Kurt Zimmerman
Research Associate
University of Utah, Salt Lake City, UT 84112

Education

Indiana University, Bloomington, IN (1998)
—PhD. in Computer Science
—Dissertation: Density Prediction for Importance Sampling in Realistic Image Synthesis

Indiana University, Bloomington, IN (1994)
—M.S. in Computer Science

Katholieke University, Leuven, Belgium (1989)
—B.A. in Philosophy

Manchester College, North Manchester, IN (1987)
—B.A. in Psychology

Experience

1998–present	Research Associate, Scientific Computing & Imaging Institute, University of Utah
1996–1998	Lead Software Engineer, University Information Technology Services Advanced Information Technology Laboratory, Indiana University
1995–1996	Software Assistant, Computer Science, Indiana University
1990–1995	Associate Instructor of Computer Science, Indiana University.

Associations

Association of Computing Machinery (ACM), including the special interest group on graphics (SIGGRAPH).

Research Interests

Scientific Visualization, Physically-based rendering, real-time rendering, software design and development.

Refereed Publications

7. Weiler, Westermann, Hansen, Zimmerman, & Ertl. 2000. Level-Of-Detail Volume Rendering via 3D Textures. *Proceedings of IEEE VolVis '00* (IEEE, 2000).

6. Zimmerman, Chiu, & Shirley. 1996. The Light Volume: An Aid to Rendering Complex Environments. *Rendering Techniques '96* (Proceedings of the Seventh Eurographics Workshop on Rendering)

5. Shirley, Wang, Zimmerman. 1996 . Monte Carlo Methods for Direct Lighting Calculations. *ACM Transactions on Graphics* (TOG).

4. Spencer, Shirley, Zimmerman & Greenberg. 1995. Physically-Based Glare Effects for Digital Images. *Computer Graphics '95* (ACM SIGGRAPH Conference Proceedings)

3. Zimmerman and Shirley. 1995. A Two-Pass Realistic Image Synthesis Method for Complex Scenes. *Rendering Techniques '95* (Proceedings of the Sixth Eurographics Workshop on Rendering)

2. Zimmerman. 1995. Direct Lighting Models for Ray Tracing with Cylindrical Lamps. *Graphics Gems V* (Collection).

1. Chiu, Herf, Shirley,Swamy, Wang, Zimmerman. 1993. Spatially Nonuniform Scaling Functions for High Contrast Images. *Proceedings of Graphics Interface '93*

Software Projects

CSAFE Visualization Tools (1998-present): Modules written to visualize the large datasets generated by the Center for Simulation of Accidental Fires and Explosion simulation software. These modules are written in the SCIRun problem solving environment and include volume visualization, particle visualization, transfer function manipulation, and other data analysis components. These modules are written in C++ and tcl using the OpenGL graphics api.

The Children's Museum Weather Station (1997-1998): This software allows for display and manipulation of three-dimensional forecast models. It was designed for use at the worlds largest children's museum in Indianapolis, Indiana. A variety of libraries are used to create an interface that is suitable for children based on the Vis5D visualization api written at the University of Wisconsin. Libraries used in the weather station include SGI's RapidApp and ViewKit libraries as well as OpenGL and Inventor. The core software, not including libraries, has over 20,000 lines of code.

Shutter (1998): Written in the Python scripting language using PyOpenGL and the Python Imaging Library (PIL), this tool allows for interactive shutter cutting on IES light sources. By providing a view from the light source into a scene (a texture map generated by the Radiance lighting software), the lighting designer can accurately manipulate shutters to restrict its area of illumination on the stage.

Interp (1998): A tool written in the Python scripting language used for the manipulation of IES light sources. Many light sources used in theater are adjustable. Interp allows the lighting designer to adjust the virtual IES source by interpolating between a few accurate measurements of real light sources.

Prop View (1997): This tool was written using the C++, OpenGL and the xforms library api for manipulation of actors and objects (props) on a theater stage.

Ray Tracing and Particle Tracing Software (1994-1996). This code was built upon the GG library (see below) and used for my dissertation research.

Graphics and Geometry (GG) Library (1993): Assisted in the coding of C++ based GG modules developed under Pete Shirley at Indiana University. This code has since been expanded and refined at Cornell University and the University of Utah where it continues to be used in research.