

# James A. Ferwerda

Munsell Color Science Laboratory  
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## RESEARCH INTERESTS:

Computer graphics; digital imaging; display systems; visual perception; material appearance; low vision; assistive technologies.

## EDUCATION:

Ph.D. in Experimental Psychology, Cornell University, 1998.  
Dissertation: "*Visual Models for Realistic Image Synthesis.*"  
M.S. in Computer Graphics, Cornell University, 1987.  
Thesis: "*A Psychophysical Approach to the Aliasing Problem.*"  
B.A. in Psychology with Honors, Cornell University, 1980.

## PROFESSIONAL EXPERIENCE:

Associate Professor, Chester F. Carlson Center for Imaging Science, Rochester Institute of Technology, 2007-present.  
Research Associate, Program of Computer Graphics, Cornell University, 1998-2007.  
Senior Project Leader, Program of Computer Graphics, Cornell University, 1987-1998.  
Systems Programmer/Analyst, Department of Computer Science, Cornell University, 1983-1984.  
Computer Systems Specialist, Department of Psychology, Cornell University, 1980-1983.  
Research Assistant, Gibson Laboratory, Department of Psychology, Cornell University, 1978-1980.

## HONORS AND AWARDS:

Xerox Chair in Imaging Science, RIT, 2011.  
Best Paper Award, IS&T/SID Color Imaging Conference, 2011.  
National Academies Keck Futures Initiative, Future of Imaging Science Program, 2010.  
Best Paper Award, IS&T/SID Color Imaging Conference, 2009.  
National Academy of Engineering, Frontiers of Engineering Program, 2003, 2005.  
Paper of the Year Award, IEEE Computer Society, 1992.

## PROFESSIONAL ACTIVITIES:

Associate Editor: ACM Transactions on Applied Perception 2004-present.  
Guest Editor: IEEE Computer Graphics and Applications - Special Issue on Applied Perception, 2001.  
Technical Program Chair, IS&T/SID Color Imaging Conference, 2010.  
Conference Chair: IS&T/SID Color Imaging Conference, 2011.  
Program Committees: ACM Symposium on Applied Perception in Graphics and Visualization, 2004, 2005, 2010, 2011; ACM SIGGRAPH Workshop on Perceptually Adaptive Graphics, 2001.  
Technical Committee: CIE TC8-08 High Dynamic Range Imaging, 2003-present.  
Review Panelist: NSF CISE 2002, 2005, 2010.  
Peer Reviewer: ACM SIGGRAPH; ACM TOG; ACM TAP; IEEE CG&A; IEEE TVCG; JOSA A; JIST; Optical Engineering; Psychological Science; Eurographics; Pacific Graphics.

Consultant: Hewlett-Packard Laboratories, 1999-2000; General Motors Research, 2002-2005; Proctor and Gamble, 2007.

