

Shiqiu Liu

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Georgia Institute of Technology

Atlanta, GA, United States

Education

08/2012 ~ Present **Georgia Institute of Technology (GT)**

Major: MS in Computer Science

09/2008 ~ 07/2012 **South China University of Technology (SCUT)**

Degree: BE in Software Engineering

Industry Experience

• **NVIDIA** **05/2013 ~ 08/2013**

Summary: Worked as an intern at NVIDIA's Infrastructure Architecture group during summer 2013.

- Primarily worked on a software scheduler for hardware performance monitor
- Exposed to the hardware design of GPU hardware performance monitor and implemented new capturing modes to better support Maxwell GPUs.
- Built testing framework for the project with Google Test.

• **Microsoft Research Asia (MSRA)** **01/2012 ~ 05/2012**

Summary: Worked as an intern at Media Computing Group at MSRA for 5 months in 2012. My job was about accelerating video codec with GPGPU techniques on Xbox 360 console.

- Studied basic video processing algorithms
- Implemented motion jpeg decoder on Xbox 360, with IDCT and dequantization computed in parallel on the GPU
- Implemented and optimized the entire CPU+GPU decoding framework on Xbox 360
- Investigated the possibility of doing entropy decoding in parallel, but failed

• **Tencent Technology** **07/2011 ~ 10/2011**

Summary: Worked as an intern game designer in Tencent Inc. for 3 months. Operated a MMO game called Roco Kingdom, and helped importing it to the US.

Research Experience

• **Research Assistant at Georgia Tech** **08/2012 ~ Present**

Summary: Currently doing an independent study on fluid simulation at Georgia Tech, advised by [Prof. Greg Turk](#), who discuss with me with existing fluid simulation techniques. This will include the physics and mathematics background, how to efficiently solve the problem with numerical approaches, and additional approaches used in previous research.

- Studied finite element methods, numerical approaches and a variety of implicit PDE solvers
- Implemented complete fluid simulator on both CPU and GPU
- Full-featured smoke simulation and level set based liquid simulation, results can be rendered with my own volumetric renderer.
- Videos and screenshots can be viewed here: www.edxgraphics.com/edxfluids.html

- Independent Research on Computer Graphics** 02/2009 ~ Present
Summary: Conducted extensive, independent graphics research
 - > Familiar with most modern real-time rendering techniques, developed a simple rendering engine that supports Deferred Rendering, SSAO, Dynamic Soft Shadow(VSM) and HDR.
 - > Familiar with software rasterizer and rendering pipeline.
 - > Developing my own Ray Tracer according to the book <Physically Based Rendering>, features include SSE optimization, Kd-tree visualized debugging, GI with Path Tracing and Photon Mapping
 - > Interested in simulating natural phenomena and implemented many papers to create demos
 - > Please visit www.edxgraphics.com/projects.html and www.edxgraphics.com/blog.html for more detailed introduction.
 - > Part of my source code can be found at edxgraphics.codeplex.com/SourceControl/list/changesets
- Computer Graphics Lab at South China University of Technology** 10/2010 ~ 12/2011
Summary: Focused on Particle-based Fluid Simulation on GPU
 - > Studied basic Fluid Dynamics
 - > Reviewed present and past literature in Fluid Simulation
 - > Studied Smoothed Particle Hydrodynamics, extracting iso-surface from scalar field
 - > Designed an Interactive Fluid Simulation Framework on GPU
 - > Paper <GPU Framework for Real Time Fluid Simulation Based on SPH> accepted by China National Computer Conference 2011
- National Undergraduates Innovation Project** 09/2009 ~ 07/2011
Summary: Proposed a simple method to simulate deformed metal shell
 - > Studied Bullet physics engine and rigid-body dynamics
 - > Proposed a simple solution to simulate and render deformed metal shell
 - > Integrated our simulator into Bullet engine
 - > Paper <A Simple Method for Real-time Metal Shell Simulation> accepted by Motion in Game 2011
- City University of Hong Kong Research Institute of Logistics Technology** 04/2009 ~ 12/2009
Summary: Served as chief programmer at City University of Hong Kong Research Institute of Logistics Technologies, focusing on solving NP-Hard logistics problems with heuristic search
 - > Studied Heuristic Search, including Genetic Algorithm, Neural Network, Stimulated Annealing, etc.
 - > Implemented several advanced papers to solve NP-Hard problems such as VRPTW and Nurse Scheduling
 - > Made comparison between results of implemented papers
 - > Helped translate the book <Bioinspired Computation in Combinatorial Optimization Algorithms and Their Computational Complexity>, English to Chinese

Research Paper

- A Simple Method for Real-time Metal Shell Simulation**
 Zhi Dong, **Shiqiu Liu**, Yuntao Ou, Yunxin Zheng;
 Motion In Games 2011
- GPU Framework for Real Time Fluid Simulation Based on SPH (in Chinese)**
 Qiulei Guo, Yizhi Tang, **Shiqiu Liu**, Guiqing Li;
 China National Computer Conference 2011
 - > More publications and detailed introduction and PDFs can be found on my personal site:
www.edxgraphics.com/papers.html

Honors & Awards

- **Third Place in National Final of 21st Century Cup National English Speaking Competition, 2011**
 - The contest represents the highest possible honor in English Speaking in China
 - The video of my speech is available at: contest.i21st.cn/article/speaking/1061_1.html
- **Second Prize in Provincial Final of Challenge Cup National Science and Tech. Competition, 2011**
 - This is a top-level annual college technology competition in China
 - We got the prize with the metal simulation project
- **First-class scholarship (Overall Top 10%), 2010-2011**

Campus Activities

- **Public Relation Department Director at Student Innovation Center at SCUT** 09/2011 ~ 07/2010
As one of the directors, planned and managed department works
- **Part-time English Teacher at Guangdong University of Technology(GDUT)** 10/2008 ~ 03/2009
Hired by an organization in Guangzhou to give weekly English lecture at GDUT