CSSE 451: Advanced Computer Graphics

Shiny Ducks Ray Tracer: User Guide

Members

Rachel Agner, John MacAslan, Sam Kim, Arda Tugay, Caleb Drake

How to use Shiny Ducks

1) Run the Ray Tracer's executable

2) Input scene information

- Do you have a predefined properties file?...
    - If Yes: Enter the name of the properties file.
    - Properties files are line-separated text files
    i. Width
    ii. Height
    iii. Anti-Aliasing Depth (Actual Anti-Aliasing value is the square of this value)
    iv. DPI
- IName of the scene description file:
    - Name of the scene description file...
    - Must be defined in XML
- Anti-Aliasing [AA] Depth
- Width of the Image
- Height of the Image
- DPI for the Stored image

3) After entering your scene's data info, your scene will be rendered to a bitmap (scene.bmp)

4) The following additional settings can be set in the main.h file

- AMBIENT_LIGHT: Defines the amount of ambient light in the scene. Can take a value between 0 and 1.
- ACCURACY: Defines how accurate the intersection calculation values will be while generating the scene. Recommended value is 0.000001.

Shiny Ducks Highlights

Scene Description Language XML Tags
- Lights
  ```
  <light>
          <R></R>        //Red
          <G></G>        //Green
          <B></B>        //Blue
          <x></x>        //x pos
          <y></y>        //y pos
          <z></z>        //z pos
  </light>
  ```
- Planes
  ```
  <plane>
          <R></R>        //Red
          <G></G>        //Green
          <B></B>        //Blue
          <F></F>        //Reflectance
          <x></x>        //x pos
          <y></y>        //y pos
          <z></z>        //z pos
          <distance></distance>//distance the plane spans from the origin
  </plane>
  ```
- Spheres
  ```
  <sphere>
          <R></R>        //Red
          <G></G>        //Green
          <B></B>        //Blue
          <F></F>        //Reflectance
          <x></x>        //x pos
          <y></y>        //y pos
          <z></z>        //z pos
          <radius></radius>//radius of sphere
  </sphere>
  ```

Ray Tracer
- Reflections & Shadows
- Multiple Light Sources & Objects
- Cameras
- Output to Bitmap
- Logical Threading / Parallel Processing