**GRANTS RECEIVED:**

- Principal Investigator, Corning Corp. (2011) "Impact of Glass Surface Texturing on Display Performance.", \$77,247
- Principal Investigator, Xerox Corp. (2011) Xerox Professorship, \$90,000.
- Principal Investigator, NSF IIS-1064410 (2011) "A Unified Approach to Material Appearance Modeling", \$398,810.
- Principal Investigator, XRite Corp. (2010) Gift for research support., \$50,000.
- Senior Investigator, A.W. Mellon Foundation (2009) "Improving Artwork Reproduction Through 3D Spectral Capture and Computer Graphics Rendering (Phase 2)", \$750,000, (R. Berns, PI)
- Principal Investigator, Sherwin-Williams Co. (2008) "Measurement, Modeling and Perception of Painted Surfaces", \$71,698.
- Principal Investigator, Eastman-Kodak Co. (2008) "Digital Imaging Media: Measurement, Modeling and Perception", \$55,037.
- Principal Investigator, Center for Emerging and Innovative Sciences (CEIS) (2008) "Digital Imaging Media: Measurement, Modeling and Perception", \$10,077 (supplement to Kodak grant).
- Principal Investigator, NSF CCF-0811032 (2008) "Visual Equivalence: A New Foundation for Perceptually-Based Rendering of Complex Scenes", \$125,000.
- Co-Investigator, U.S. Army Night Vision and Electronic Sensors Directorate (2008) "Common Sensor Payload Performance Modeling", \$68,000, (S. Brown, PI)
- Principal Investigator, RIT Office of the Vice President for Research (2007) "A Second Generation High Dynamic Range Display", \$25,432.
- Principal Investigator, Eastman-Kodak Co. (2006) "Measurement, Modeling and Perception of Digital Imaging Media", \$125,665.
- Co-Investigator, NIH/NEI SBIR (2006) "Accessible Graphical Display for Numerical Data", \$100,000, (J. Gardner, PI)
- Principal Investigator, General Motors Corp. (2003) "Evaluating the Effectiveness of Advanced Rendering for Automobile Design", \$155,799.
- Co- Investigator, NSF CCF-0205438 (2002) "ITR/AP: Beyond Polygons and Pixels: New Paradigms for Real-Time, Physically-Based Rendering", \$2,743,914, (D. Greenberg, PI)
- Principal Investigator, NSF IIS-0113310 (2001) "ITR/PE: Digital Imaging Techniques for the Simulation and Enhancement of Low Vision", \$450,799, (\$6,000 REU supplement 2004).
- Senior Investigator, NSF CNS-8920219 (supplement) (1998) "Physically-Based Rendering: Why Bother?", \$60,000.
- Senior Investigator, NSF CNS-8920219 (supplement) (1997) "Realistic Display of High Dynamic Range Images", \$99,294.
- Senior Investigator, NSF OCI-9523483 (1995) "MRA: Physically and Perceptually-Based Parallel Global Illumination Solutions", \$990,000.
- Senior Investigator: NSF CNS-8920219 (supplement) (1994) "Networking and Computer Graphics for Education", \$200,000.
- Senior Investigator, NSF EIA-8717024 (1987) "CISE Research Instrumentation: Computer Graphics Dynamic Simulation for Scientific Inquiry". \$90,600.

**TEACHING EXPERIENCE:**

**University Courses:**

- Appearance of Materials, (grad), RIT, 2009 - present.
- Computing for Color Science, (grad), RIT, 2008 - present.

Color Measurement Laboratory II, (grad), RIT, 2008 - present.  
Imaging Systems Analysis II: Resolution, MTF, and Spatial Artifacts, (ugrad), RIT, 2007 - present.  
Engineers without Frontiers, (ugrad), Cornell University 2002-2003.  
Special Topics in Computer Graphics, (ugrad), Cornell University, 1999-2000.  
Realistic Image Synthesis, (grad), Cornell University, 1998-2002.  
Practicum in Computer Graphics, (ugrad), Cornell University, 1987.

**Professional Courses:**

Fundamentals of Color Science: Munsell Color Science Laboratory, RIT, 2008-present.  
Psychophysics 101: How to Run Perceptual Experiments in Computer Graphics: ACM SIGGRAPH 2002, 2008; IEEE Visualization 2002; IS&T Color Imaging Conference 2009-present.  
Frontiers of Perceptually-Based Computer Graphics: ACM SIGGRAPH 2003.  
Principles of Visual Perception and its Applications in Computer Graphics: ACM SIGGRAPH 1997-98.

