Fluid simulation in XNA using SPH

Summary

1. Introduction

To better and easier understand the reality, simulations is a useful tool. One natural phenomena which is interesting to study is fluids, and even with only the power of a modern normal computer, pretty good simulations of fluids can be done.

2. Method

2.1 SPH, Navier-Stoke

SPH (Smoothed Particles Hydrodynamics) is used to simulate fluids. The SPH algorithm is, apart from mesh based algorithms, particle based. Originally created to visualize astro-physical phenomena’s, SPH is still a well used method for fluid simulation.

2.2 Marching cubes

2.3 C#/.NET, XNA

This project was programmed using XNA (XNA Is) in Windows .NET framework.

3. Result

Images

4. Conclusion

Does the algorithm give a “good” simulation?

What could have been done differently?

If we wanted to continue developing the software, what would we have done?

Reference

[1] - Müller M., Charypar D., Gross M. Particle based fluid simulation for interactive applications, 2003.

Appendix: Code