Abhinav Golas

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EDUCATION

University of North Carolina at Chapel Hill   **Fall 2008 – Present**
Ph.D. student in Computer Science

Indian Institute of Technology, Delhi, India   **Fall 2003 – Spring 2008**
Master of Technology in Computer Science and Engineering   *GPA – 9.33 (10)*
Bachelor of Technology in Computer Science and Engineering   *GPA – 8.63 (10)*

RESEARCH

Working on physically based simulation for Computer Graphics, interested in developing fast and accurate approaches to simulate natural phenomena, using emerging architectures. Current research focus is simulation of large-scale fluids and crowds.

PUBLICATIONS

- **Abhinav Golas**, Rahul Narain, Sean Curtis, Ming Lin, "*Hybrid Long-Range Collision Avoidance for Crowd Simulation*", IEEE Transactions on Visualization and Computer Graphics, 2014 (*To appear*)
- **Abhinav Golas**, Rahul Narain, Ming Lin, "*Hybrid Long-Range Collision Avoidance for Crowd Simulation*", ACM SIGGRAPH Symposium on Interactive 3D Graphics and Games (I3D) 2013
- **Abhinav Golas**, Rahul Narain, Jason Sewall, Pavel Krajcevski, Pradeep Dubey, Ming Lin, "*Large-scale Fluid Simulation using Velocity-Vorticity Domain Decomposition*", Proceedings of ACM SIGGRAPH Asia 2012
- **Abhinav Golas**, Rahul Narain, Jason Sewall, Pavel Krajcevski, Ming Lin, "*Efficient Large-scale Hybrid Fluid Simulation*", ACM SIGGRAPH 2012 Technical Talks
- Rahul Narain, **Abhinav Golas**, Ming Lin, "*Free-Flowing Granular Materials with Two-Way Solid Coupling*", Proceedings of ACM SIGGRAPH Asia 2010
- Rahul Narain, **Abhinav Golas**, Sean Curtis, Ming Lin, "*Aggregate Dynamics for Dense Crowd Simulation*", Proceedings of ACM SIGGRAPH Asia 2009
- Ming Lin, Stephen Guy, Rahul Narain, Jason Sewall, Sachin Patil, Jatin Chhugani, **Abhinav Golas**, Jur van den Berg, Sean Curtis, David Wilkie, Paul Merrell, Changkyu Kim, Nadathur Satish, Pradeep Dubey, Dinesh Manocha, "*Interactive Modeling, Simulation and Control of Large-Scale Crowds and Traffic*", Motion in Games 2009
- **Abhinav Golas**, Akram Khan, Prem Kalra, Subodh Kumar, "*Explosion Simulation using Compressible Fluids*", Proceedings of the Indian Conference on Computer Vision, Graphics & Image Processing 2008

EXPERIENCE

Research Assistant, GAMMA group   **Fall 2008 – Present**
(Advisor: Prof. Ming Lin)

Co-op Engineer, AMD   **Summer 2012**
(Heterogeneous System Architecture Workloads)
- Researched algorithmic improvements for mapping fluid simulation to heterogeneous architectures using both CPU and GPU cores

Graduate Intern, Intel Corporation   **Summer 2011**
(Parallel Computing Lab)
- Researched vortex singularity algorithms for highly parallel fluid simulation
- Developed efficient fluid simulation algorithms which were published as a research paper

Graduate Intern, Intel Corporation   **Summer 2010**
(3D Graphics Technology Group)
- Researched performance improvements for eulerian fluid simulation on current generation CPU and GPU architectures, including parallel algorithms for conditioning linear systems.
- Evaluated the OpenCL standard to suggest changes for improving performance of physically based simulations

Summer Intern, Institute of Creative Technologies, USC   **Summer 2009**
(Virtual Humans Group)
- Worked towards improving audio-visual fidelity and realism of virtual agents, and contributed to the testing architecture for artists to verify animations. Studied the applicability of various body gestures to speech portions depending on the state of the virtual agent.

Master's Thesis, Computer Science Dept.
Indian Institute of Technology (IIT) Delhi   **Spring 2007 – Spring 2008**
(Advisors: Prof Prem Kalra & Prof. Subodh Kumar)
Compress: A Novel Compressible Flow based Simulation Method for Explosions
- Proposed a stable numerical method for approximate shock propagation capable of running at time steps up to 100x more than existing methods used in computer graphics

Intern, Network Appliance, Bangalore, India   **Summer 2006**
Ranking & security criteria for file search on enterprise file servers
- Helped design search ranking criteria for enterprise file search, based on file usage and access patterns, by analyzing anonymized network traces of file server access.

System Administrator, Computer Science Dept.
Indian Institute of Technology (IIT) Delhi   **Fall 2005 – Spring 2008**
- One of 3 student volunteers who maintained computing services for the department, including 10+ servers and 100+ heterogeneous clients (Windows/Linux), for a user base of 500+ users

SKILLS

- *Languages*: C/C++ (VC, gcc, icc), OpenCL, CUDA, Python, MATLAB, Cg, HTML/XML, PHP
- *API/Toolkits/Etc.*: OpenGL, Renderman, SVN, Git, OpenMP, SIMD (SSE), pthreads
- *Operating Systems*: Linux, Windows

ACHIEVEMENTS

- Recipient of the prestigious **National Talent Search** (**N.T.S**), and **Junior Science Talent Search** (**J.S.T.S.**) scholarships, the premier science scholarships awarded by the Govt. of India
- Awarded the **Ministry of H.R.D. scholarship** for 2007-08, **Dean's Merit Scholarship** for 2003-04 for meritorious performance at the Indian Institute of Technology, Delhi