

## Assignment 6—Welcome to the final level: the machine

1. Gouraud shading and texture mapping with fixed-pipeline support.
  - Add a hardware rendering method to your triangle mesh class.
  - If the mesh is textured render by texture mapping.
  - If not, render by interpolating the vertex colors read from the model file.
2. Reflected billboard impostors.
  - Write a GPU program that improves reflection quality by approximating the reflected scene with billboard impostors.
  - The scene consists of a single reflector (e.g. a teapot) located on a planar table top. The table top is textured with a black and white checkerboard. Several diffuse objects are also located on the table top.
  - The diffuse objects and the table top are reflected by approximating each of them with a billboard.
  - Reflected rays that do not intersect any billboard should be set using environment mapping.
  - See our Eurographics 2006 paper for more details.  
<http://www.cs.purdue.edu/cgvlab/papers/popescu/popescuGemEG06.pdf>
3. Make a movie with 2 sequences:
  - Dynamic view, side by side comparison of this method to environment mapping (15s)
  - Static view, reflector morphed to a sphere and back 3 times (15s)

### Extra credit

- Reflective billboards for second order reflections (2%)
- Ray morph for continuous transition from billboard to environment mapping (2%)
- Depth image impostors (6%)

### Turn in instructions

Turn in your work in an archive submitted via Blackboard. The archive should contain:

- Source code and VC++ solution (please Build->Clean Solution to minimize submission size).
- The movie file and the path text files used to render the movie sequences.
- External libraries used.
- Code should compile, link, and run.
- A Readme.txt or Readme.doc file that lists the movie making library or software used, any special GUI features, and extra credit features attempted.