**Colloquia and Invited Presentations:**

Hewlett-Packard Laboratories 11/11.  
IEEE IVMS 2011, Workshop on Perception and Visual Signal Analysis (Keynote), 6/11.  
International Symposium on Material Appearance, Giessen, Germany, 5/11.  
Eastman Kodak, 5/11.  
Inter-society Color Council (ISCC) Annual Meeting (Keynote), 04/11.  
Delft University of Technology, The Netherlands, Department of Industrial Design, 9/10.  
Northwestern University, Department of Electrical and Computer Engineering, 3/10.  
Picture Coding Society of Japan Annual Meeting (Keynote), 10/09.  
Proctor and Gamble Imaging Community of Practice Symposium (Keynote), 10/09.  
Stanford University, Center for Imaging Science and Engineering, 9/09.  
Vision Society of Japan Annual Meeting (Keynote) 7/09.  
NTT Research, Japan, 7/09.  
National Institute of Physiological Sciences, Japan, 7/09.  
Chiba University, Japan, Department of Information Science, 7/09.  
Sherwin-Williams Co., 5/09.  
Xerox Research, 3/09.  
Yale University, Department of Computer Science, 2/09.  
Proctor and Gamble, 1/07.  
Eastman-Kodak, 6/06.  
Johns Hopkins School of Medicine, 9/05.  
National Academy of Engineering, 5/05.  
Asilomar Conference on Signals, Systems and Computers, 11/03.  
ACREO Symposium on Paper Optics and Perception, Sweden, 11/02.  
Swedish Royal Institute of Technology, 11/02.  
ACM SIGGRAPH Workshop on Perceptually Adaptive Graphics, 5/01.  
IBM T.J. Watson Research Center, 5/01.  
MIT, Department of Brain and Cognitive Sciences, 9/00.  
ACM SIGGRAPH '99, Panel on Perceptual Issues in Computer Graphics, 8/99.  
University of Minnesota, Department of Psychology, 6/99.  
Stanford University, Department of Computer Science, 5/99.  
Hewlett-Packard Laboratories, 5/99.  
Cornell University, Workshop on Rendering, Perception and Measurement, 4/99.  
ASTM, E12 Committee Annual Meeting, 1/99.

University of Minnesota, Department of Computer Science, 11/98.  
ACM SIGCHI '94, Workshop on the Challenges of 3D Interaction, 4/94.

**STUDENT MENTORING:**

**Thesis Advising:**

Alicia Stillwell, M.S. student, Color Science, Center for Imaging Science, RIT.  
Adria Fores-Herranz, Ph.D student, Color Science, Center for Imaging Science, RIT.  
Jonathan Philips, Ph.D. candidate, Color Science, Center for Imaging Science, RIT.  
Benjamin Darling, Ph.D. candidate, Color Science, Center for Imaging Science, RIT.  
Stefan Luka, M.S. candidate, Color Science, Center for Imaging Science, RIT.  
Anthony Blatner, M.S. 2011, Computer Engineering, RIT.  
Suparna Kalghatgi, M.S. 2011, Industrial Engineering, RIT.  
Dan Zhang, M.S. 2011, Color Science, Center for Imaging Science, RIT.  
William Stokes, M.S. 2004, Program of Computer Graphics, Cornell University.  
John Mollis, M.S. 2004, Program of Computer Graphics, Cornell University.  
Simon Leet, B.S. 2003, College Scholar, Cornell University.  
Fabio Pellacini, Ph.D. 2002, Department of Computer Science, Cornell University.  
Patrick Heynen, M.S. 1996, Program of Computer Graphics, Cornell University.  
Leonard Wanger, M.S. 1992, Program of Computer Graphics, Cornell University.

**Thesis Committees:**

Susan Farnand, Ph.D. Candidate, Color Science, Center for Imaging Science, RIT.  
Steven Glaser, M.S. Computer Science, RIT.  
Chih-Chun Lin, M.S. Computer Science, RIT.  
Hrushikesh Godbole, M.S. Industrial Engineering, RIT.  
Bingxin Hou, M.S. 2010, Color Science, Center for Imaging Science, RIT.  
Susan Munn, Ph.D. 2009, Imaging Science, Center for Imaging Science, RIT.  
Stacey Casela, M.S. 2009 Color Science, Center for Imaging Science, RIT.  
Erin Fredricks, M.S. 2009 Color Science, Center for Imaging Science, RIT.  
Ying Chen, Ph.D. 2008 Imaging Science, Center for Imaging Science, RIT.  
Ganesh Ramnarayanan, Ph.D. 2008, Department of Computer Science, Cornell University.  
William Feth, M.Eng. 2000, Department of Computer Science, Cornell University.

**Undergraduate Research Advising:**

Suzanne Farrell, B.S. Digital Cinema, RIT, 2011-2012.  
Carrie Houston, B.S. Imaging Science, RIT, 2011-2012  
Chris Corvan, B.S. Computer Science, RIT, 2011-2012.  
Ann Nunziata, Center for Imaging Science, RIT. Summer 2009.  
Juliet Bernstein, Center for Imaging Science, RIT, Spring, Summer 2009.  
Brendan Rehon, Department of Computer Science, Cornell University, Summer 2006.  
Victor Kwok, Department of Computer Science, Cornell University, Summer 2006.  
Ang Pet Chean, Department of Computer Science, Cornell University, Summer 2005.  
Ankur Moitra, Department of Computer Science, Cornell University, Summer 2005.

