CS 33400, Fall 2012
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Due: November 7 at 6:00am

A8—Hardware rendering, the programmable pipeline

In a nutshell

Write a shader that reflects a texture mapped quad.

Details

1. Scene
    - Teapot; surface with both diffuse and reflective components;
    - Rectangular base on which the teapot sits, diffuse, texture mapped with black and white checker;
2. Write vertex/pixel shader programs for rendering the teapot
    - teapot color should be a blend of diffuse and reflective components;
    - diffuse component is interpolated from input vertex colors (provided in the model);
    - reflective component is computed by intersecting rectangular base with reflected ray, per pixel; teapot does not self-reflect; OK to use analytical expression of checker;
    - blending factor should be constant across pixels;
3. Video
    - Define a camera path, save to file; have GUI button that animates camera along path.
    - Make a 15s 30fps video of your scene; for the first 5 seconds the camera is stationary and the blending factor changes from 0 to 1 and then from 1 to 0.5, where 0 is diffuse only, 1 is reflective only; for the last 10 seconds camera follows the path and blend factor is 0.5;
4. Extra credit, all through GPU programs:
    - Fresnel reflections: blend factor depends on viewing angle, surfaces seen more tangentially should be more reflective (3%)
    - Reflect any texture mapped quad, by passing the texture to the pixel shader as a uniform parameter (2%)

Turn in

- Code including GPU programs.
- Camera path file.
- Movie file.
- A README.txt description of your GUI.