CIS 565 GPU Programming Final Project Pitch

WebGL Interactive Fluid

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1. Summary

In recent years, WebGL grows to catch people's eye and heart due to its extreme mobility and cross-platform compatibility. Many compact and innovative graphic projects have been done and made available all over the web.

In this project, we are going to make a real-time interactive fluid simulation on WebGL. The completed version should be similar to http://madebyevan.com/webgl-water/, made by Evan Wallace.

In the following three weeks, we are going to finish literature review, framework set-up, fluid solver, WebGL shader, and user interactivity one by one. The ultimate goal is to create an eye candy of fast water rendering, instead of realistic water simulation.

2. Technique

First, start the framework from scratch, webGL setup in JavaScript, shader in GLSL, viewer in html.

Then, create simple water simulation by rendering to float texture and update water vertex shader, each time mouse click triggers.

In the water fragment shader, include visual effects like soft shadow, reflection, refraction and caustics.

Lastly, load sphere/cube/other obj files at real time and simulate their interaction with water.

3. Tasks

- Framework set up
- Water Simulation (height field)
- Water and environment Shader (Reflection, Refraction,Shadow, Skybox, Caustics)
- Interactivity (Camera, Mouse, Movable Object, and interaction with water)
- Web GUI