CSC 305 - Assignment 3

Due April 9th 2017

This is a more open assignment than the previous two assignments. You have 3 main choices:

1. Improve the ray tracer from assignment 1 by doing bonus features from assignment 1.
2. Improve your assignment 2 renderer eg. with features described in the Deus Ex article[1].
3. Tackle the "Virtual World" project[2]

(Note links to the resources in the footnotes of this page.)

Spline Camera Animation

For the options 2 and 3, you are encouraged to implement an animation path for the camera using a spline and arc-length parameterization. Consider the following instructions from the "Virtual World" specification:

- **(easy)** use a bezier curve to **animate the camera** path (in the lookAt function, evaluate one bezier curve to know the position of your camera, and another to know what you are looking at)
- **(medium)** parametrize your camera path with **arc-length** (i.e. uniform speed) and use **ease in/out** to avoid abrupt starts/stops; concatenate multiple curves to show off your virtual world.

Group & Project Selection

For project options 2 and 3, we suggest working in groups of 2. Option 1 can be done solo.

Please e-mail the TAs (maurizio.kovacic@gmail.com, nlguillemot@gmail.com) with your group members and assignment of tasks for group members as soon as possible, ideally by Friday this week (the 10th).

Your proposal doesn't need to be very long. We mainly just need to know:

- Who are your group members?
- What will each group member do?

The amount of work suitable for one person is approximately 1 or 2 "medium" difficulty tasks from the Virtual World assignment, on top of your group implementing the standard requirements of the Virtual World (ie. rendering the terrain in the first place.)

The amount of work suitable for the advanced rendering assignment is to implement the normal map + depth pre-pass (first thing in the Deus Ex article), and have each group member implement one feature from the article. (eg: SSAO, light pre-pass, bloom) Try to work one-pass-at-a-time, with some debug visualizations to confirm each pass works (either through the GUI like the shadow map, or by confirming the results with an OpenGL debugger like RenderDoc.)

For the ray tracer, you can do the requirements that were listed as bonus in the first assignment.

---

[1] http://www.adriancourreges.com/blog/2015/03/10/deus-ex-human-revolution-graphics-study/
[2] https://github.com/ataiya/icg/wiki/Hw3-Virtual-World