

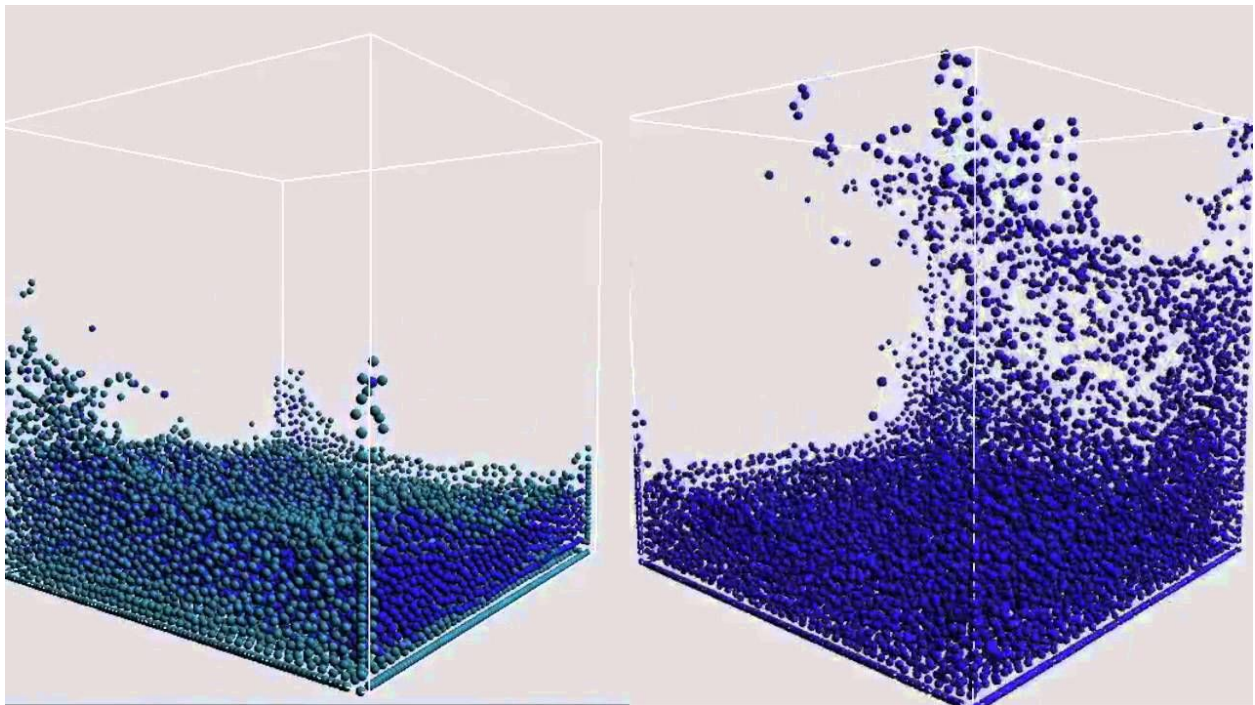
Brent Gingell

Homework 3 - Part 3

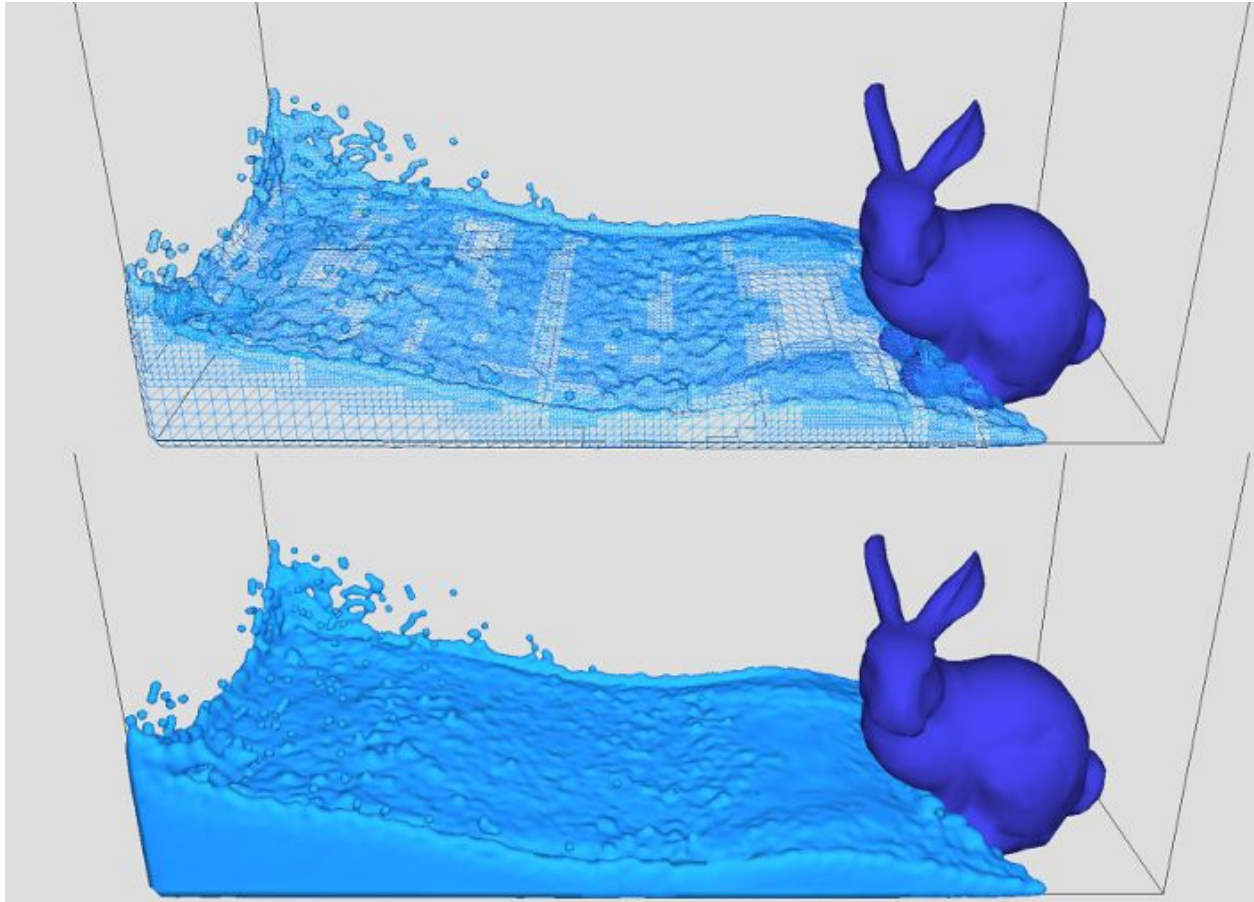
Group Project - Feature Suggestion

The general plan for my group's project is to make an abstract 3D scene that's reactive to music. As for an individual effect for the scene, I'll be focusing on smoothed particle hydrodynamics for a fluid simulation. The idea is to incorporate it in such a way that it looks like a plasma or maybe the inside of a lava lamp.

Smoothed particle hydrodynamics is an approach to approximate fluid simulations in real time. With elements of signed distance functions and image processing kernels, the idea is to split a fluid into a grid with fixed distances between the elements, and then apply a kernel (often Gaussian) to calculate the physical properties of each particle.



Above is an image where the particles are rendered as such, rather than smoothed, to demonstrate how each particle is arranged.



Smoothing the particles with a neighbor search and a blurring kernel produces realistic results.