

Due: Friday November 14 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.