Andrew Dunn

Alec Jackson

CSCI 480

03/01/2021

Milestone 1 Report

The good news: The ray tracer executes rendering using Bounded Volume Hierarchies very, very quickly!

The bad news: It's only drawing background!

1.) The code base is set up to run using the same main method calls as you would for A2 with the addition of a Boolean argument (which is optional, the default value is `false`). If passed `true` instead, the ray tracer will use BVH structures for accelleration. At the moment, there is still a bug being worked out in the `Bounds.jl` module. Complete initial functionality using BVH with spherical bounding should be ironed out by midweek, with axis-aligned bounding boxes implemented by the week's end.

For the second weekly action item, we have begun researching different Level of Detail algorithms and the current leading candidate is Incremental Decimation using queues.

2.) As described above, our implementation has piggybacked on the A2 codebase with integration into that existing structure. After opening a Julia REPL and calling `using WWURay`, entering the command:

`WWURay.main(10, 4, 1000, 1000, "results/test.png")` is equivalent to:

`WWURay.main(10, 4, 1000, 1000, "results/test.png", false)` whereas

`WWURay.main(10, 4, 1000, 1000, "results/test.png", true)` would invoke our alterations and render the image using a BVH implementation.

3.) We do not feel that our project goals need to be altered at this time, the small setback with `Bound.jl` will be rectified and complete implementation of our BVH acceleration function will be completed by the end of the week to get our timeline back on track.