Steven L. Martin

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INTERESTS

- Applying emerging trends in computer architecture to challenging problems
- Enabling improved understanding of data through scientific visualization
- Working with teams to streamline visualization workflows

EDUCATION

- Ph.D. **Computer Science**, The Ohio State University, Columbus, OH
  Thesis topic area: scientific visualization
  Course foci: computer graphics, numerical methods, software engineering
  In progress June 2007-present; Advisor: Professor Han-Wei Shen
- B.Sc. **Computer and Systems Engineering**, Rensselaer Polytechnic Institute, Troy, NY
  Concentration in computer graphics; Graduated May 2007
- B.Sc. **Electrical Engineering**, Rensselaer Polytechnic Institute, Troy, NY
  Concentration in computer graphics; Graduated May 2007

WORK EXPERIENCE

- (2008,2009) **Graduate Intern**, Los Alamos National Laboratory
  Developed visualization tools for hybrid parallel architectures with multiple GPUs, CPUs, and nodes.
  Performed research on volume and vector field visualization.
  Manager: Patrick McCormick
- (2007-present) **Graduate Research Associate**, The Ohio State University, Columbus, OH
  Performing research on computer graphics and scientific visualization.
  Advisor: Professor Han-Wei Shen
- (2006) **Undergraduate Research Assistant**, Rensselaer Polytechnic Institute, Troy, NY
  Performed hydrologically guided digital terrain map compression research.
  Advisors: Professors W. Randolph Franklin and Caroline Westort
- (2002-2005) **Software Engineer**, Cubic Sky Interactive, LLC, Redmond/Bellevue, WA
  Founded company and lead software development team.
  Developed a 3D graphics SDK and a video compression codec.
- (1999-2000) **Java Developer**, Open Vertical, Inc., Raleigh, NC
  Developed online store applications and managed the company network.

SKILLS

- *Languages*: C++, C, CUDA, GLSL, Java, assembly, Scheme, Lisp, C#, Matlab, Verilog HDL, VHDL
- *APIs*: OpenGL, CUDA, ITBB, MPI, UNIX SVR4, Xlib, Qt, DirectX, Windows, CGAL, SDL
- *Topic familiarity*: computer graphics, data compression, visualization, computer architectures, numerical computing, algorithms, operating systems, digital and analog electronics
- *Communication*: technical writing, teaching, project planning

PUBLICATIONS

- (2008) 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", SciDAC 2008 Journal of Physics
- (2008) Barbara Cutler, Yu Sheng, Steven Martin, Daniel Glaser, Marilyne Andersen, "Interactive Selection of Optimal Fenestration Materials for Schematic Architectural Daylighting Design", Elsevier Automation in Construction, Vol 17/7, Sep 2008
- (2008) Steven Martin, Han-Wei Shen, Ravi Samtaney, "Efficient Rendering of Extrudable Curvilinear Volumes", Paper to appear in *Proceedings of PacificVis 2008*.
- (2007) Yu Sheng, Steven Martin, Barbara Cutler, "Interactive Rendering of Fenestration Materials for Architectural Design," Poster, *SIGGRAPH 2007*.
- (2007) Steven Martin, Yu Sheng, Barbara Cutler, Daniel C. Glaser, "Interactive Selection of Optimal Fenestration Materials for Architectural Design," Poster, *Graphics Interface 2007*

SELECTED PAST PROJECTS

- (2009) *Graphics/Research*: Multi-GPU curvilinear volume ray tracer with robust concave mesh, adaptive sampling, and time-varying rendering support
- (2009) *Graphics/Research*: Multi-GPU, multi-core, and multi-node large scale volume renderer with remote visualization support using CUDA, ITBB, and MPI
- (2009) *Graphics/Research*: GPU-accelerated semi-automatic visibility-aware transfer function design tool for volume visualization
- (2008) *Graphics/Research*: Multi-GPU and multi-core isosurfacer using CUDA and ITBB
- (2008) *Graphics/Research*: Flow field simplification tool using wavelets
- (2007) *Graphics/Research*: GPU volume and isosurface renderer for curvilinear AMR data
- (2007) *Systems/Hardware*: Pipelined RISC processor for FPGAs
- (2006) *Graphics/Research*: Interactive lighting simulator for architectural design
- (2006) *Data Compression/Research*: Hydrologically-guided digital terrain map compression codec
- (2006) *Graphics/Research*: Global illumination solver using GPU-accelerated density estimation
- (2005) *Data Compression/Research/Hardware*: Streaming adaptive arithmetic coding codec
- (2005) *Networking*: Low-profile HTTP server
- (2004) *Graphics/Game*: Software-rendered 3D first-person game
- (2003) *Data Compression/Research*: High-efficiency video compression codec
- (2001) *Graphics/Game*: OpenGL-rendered 3D racing game
- (2000) *Systems*: Multitasking, protected-memory OS kernel
- (1999) *Systems*: Tracing 65816 disassembler and emulator