Joel Gross

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Projects

Fluid-Cloth Two-Way Coupling
SPRING 2015
Extends the fluid simulation project below to also support cloth, similar to NVIDIA's FleX framework. Particles of different types are able to interact seamlessly within the framework, all in real-time at interactive framerates. The cloth implementation is primarily based on "Position Based Dynamics" (Mueller 2006).

Fluid Simulation
FALL 2014 — SPRING 2015
Simulates fluid and foam particles with realistic motion in real-time. Written from scratch using CUDA, C++, and OpenGL. Implements many different research papers resulting in a framework capable of running 50k fluid particles and up to 500k foam particles at 10-15 fps. The primary resource for the fluid physics is "Position Based Fluids" (Macklin 2013).

Deferred Shading Engine
SPRING 2015 — CURRENT
Developing a 3D puzzle-action game in C++ and OpenGL, working in a team of 6. Lead Programmer and personally responsible for developing the rendering engine being used in the game. Features currently implemented or under development include an Octree data structure for fast spatial partitioning, screen-space ambient occlusion, depth of field, and various lighting effects.

Thermo
FALL 2014
Developed a puzzle-platformer using Actionscript 3 in a team of 6. Personally responsible for game direction, gameplay programming, and art. Played by over 50k people across Newgrounds and Kongregate. Featured on the front page of Kongregate for over two weeks and reviewed as a top game on Jayisgames.com.

Work Experience

Course Assistant — Computer Architecture
FALL 2013
Assisted with course projects, tutored students during study sessions, and held weekly office hours for a class of 60.

Education

Cornell University
FALL 2014 — SPRING 2015 (EXPECTED)

Graduate School
M.Eng — Computer Science

SUNY Binghamton University
FALL 2011 — SPRING 2014
GPA: 3.67 — GRADUATED IN 3 YEARS

Watson School of Engineering
BS — Computer Science

Harpur College of Arts & Sciences
BS — Economics

Honors

Academic Honors
Watson School of Engineering
CUM LAUDE

Harpur College of Arts & Sciences
CUM LAUDE

Dean's List • SPRING 2012, FALL 2012, SPRING 2013, FALL 2013

Skills

Programming
Java • FLUENT, 6 YEARS
C++ • FLUENT, 4 YEARS
C • FLUENT, 4 YEARS
Python • FAMILIAR, 3 YEARS
Actionscript 3 • PROFICIENT, 1 YEAR

Design
Adobe Photoshop • FLUENT, 9 YEARS
Adobe Flash • PROFICIENT, 3 YEARS

Tools & Platforms
Linux
Microsoft Windows
CUDA
OpenGL/GLSL
Unity
Unreal Engine 4
LibGDX
Git