CS 33400
Fall 2012
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Due: Saturday September 29 at 6:00am

Assignment 4—Lighting and Shading

In a nutshell

Extend your interactive 3-D graphics application with basic lighting and shading support.

Details

1. Light
   - Point light source
   - 3-D interactive positioning through GUI
   - Visualization with big dot (e.g. 7x7 pixels in size)
2. Lighting
   - Ambient plus diffuse plus white specular highlights
   - The specular ambient factor and the specular exponent should be parameters that can be set through the GUI
3. Shading
   - Per vertex
   - Per pixel (screen space interpolation of triangle normals)
   - Allow switching between shading modes through GUI
4. Example
   - Make a simple 3-D scene with a single coarse teapot.
   - Make a 30 second 30 frames per second movie file showing your lighting and shading. The camera should not move, the point light source should. In the first 10s show vertex shading, in the second 10s show pixel shading, and in the last 10s show the two shading modes in a side by side comparison. Split screen with vertical bar. Label left half "per vertex" and right half "per pixel".
5. Extra credit
   - Directional light source (2%)
   - Multiple lights (2%)
   - Conic light spot (2%)
   - Nice scene, i.e. complex geometry, animation (x%)

Turn in

   - Code
   - A README.txt description of your GUI
   - Movie file

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