CS 251, Fall 2007
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Assignment 8
Due Monday December 3rd, 11:59PM

Assignment 8—Projective texture and shadow mapping

In a nutshell, make your light cast shadows and add a projector to the scene.

1. Scene
    a. Use one of your earlier scenes, with no reflective objects, and with one point light source.

2. Shadow mapping
    a. Render a z-buffer from the light's viewpoint.
    b. Use it to cast shadows.
    c. Tune the shadow map lookup epsilon and the shadow map resolution to get a good result.

3. Projective texture mapping
    a. Model a projector (a box would do).
    b. Make the projector project a digital photograph (that you load from a file).
    c. Have a mode selectable through the GUI that let's you navigate the projector (6 degrees of freedom, like a camera).
    d. Make a movie that shows off your scene and the added effects.
    e. Extra credit 5%: use projective texture mapping to model a real world scene
        i. Calibrate camera intrinsics.
        ii. Model 3-D scene.
        iii. Acquire image.
        iv. Calibrate camera extrinsics.
        v. Match camera to geometry.
        vi. Projective texture map the image to color the geometry.

4. Turn in: use WebCT to upload zip archive with:
    a. Source code, including project/workspace/makefiles.
    b. Code should compile, use relative paths.
    c. Include all non-standard libraries (archive size should be <50MB).
    d. A short REPORT.{pdf|doc} file that describes your user interface, and the extra credit completed, and that includes 3 of your best images.
    e. The movie file.