**PUBLICATIONS:** (\* indicates student co-author)**Refereed journal articles:**

- [J17] Ferwerda, J.A., Bulatov, V., and Gardner, J. (2012) Comparing auditory and tactile representations of surface graphs for the visually impaired. *ACM Transactions on Applied Perception*. Submitted for review.
- [J16] Krivanek, J. Ferwerda, J.A. and Bala, K. (2010) Effects of global illumination approximations on material appearance. *ACM Transactions on Graphics*, 29(4), (SIGGRAPH '10), 1-10.
- [J15] Ferwerda, J.A. (2009) Envisioning the material world (invited review article). *Vision: Journal of the Vision Society of Japan*, 1-11.
- [J14] \*Ramanarayanan, G., Bala, K. and Ferwerda, J.A. (2008) Perception of complex aggregates. *ACM Transactions on Graphics*, 27(3), (SIGGRAPH '08), 1-10.
- [J13] \*Ramanarayanan, G., Ferwerda, J.A., Walter, B.J. and Bala, K. (2007) Visual Equivalence: towards a new standard for image fidelity. *ACM Transactions on Graphics*, 26(3), (SIGGRAPH '07), 1-11.
- [J12] \*Stokes, W., Ferwerda, J.A., Walter, B.J. and Greenberg, D.P. (2004) Perceptual Illumination Components: A new approach to efficient, high quality global illumination rendering. *ACM Transactions on Graphics*, 23(3). (SIGGRAPH '04), 742-749.
- [J11] Dumont, R., \*Pellacini, F. and Ferwerda, J.A. (2003) Perceptually-driven decision theory for interactive realistic rendering. *ACM Transactions on Graphics* 22(2), 152-181.
- [J10] \*Reinhard, E., Stark, M., Shirley, P. and Ferwerda, J.A. (2002) Photographic tone reproduction for digital images. *ACM Transactions on Graphics*, 21(3), (SIGGRAPH '02), 267-276.
- [J9] Thompson, W., Shirley, P. and Ferwerda, J.A. (2002) A spatial post-processing algorithm for images of night scenes. *Journal of Graphics Tools* 7(1), 1-12.
- [J8] Ferwerda, J.A. (2001) Elements of early vision for computer graphics. *IEEE Computer Graphics and Applications*, 21(5), 22-33.
- [J7] \*Pellacini, F., Ferwerda, J.A. and Greenberg, D.P. (2000) Toward a psychophysically-based light reflection model for image synthesis. *Proceedings SIGGRAPH '00*, 55-64.
- [J6] Pattanaik, S., Ferwerda, J.A., Fairchild, M.D. and Greenberg, D.P. (1998) A multiscale model of adaptation and spatial vision for realistic image display. *Proceedings SIGGRAPH '98*, 287-298.
- [J5] Ferwerda, J.A., Pattanaik, S., Shirley, P. and Greenberg, D.P. (1997) A model of visual masking for computer graphics. *Proceedings SIGGRAPH '97*, 143-152.
- [J4] Greenberg, D.P., Torrance, K.T., Shirley, P., Arvo, J., Ferwerda, J.A., Pattanaik, S., Lafortune, E., Walter, B., Foo, S. and Trumbore, B. (1997) A framework for realistic image synthesis. *Proceedings SIGGRAPH '97*, 477-494.
- [J3] Ferwerda, J.A., Pattanaik, S., Shirley, P. and Greenberg, D.P. (1996) A model of visual adaptation for realistic image synthesis. *Proceedings SIGGRAPH '96*, 249-258.
- [J2] \*Wanger, L.R., Ferwerda, J.A. and Greenberg, D.P., (1992) Perceiving spatial relationships in computer-generated images. *IEEE Computer Graphics and Applications*, 12(3), 44-58.
- [J1] Ferwerda, J.A. and Greenberg, D.P. (1988) A psychophysical approach to assessing the quality of antialiased images. *IEEE Computer Graphics and Applications*, 8(5), 85-95.

