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Shaders Proposal

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For my shaders final project, I want to explore particle systems and how fragment shaders can be used to create liquid/smoke simulations emitting from those particles. I will most likely use openFrameworks (but maybe Unity), as that is what I am most comfortable building particle systems in. I am thinking about making this interactive, whereby a Kinect or leap motion sensor is used to move or create the particles in the virtual space. If I use a Kinect, perhaps the particle starting points will be the point cloud vertices of the people interacting with the program.

5 key features

* Custom particle system
* Fluid/smoke shader simulation
* Interactivity either through gesture or mouse
* Dynamic color changing based on speed/velocity/interaction
* Physics engine to control movement of particles

3 stretch goals

* Multiple modes (different shader effects or phyiscs)
* Sound effects with interactivity
* Physics engine to allow for inter-particle interaction

5 learning goals

* Learn/become comfortable with openFrameworks-shader pipeline
* Learn natural simulation techniques as it relates to shaders & graphics programming
* Study visual effects as it relates to computer vision interactivity
* Practice incorporating multiple components into a coherent project (sensor, program, shaders)
* Learn various shader input mechanisms (mouse, motion, detection…) to control interactivity