



Stephen H. Westin

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Experienced and creative software engineer with exceptional skills in computer graphics modeling, rendering, and simulation, and a proven track record of delivering innovative contributions.

Key accomplishments

- Software development & testing of cybersecurity and software assurance tools.
- Software design and development of real-time simulators for heavy vehicle training.
- State-of-the-art research in physically-based image synthesis and animation.
- Development of an advanced CAD system to support creative automobile design.

Expertise

- 20+ years experience in object-oriented software design, development, and support.
- Expert in tools/techniques for interactive/realistic 3D computer graphics.
- Deep knowledge of computational methods for physical modeling/simulation.
- 3D geometry description, display, and interaction.
- Extensive experience in laboratory methods for illumination/surface metrology.
- Excellent communication skills with diverse groups (e. g. non-technical designers, software engineering, automotive engineering).

Education

- Master of Science, Computer Graphics, Cornell University, 1992.
- Bachelor of Science, Electrical and Computer Engineering, University of Michigan, 1980.

Technical skills

- Programming languages: C/C++, Python, Java, MATLAB, FORTRAN, Pascal, LISP; PDP-11, VAX, and IBM 370 assembly.
- Operating systems: Windows, Linux, OS-X (GUI, command line, batch/scripting).
- Interface APIs: wxWidgets, Qt, Swing/AWT, Delta3D.
- 3D graphics modeling: Maya, 3D Studio Max, Sketchup, Alias Studio, Photoshop.
- 3D graphics rendering: OpenGL, GLSL, RenderMan, Radiance.
- Web/markup: HTML/HTML5, Javascript.

Work Experience

Software Engineer, GrammaTech

May 2014 - March 2018

Project – development/testing of cybersecurity and software assurance software.

- Developed cross-platform product GUIs (wxWidgets, Python, Javascript).
- Maintained code to enforce MISRA software assurance guidelines (C++).
- Developed tools to monitor product testing (Python, Excel).
- Spearheaded testing of new product release.

Impact – improvement of product functionality, delivering on time to customer base.

Software Engineer, Doron Precision Systems

December 2007 - May 2014

Project – software design/development of real-time simulators for heavy vehicle training.

- Worked with collaborative team to design and develop new simulator image generator (OpenGL, OpenSceneGraph, Delta3D)

- Co-developed advanced vehicle dynamics and powertrain models (C++, PAL, Bullet)
 - Supervised team improving vehicle and environment models (3D Studio Max, SketchUp)
- Impact – successful deployment of enhanced simulators to customer base.*

Programmer/Administrator, Animusic, LLC

October 2005 - August 2007

Project – developed software for realistic rendering of music-driven 3D animations

- Developed real-time interactive 3D preview display (OpenGL, OpenSceneGraph).
- Implemented subdivision surface algorithms for enhanced geometric modeling (C++)
- Installed/managed Pixar RenderMan software on 13-node parallel rendering cluster.
- Implemented shaders for realistic rendering (RenderMan).

Impact – improved company productivity, enhanced product quality.

Research Associate, Cornell University

August 1997 - August 2005

Project – Advanced research on physically-based computer graphics/image synthesis

- Managed the Cornell Light Measurement Laboratory.
 - Maintained, calibrated, and improved laboratory instrumentation.
 - Performed physical measurements of illumination and surface reflectance.
- Developed physically-based rendering algorithms in Java, for parallel processing on 64-workstation cluster.
- Performed imaging and processing for geometric and radiometric calibration.
- Participated in innovative collaborative research resulting in 5 refereed publications.

Impact – Advanced the state-of-the-art in image synthesis, graduate student training, and five journal publications.

Software Engineer, Ford Motor Company

September 1984 - August 1997

Project – Development of an advanced CAD system to support creative automobile design.

- Distilled requirements from stakeholders in U.S. and England to reach consensus.
- Wrote UX and functionality specifications for CAD and rendering software.
- Facilitated communication between non-technical designers and development team.
- Developed rendering and animation code for design visualization.
- Produced renderings and video animations for design evaluation.
- Supplied technical support during deployment ramp-up.

Impact – Successful launch of CG design system, revolutionary change in product design workflow.

Publications

Hongsong Li, Sing-Choong Foo, Kenneth E. Torrance, and Stephen H. Westin. (2005) *Automated three-axis gonioreflectometer for computer graphics applications*. Advanced Characterization Techniques for Optics, Semiconductors, and Nanotechnologies II, Proc. SPIE 5878, Aug. 2005.

Stephen R. Marschner, Stephen H. Westin, Adam Arbree, and Jonathan T. Moon. (2005) *Measuring and modeling the appearance of finished wood*. ACM Transactions on Graphics, Proceedings of SIGGRAPH 2005.

James A. Ferwerda, Stephen H. Westin, Randall C. Smith, and Richard Pawlicki. (2004) *Effects of rendering on shape perception in automobile design*. First ACM Symposium on Applied Perception in Graphics and Visualization, July 2004, 107-114.

Stephen R. Marschner, Stephen H. Westin, Eric P. F. Lafortune, and Kenneth E. Torrance. (2000) *Image-based bidirectional reflectance distribution function measurement*. Applied Optics-OT, 39(16):2592--2600, June 2000.

Stephen R. Marschner, Stephen H. Westin, Eric P. F. Lafortune, Kenneth E. Torrance, and Donald P. Greenberg. (1999) *Image-based brdf measurement including human skin*. In Eurographics Workshop on Rendering, 1999.

Stephen H. Westin, James R. Arvo, and Kenneth E. Torrance. (1992) *Predicting reflectance functions from complex surfaces*. Computer Graphics (SIGGRAPH '92 Proceedings), 26:255--264, July 1992.

François X. Sillion, James R. Arvo, Stephen H. Westin, and Donald P. Greenberg. (1991) *A global illumination solution for general reflectance distributions*. Computer Graphics (SIGGRAPH '91 Proceedings), 25:187--196, July 1991.