**Refereed conference proceedings:**

- [R20] Ferwerda, J.A. (2012) Through a glass brightly: material appearance and image quality. In: *Predicting Perceptions: 3<sup>rd</sup> International Conference on Material Appearance*, 32-33.
- [R19] \*Darling, B.A. and Ferwerda, J.A. (2012) Seeing virtual objects: simulating reflective surfaces on emissive displays. *Proceedings IS&T/SID 20<sup>th</sup> Color Imaging Conference*. Accepted for publication.
- [R18] \*Fores-Herranz, A., Ferwerda, J.A., and Gu, J. (2012) Toward a perceptually-based metric for BRDF modeling. *Proceedings IS&T/SID 20<sup>th</sup> Color Imaging Conference* Accepted for publication.

- [R17] Ferwerda, J.A. (2011) High dynamic range displays and low vision. Proceedings IS&T/SID 19<sup>th</sup> Color Imaging Conference, 181-185.
- [R16] \*Blatner, A.M., Ferwerda, J.A., Darling, B.A. and Bailey, R.J. (2011) TangiPaint: a tangible digital painting system. Proceedings IS&T/SID 19<sup>th</sup> Color Imaging Conference, 102-107.
- [R15] \*Darling, B.A., Ferwerda, J.A., Chen, T. and Berns, R. (2011) Real-time multi-spectral rendering with complex illumination. Proceedings IS&T/SID 19<sup>th</sup> Color Imaging Conference, 345-351.
- [R14] Ferwerda, J.A. (2010) Effects of mesoscale texture on apparent surface gloss. Proceedings 2<sup>nd</sup> CIE Expert Symposium on Appearance, 1-4.
- [R13] Ferwerda, J.A., \*Selan, J. and Pellacini, F. (2010) Perception of lighting errors in image compositing. Proceedings IS&T/SID 18<sup>th</sup> Color Imaging Conference, 375-380.
- [R12] \*Kalghatgi, S. and Ferwerda, J.A. (2010) A psychophysical analysis of the touch-up problem. Proceedings IS&T/SID 18<sup>th</sup> Color Imaging Conference, 266-271.
- [R11] \*Zhang, D. and Ferwerda, J.A. (2010) Appearance-based image splitting for HDR displays. Proceedings IS&T/SID 18<sup>th</sup> Color Imaging Conference, 340-346.
- [R10] \*Darling, B.A. and Ferwerda, J.A. (2009) The tangiBook: a tangible display system for direct interaction with virtual surfaces. Proceedings IS&T 17<sup>th</sup> Color Imaging Conference, 260-266. (Best paper award)
- [R9] \*Phillips, J.B. and Ferwerda, J.A. (2009) Effects of dynamic range on apparent surface gloss. Proceedings IS&T 17<sup>th</sup> Color Imaging Conference, 193-197.
- [R8] Ferwerda, J.A., \*Ramanarayanan, G., Bala, K. and Walter, B.J. (2008) Visual Equivalence: an object-based approach to image quality. Proceedings IS&T 16<sup>th</sup> Color Imaging Conference, 347-354.
- [R7] Bala, K., Ferwerda, J.A. and Walter, B.J. (2006) Information-preserving imaging for heterogeneous networked displays. Workshop on Information Visualization and Interaction Techniques across Multiple Displays, ACM CHI '06, 1-4.
- [R6] \*Irawan, P., Ferwerda, J.A. and Marschner, S.R. (2005) Perceptually-based tone mapping of high dynamic range image streams. Eurographics Symposium on Rendering, 231-242.
- [R5] Ferwerda, J.A., Westin, S.H., Smith, R.C. and Pawlicki, R. (2004) Effects of rendering on shape perception in automobile design. First ACM Symposium on Applied Perception in Graphics and Visualization, 107-114.
- [R4] Ferwerda, J.A. and \*Pellacini, F. (2003) Functional difference predictors (FDPs): measuring meaningful image differences. Asilomar Conference on Signals, Systems, and Computers, 1388-1392.
- [R3] Dumont, R., \*Pellacini, F. and Ferwerda, J.A. (2001) Perceptually-based texture caching for hardware rendering. Proceedings 12<sup>th</sup> Eurographics Workshop on Rendering, 246-256.
- [R2] Pattanaik, S.N., Fairchild, M.D., Ferwerda, J.A. and Greenberg, D.P. (1998) Multiscale model of adaptation, spatial vision and color appearance. Proceedings IS&T 6<sup>th</sup> Color Imaging Conference, 2-7.
- [R1] Pattanaik, S.N., Ferwerda, J.A., Torrance, K.E. and Greenberg, D.P. (1997) Validation of global illumination simulations through CCD camera measurements. Proceedings IS&T 5<sup>th</sup> Color Imaging Conference, 250-253.

