

Steven Martin

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EDUCATION

- **Ph.D. Computer Science**, The Ohio State University, Columbus, OH (Q4 2012)
Dissertation: Parallel Data Transformations for Low-Latency Large-Scale Data Analysis
- **M.Sc. Computer Science**, The Ohio State University, Columbus, OH (Q2 2012)
- **B.Sc. Computer and Systems Engineering**, Rensselaer Polytechnic Institute, Troy, NY (Q2 2007)
- **B.Sc. Electrical Engineering**, Rensselaer Polytechnic Institute, Troy, NY (Q2 2007)

WORK EXPERIENCE

- **Graduate Research Associate**, The Ohio State University, Columbus, OH (2007-present)
Researching techniques for visual and quantitative analysis of large-scale scientific and financial data
Current project: Data transformations for real-time error-bounded statistical queries on terascale data
C++, CUDA, Python, OpenMP, and MPI are being utilized.
Advisor: Professor Han-Wei Shen
- **Software Intern**, NVIDIA Corporation, Santa Clara, CA (2010, 2011)
Developed projects applying parallel GPU and CPU resources in novel ways to improve workflows:
 - Error-constrained stereo video compression algorithms for remote visualization
 - Stochastic algorithms enabling interactive exploration of out-of-core seismic data
 - Cluster-enabled multi-GPU real-time ray tracing systemProjects were implemented using C++, CUDA, Python, OpenMP, POSIX threads, and OpenGL.
- **Graduate Intern**, Los Alamos National Laboratory, Los Alamos, NM (2008, 2009)
Collaborated with scientists to develop tools for interactive quantitatively-driven visualization of large-scale volumetric data using data-parallel techniques on Linux HPC resources:
 - Hierarchically parallel volume renderer to provide visual confirmation of quantitative analyses
 - Load-balanced interactive parallel isosurface generation tool using multiple GPUs and CPUs in a clusterProjects were implemented using C++, CUDA, OpenCL, Intel TBB, MPI, and OpenGL.
- **Undergraduate Research Assistant**, Rensselaer Polytechnic Institute, Troy, NY (2006)
Researched hydrologically-guided digital terrain map compression techniques for the DARPA GeoStar project using Matlab and C++
- **Software Engineer**, Cubic Sky Interactive, LLC, Redmond, WA (2002-2005)
Developed a 3D graphics SDK and a video compression codec using C++, assembly, and OpenGL
- **Java Developer**, Open Vertical, Inc., Raleigh, NC (1999-2000)
Developed online store applications using Java Servlets and JSPs

SELECTED PUBLICATIONS

- Steven Martin, Han-Wei Shen, "Histogram Spectra for Multivariate Time-Varying Volume LOD Selection," Paper, *IEEE Symposium on Large-Scale Data Analysis and Visualization 2011*
- Steven Martin, Han-Wei Shen, Patrick McCormick, "Load-Balanced Isosurfacing on Multi-GPU Clusters," Paper, *Eurographics Symposium on Parallel Graphics and Visualization 2010*
- Daniel Livescu, Mark Petersen, Steven Martin, Patrick McCormick, "Spikes and Bubbles in Turbulent Mixing: High Atwood Number Rayleigh-Taylor Instability," Poster, *APS Gallery of Fluid Motion 2009*
- Patrick McCormick, Erik Anderson, Steven Martin, Carson Brownlee, Jeff Inman, Mathew Maltrud, Mark Kim, James Ahrens, Lee Nau, "Quantitatively Driven Visualization and Analysis on Emerging Architectures," Paper, *SciDAC 2008 Journal of Physics*
- Barbara Cutler, Yu Sheng, Steven Martin, Daniel Glaser, Marilyne Andersen, "Interactive Selection of Optimal Fenestration Materials for Schematic Architectural Daylighting Design," Paper, *Elsevier Automation in Construction, Volume 17, Sep 2008*
- Steven Martin, Han-Wei Shen, Ravi Samtaney, "Efficient Rendering of Extrudable Curvilinear Volumes," Paper, *IEEE Pacific Visualization Symposium 2008*.