the travel scenario. The user walks around the village, enters and exits buildings, and picks and explores some objects by turning them around, for instance using the 3D interface from Homework 2). The rooms in the buildings are furnished. The interior decorations and the furnishings are up to you, but you must include both texture mapped and smoothly shaded objects (using lights and materials). The user should be able to switch lights on and off. Make sure that outside/inside lights do not illuminate interiors/exterior (unless there are windows).

**Note:** You are allowed to download models from one of the many free modeling sites, such as the Google 3D Warehouse, or use some modeling software, such as Blender. You must explain how you obtained the model (giving proper references and credit), and how the model was incorporated in your scene. You are also allowed to download textures, but must give proper references and credit.