#### Conference papers and abstracts:

- [C20] Ferwerda, J.A. (2012) Through a glass brightly: seeing through the surface in image quality (abstract). Vision Sciences Society, Annual Meeting, Journal of Vision, 12(9), 872a.
- [C19] Ferwerda, J.A. (2012) Tangible display systems: bringing virtual surfaces into the real world. Proceedings SPIE Electronic Imaging '12 (Human Vision and Electronic Imaging XVII), 8291 1-10.
- [C18] Ferwerda, J.A. and \*Phillips, J.B. (2010) Effects of image dynamic range on perceived surface gloss. (abstract), Vision Sciences Society, 9<sup>th</sup> Annual Meeting, Journal of Vision, 10(7), 387.
- [C17] \*Kalghatgi, S. and Ferwerda, J.A. (2010) Effects of microscale and mesoscale structure on surface appearance (abstract), Vision Sciences Society, 9<sup>th</sup> Annual Meeting, Journal of Vision, 10(7), 449.

- [C16] \*Zhang, D. and Ferwerda, J.A. (2010) A low-cost, color-calibrated, reflective high dynamic range display (abstract), Vision Sciences Society, 9<sup>th</sup> Annual Meeting, Journal of Vision, 10(7), 397.
- [C15] Ferwerda, J.A. (2010) The medium and the message: a revisionist view of image quality. Proceedings SPIE Electronic Imaging '10 (Human Vision and Electronic Imaging XV), 7257 0J 1-11.
- [C14] \*Darling, B.A. and Ferwerda, J.A. (2010) Tangible Display Systems: direct interfaces for computer-based studies of surface appearance Proceedings SPIE Electronic Imaging '10 (Human Vision and Electronic Imaging XV), 7257 0Q 1-12.
- [C13] \*Phillips, J., Ferwerda, J.A., and \*Nunziata, A. (2010) Gloss discrimination and eye movements. Proceedings SPIE Electronic Imaging '10 (Human Vision and Electronic Imaging XV), 7257 0Z 1-12.
- [C12] \*Luka, S and Ferwerda, J.A. (2009) Colorimetric image splitting for high dynamic range displays. Proceedings SID 2009 Annual Conference, 1298-1301.
- [C11] Ferwerda, J.A. and \*Luka, S. (2009) A high resolution high dynamic range display for vision research (abstract), Vision Sciences Society, 8<sup>th</sup> Annual Meeting, Journal of Vision, 9(8), 346a.
- [C10] \*Darling, B.A. and Ferwerda, J.A. (2009) The situated laptop: a tangible interface for computer-based studies of surface appearance (abstract), Vision Sciences Society, 8<sup>th</sup> Annual Meeting, Journal of Vision, 9(8), 324a.
- [C9] \*Ramanarayanan, G., Ferwerda, J.A., Bala, K. and Walter, B.J (2008) Dimensionality of visual complexity in computer graphics scenes. Proceedings SPIE Electronic Imaging '08 (Human Vision and Electronic Imaging XIII), 1-10.
- [C8] Ferwerda, J.A. and Arditi, A. (2008) Are high dynamic range displays bad for the eyes? Council on Optical Radiation Measurement, Proceedings of the Annual Meeting (CORM 2008), 1.1
- [C7] Ferwerda, J.A, \*Irawan, P. and Marschner S.R. (2008) Simulating low vision in high dynamic range scenes. Council on Optical Radiation Measurement, Proceedings of the Annual Meeting (CORM 2008), 1.4
- [C6] Ferwerda, J.A. and \*Rehon, B. (2007) MagnoFly: game-based screening for dyslexia. 7<sup>th</sup> Annual Meeting, Vision Sciences Society, Journal of Vision, 7(9), 520a.
- [C5] Ferwerda, J.A. and Arditi A. (2006) High dynamic range displays and the blue light hazard. 6<sup>th</sup> Annual Meeting, Vision Sciences Society, Journal of Vision, 6(6), 70a.
- [C4] Ferwerda, J.A. and \*Ang, P.C. (2004) Dalton's Jungle: a video game for assessing color anomalies in children's vision. 4<sup>th</sup> Annual Meeting, Vision Sciences Society, Journal of Vision, 4(8), 310a.
- [C3] Ferwerda, J.A., \*Irawan, P., and Marschner, S.R. (2004) Simulating low vision in high dynamic range scenes. 4<sup>th</sup> Annual Meeting, Vision Sciences Society, Journal of Vision, 4(8), 879a.
- [C2] Ferwerda, J.A (2003) Three varieties of realism in computer graphics. Proceedings SPIE Human Vision and Electronic Imaging '03, 290-297.
- [C1] Ferwerda, J.A., \*Pellacini, F. and Greenberg, D.P. (2001) A psychophysically-based model of surface gloss perception. Proceedings SPIE Human Vision and Electronic Imaging '01, 291-301.

