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Education

August 1997 - present:

Ph. D. student in Department of Computer Science, University of North Carolina at Chapel Hill. M.S. received May 1999. Ph.D. received December 2002. Continuing work as a research assistant as of January 2003.

September 1993 - June 1997:

McCormick School of Engineering and Applied Science, Northwestern University. Received B.Sc. magna cum laude in computer science in June 1997.

Experience

August 1997-October 2002:

Affiliated with Walkthrough research group at UNC. Areas of concentration include memory management for interactive rendering and proximity queries on massive models. Served as Walkthrough team leader August 1998 – August 2001.

June 2001-August 2001:

Instructor for COMP 96, Computers and Society. Responsible for daily lesson planning and lectures on current topics concerning social effects of computers as well as preparation, administration, and grading of assignments and exams.

May 2000-August 2000:

Intern at Silicon Graphics, Inc., working on real-time procedural shading in OpenGL. Responsible for development of demos for SIGGRAPH conference as well as a preliminary port of the OpenGL Shader compiler to Linux.

May 1999-August 1999:

Intern with Media and Graphics Lab in Intel Microprocessor Research Labs. Developed a video-based walkthrough system using in-house MPEG2 decoder optimized for Intel processors.

April 1997 - August 1997:

Intern with Qualitative Reasoning Group at Northwestern University. Participated in development of SIMGEN (interactive physics simulations) and Neverworld (multiuser, multimodal virtual environment) – see Projects section for further detail.

June 1996-September 1996:

Intern with Advanced Mobile Robotics Group at Northwestern University. Initial development of Neverworld and Scheme48 (see below).

May 1995 - April 1997:

Assistant Lab Manager for Technology Support Services, Northwestern University. Responsible for overseeing and maintaining two public computing facilities with ~30 workstations apiece.

Presentations and Publications

A. Wilson and D. Manocha. [Simplifying Complex Environments using Incremental Textured Depth Meshes](#). To appear in Proceedings of ACM SIGGRAPH 2003.

A. Wilson. [Spatially Encoded Image-Space Simplifications for Interactive Walkthrough](#). PhD. Dissertation, University of North Carolina at Chapel Hill, Dept. of Computer Science, 2002.

A. Wilson, D. Manocha, K. Mayer-Patel. [Spatially Encoded Far-Field Representations for Interactive Walkthroughs](#). In Proceedings of ACM Multimedia 2001, pp. 348-357. **Won Best Student Paper award at ACM Multimedia 2001.**

A. Wilson, M. C. Lin, D. Manocha, B.-L. Yeo, M. M. Yeung. [A Video-Based Rendering Acceleration Algorithm for Interactive Walkthroughs](#). In Proceedings of ACM Multimedia 2000, pp. 75-83.

- A. Wilson, E. Larsen, M. C. Lin and D. Manocha, Partitioning and Handling Massive Models for Interactive Collision Detection. Computer Graphics Forum (Proc. of Eurographics '99). **Won Best Student Paper and Runner-Up for Best Paper awards at Eurographics '99 conference.**
- D. Manocha et al. Interactive Walkthrough of Large Geometric Datasets. Full-day course presented at SIGGRAPH 1999 and 2000. Presented section on cell-based walkthrough and memory management.
- A. Wilson, E. Larsen, D. Manocha and M. C. Lin. Representation and Interactive Manipulation of Massive CAD Databases. Appeared in Integrated Spatial Databases: Spatial Images and GIS (Lecture Notes in Computer Science #1737), Springer-Verlag, 1999.
- D. Aliaga, J. Cohen, A. Wilson et al. MMR: An Interactive Massive Model Rendering System Using Geometric and Image-Based Acceleration. In Proceedings of the 1999 ACM Symposium on Interactive 3D Graphics, ACM Press, 1999.
- A. Wilson, E. Larsen, M. C. Lin and D. Manocha, IMPACT: A System for Interactive Proximity Queries on Massive Models, Technical Report TR98-031, Dept. of Computer Science, University of North Carolina, 1998.

Research Projects

Incremental Far-Field Representations for Interactive Walkthrough:

Accelerate walkthroughs of large environments by replacing distant geometry with image-based impostors. These impostors use the graphics pipeline to attain the visual properties of layered depth images and image warping without the expense of per-pixel processing on the CPU.

Spatial Video Encoding:

Generalization of video encoding techniques to encode spatial databases of images instead of a linear, temporal stream. Goal: interactive walkthrough of massive CAD databases (10-100 million primitives) at 20 frames/second on a PC.

IMPACT:

Interactive proximity queries on massive models containing over 10 million geometric primitives. Documented in UNCCS tech report TR98-031 above.

MMR (Massive Model Rendering):

Interactive walkthroughs of massive models on high-end graphics hardware. Goal: 15 million triangles at 15 frames per second using under 400MB of main memory on an SGI Onyx2.

Neverworld:

Scheme-based multiuser virtual environment incorporating dynamic generation of VRML and HTML content from persistent objects. Parts of Neverworld are used in an introductory programming class and a design-studio course on virtual environments. See <http://www-personal.umich.edu/~jeffshuo/neverworld/> for more information.

SIMGEN:

Development of retargetable compiler and runtime environment for self-explanatory simulators. Also built agent toolkit to enable these simulators to be embedded within text-based shared virtual environments. See <http://www.qrg.ils.nwu.edu> for more information.

Scheme48:

Ported Unix-based Scheme interpreter to Windows environment. This version of Scheme48 is used to teach the introductory CS programming sequence as well as the introductory AI course at Northwestern.

Awards and Honors

NSF Graduate Research Fellowship (three-year competitive fellowship offered by National Science Foundation)

Humphreys Fellowship (three-year competitive fellowship offered by UNC)

Best student paper award at ACM Multimedia 2001

Best student paper, 2nd best paper overall at Eurographics 1999

Graduated magna cum laude from Northwestern University

References available upon request.