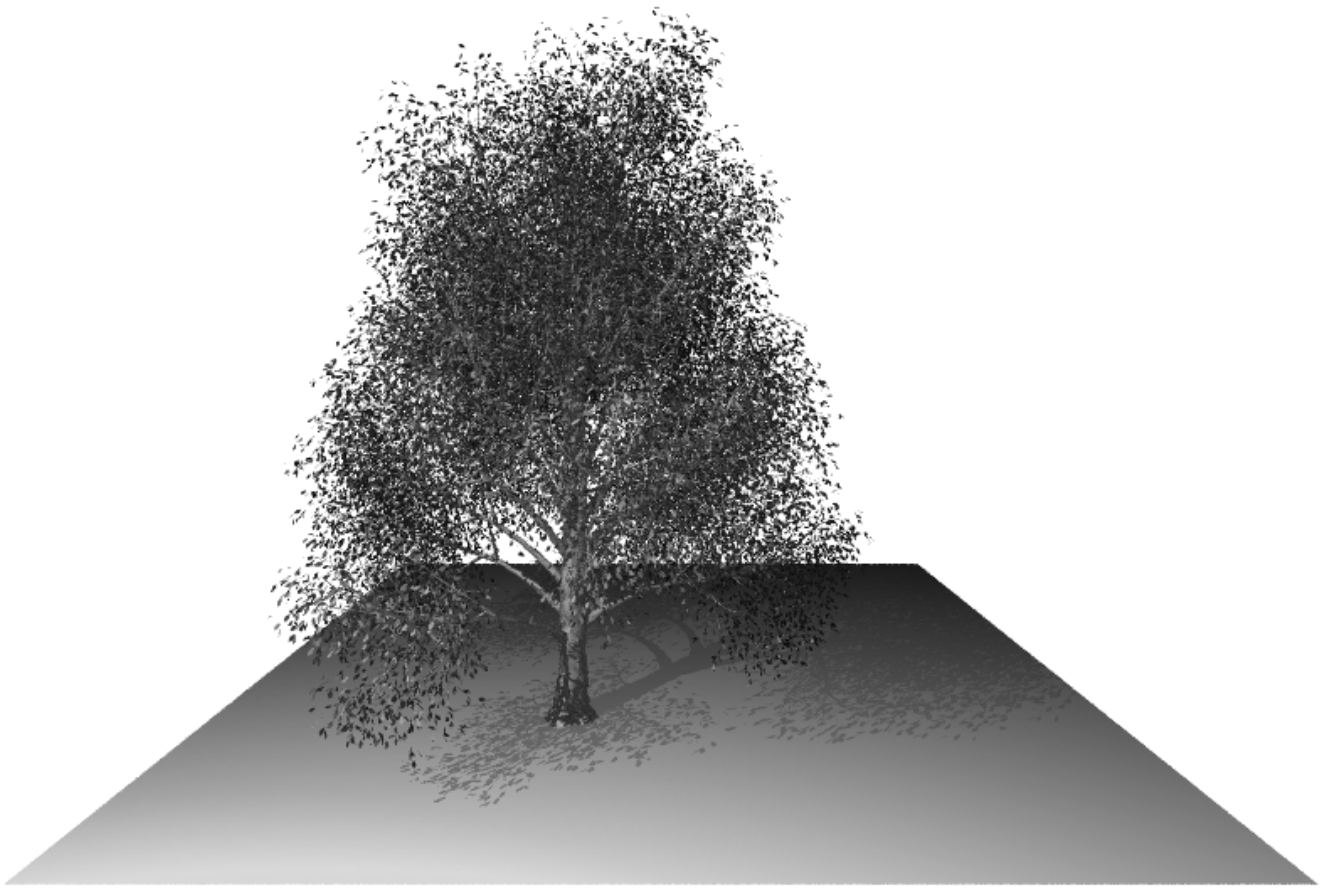
CPSC 212 Project 2: Forest RT, Phase 2



Modify your Phase 1, C++ ray tracer to handle an entire tree, such as the beech tree shown above (except in color, of course). The tree model will be input in .obj format, and it may contain *many* triangles. The example above contains 496,719 triangles.

- The default scene produced by your ray tracer must include at least:
  - one light to cast shadows
  - a plane segment that captures the shadows
  - a tree, chosen from the models posted on the class web site
- The code must be in C++ rather than purely in (the subset) C. In particular, no "structs" or function pointers or unions are allowed. Vector (point) operators must be overloaded, and derived classes of a generic Object class, with inheritance, should be used for both textured and non-textured triangles.

Texture types P7, which allow for transparency and hence leaf cutouts, and P6 (opaque) must be supported.

- All tree triangles must be contained in a bounding box. The triangles within the box must be structured as a kd tree to accelerate ray-triangle intersection testing.
- Timing: an image of size 400x300 pixels with 1 ray per pixel should render on lab machines in about 1 minute.
- Space: the entire source code must be less than 2000 lines.

Again you may work in teams, where team size ≤ 3. Teams of size larger than 1 must be registered by 5pm, October 16. Previous teams are no longer registered. Register by sending team list and captain to "geist@cs.clemson.edu". Caution: any member of your team may be called forward to explain to the class how your system works. Be sure that all team members *completely* understand all components of the code.

You may not receive any help of any kind in solving this problem from anyone except your team, the lab instructors, or Robert Geist.

Your code will be graded on several components:

- quality of the image
- readability of code
- speed
- space efficiency
- in-class explanation

The project is due Tuesday, November 11^{th} 11:59:59 pm. Mail code and execution instructions, as a single .tar file, to geist@cs.clemson.edu. DO NOT USE THE "HAND-IN" FACILITY. DO NOT USE THE "HAND-IN" FACILITY. DO NOT USE THE "HAND-IN" FACILITY.