#### **Chapters, monographs and tutorials:**

- [M3] Ferwerda, J.A. (2008) Psychophysics 101: how to run perception experiments in computer graphics, Course notes, Course , SIGGRAPH '08, 1-27.
- [M2] Ferwerda, J.A. (1997) Fundamentals of spatial vision. In V. Interrante (Ed.) Principles of Visual Perception and its Applications in Computer Graphics, Course 33, SIGGRAPH '97, 1-27.
- [M1] Ferwerda, J.A. (1991) Psychophysical methods. In B. Guenter (Ed.) Understanding Visual Perception and its Impact on Computer Graphics. Course 9 SIGGRAPH '91, 3:1-38.

**Technical reports:**

- [T5] \*VanGorp, P., \*Condon, T., Ferwerda, J.A., Bala, K., Schoukens, R., and Dutre, P. (2009) Visual equivalence in dynamic scenes. Department of Computer Science, Katholieke Universiteit Leuven, Tech. Rep. CW 557.
- [T4] \*Jensen, H.W., \*Premoze, S., Shirley, P., Thompson, W.B., Ferwerda, J.A., and \*Stark, M.M. (2000) Night rendering. Department of Computer Science, University of Utah, Tech. Rep. UUCS-00-016.
- [T3] Ferwerda, J.A. (1993) GV-STC digital media network. Program of Computer Graphics, Cornell University, PCG-93-4.
- [T2] Ferwerda, J.A. (1993) GV-STC video widgets. Program of Computer Graphics, Cornell University, PCG-93-2.
- [T1] Ferwerda, J.A., Rose, J.A., and Yoo, T.S. (1993) A widely distributed video teleconferencing environment. Program of Computer Graphics, Cornell University, PCG-93-1.

**Popular press:**

- [P14] National Association of Broadcasters, NABShow Blog (3/29/10) "The tangiBook."
- [P13] IS&T Reporter (Jan./Feb. 2010) " The tangiBook: A tangible display system for direct interaction with virtual surfaces."
- [P12] RIT Athenaeum (5/1/10) "The tangiBook."
- [P11] Research at RIT (5/1/10) "Bringing virtual surfaces into the real world."
- [P10] Cornell Daily Sun (3/8/06) "Duffield showcases BOOM technology."
- [P9] Nature (6/2/05) "Scientists with disabilities: access all areas."
- [P8] Cornell Engineering Magazine (Spring '05) "Coloring sound."
- [P7] Cornell Daily Sun (2/17/05) "CU student's software uses sound to aid blind."
- [P6] BBC News (2/14/05) "Blind student 'hears in colour.'"
- [P5] Cornell Chronicle (1/27/05) "Blind graduate student 'reads' maps using CU software that converts color into sound."
- [P4] Cornell Chronicle (2/5/04) "Thanks to CU project L-VIS is in the library."
- [P3] Cornell Chronicle (12/13/01) "Low-vision sufferers could be aided by CU computer graphics technology."
- [P2] Cornell Daily Sun (11/15/01) "Computer graphics research may lead to electronic eyes."
- [P1] Computer Graphics World (10/1/01) "Seeing with the minds eye."