

Due: Monday October 1st, 23:59

## **Assignment 3—Wireframe, Gouraud, Ambient and Diffuse Lighting, Z-Buffering, and Navigation**

### ***In a nutshell***

Draw geometry in wireframe and filled mode, with z-buffering, simple shading and lighting, and let the user navigate with 6 degrees of freedom.

### ***Details***

1. Camera functionality
  - Translations forward/backward, up/down, and left/right
  - Pan, tilt, and roll rotations
  - Increase/decrease of field of view
  - Allow the user to adjust the translation and rotation steps independently
2. Z-Buffering
  - Add a z channel to your frame buffer
  - Resolve visibility for all rendering modes, including wireframe
3. Shading and lighting
  - Support point light sources and directional light sources
  - Ambient (constant) + diffuse (normal and light vector dependent) lighting
  - Gouraud shading (pixel color computed by screen space interpolation of vertex colors)
4. Application
  - Load the scene from a text file which specifies the geometry, the camera parameters, the lights
  - Use the objects provided to make a non-trivial scene
  - Allow saving/loading the view
  - Allow saving/loading the image

### ***Extra credit***

1. Anything that produces a compelling visual experience. (x%)

### ***Turn in***

Use WebCT if possible, if not email URL to zip archive with:

- Source code, including project/workspace/makefiles
- Code should compile, use relative paths
- Include all non-standard libraries (archive size should be <50MB)

- A short REPORT.{pdf|doc} file that describes your user interface, and the extra credit completed, and that includes 3 of your best images.