Douglas Lanman

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Current Research Highlights

Near-Eye Light Field Displays
SIGGRAPH 2013 Emerging Technologies Exhibition and SIGGRAPH Asia 2013 Technical Papers Program
`http://youtu.be/uwCwtBxZM7g`
`http://youtu.be/deI1IzbveEQ`

Tensor Displays
SIGGRAPH 2012 Technical Papers Program and Emerging Technologies Exhibition
`http://youtu.be/4r6lY8S4A6E`

Education

08/05 – 08/10 **Brown University**, Providence, RI
Ph.D. in Electrical Engineering
Advisor: Gabriel Taubin
Dissertation: Mask-based Light Field Capture and Display

08/05 – 12/06 **Brown University**, Providence, RI
Master of Science in Electrical Engineering

09/98 – 06/02 **California Institute of Technology**, Pasadena, CA
Bachelor of Science with Honors in Applied Physics

Professional Experience

09/13 – present **NVIDIA Research**, Senior Research Scientist
Computer Graphics and New Experiences Groups, Santa Clara, CA

Researching computational display and imaging systems (spanning optical design to software rendering algorithms), with an emphasis on wearable displays for virtual and augmented reality. Responsible for leading small teams to take a concept from early simulations through public demonstrations.

06/12 – 09/13 **NVIDIA Research**, Research Scientist
Computer Graphics and New Experiences Groups, Santa Clara, CA

08/10 – 06/12 **MIT Media Lab**, Postdoctoral Associate
Camera Culture Research Group, Cambridge, MA

Developing computational imaging systems for human-computer interaction, including mask-based light field cameras, automultiscopic dual-stacked LCDs, and single-shot computed tomography (CT) scanners without any moving parts.

04/08 – 08/08 **MIT Media Lab**, Visiting Student
Camera Culture Research Group, Cambridge, MA

Professional Experience (continued)

Researched methods in computational photography, human-computer-interaction, and medical imaging. Published results at ICCP 2009, SIGGRAPH 2009, and SIGGRAPH Asia 2009.

07/07 – 03/08 **Mitsubishi Electric Research Laboratories (MERL)**, Research Intern
Mitsubishi Research Laboratory (MRL), Cambridge, MA

Worked in collaboration with Dr. Ramesh Raskar to develop methods for computational photography, 3D scanning, and active imaging. Published results at CAe 2008 and SIGGRAPH Asia 2008.

07/06 – 07/06 **INRIA Rhône-Alpes**, NSF-INRIA REUSSI Research Intern
Video and Mesh Processing for 3D Cinematography (VAMP), Montbonnot, France

Investigated 3D reconstruction using image silhouettes and camera arrays, including the "osculating circle" [Vaillant and Faugeras 1992] and the "osculating quadric" [Boyer and Berger 1997].

08/02 – 08/05 **MIT Lincoln Laboratory**, Assistant Technical Staff Member
Seeker and Interceptor Technology (Group 38), Lexington, MA

Supported the development of advanced image-processing technologies.

06/01 – 09/01 **Los Alamos National Laboratory**, Technical Intern
Space Instrumentation and System Engineering (NIS-4), Los Alamos, NM

Performed fundamental research regarding ad-hoc distributed sensor networks.

06/01 – 09/01 **California Institute of Technology**, Research Assistant
Prof. John C. Crocker (Assistant Professor of Applied Physics), Pasadena, CA

Implemented 3D tracking system for colloidal particles observed in microscope images.

06/00 – 09/00 **Intel Corporation**, Technical Intern
06/99 – 09/99 Intel Mask Operations (IMO), Santa Clara, CA

Realized a complete package for improving inspection capabilities on photolithographic equipment.

Teaching

09/11 – 12/11 **Computational Photography**, Instructor
MIT Media Lab – MAS.131/MAS.531 – Cambridge, MA

Instructed a graduate-level course covering computational cameras that exploit co-design of task-specific optics, illumination, sensors, and processing.

02/11 – 05/11 **Future of 3D Imaging: Capture, Display, and Interaction**, Instructor
MIT Media Lab – MAS.132/MAS.532 – Cambridge, MA

Presented a graduate seminar on computational imaging. Responsibilities included presenting weekly, two-hour lectures, designing assignments, organizing projects, and coordinating invited speakers.

08/12 **Computational Plenoptic Imaging**, Presenter
SIGGRAPH 2012 – Los Angeles, CA

Reviewed the state of the art in joint optical modulation and computational reconstruction for plenoptic acquisition, including applications to high dynamic range (HDR) and multispectral imaging, light field capture, and time-of-flight photography.

08/12 **Computational Displays**, Presenter
SIGGRAPH 2012 – Los Angeles, CA

Teaching (continued)

Provided the first comprehensive overview of computational displays for the graphics community, describing emerging displays that employ co-design of optical elements, efficient computational processing, and models for human perception.

08/11 **Build Your Own Glasses-Free 3D Display**, Presenter
SIGGRAPH 2011 – Vancouver, British Columbia

Presented an intermediate course on 3D displays addressing, through concrete examples, the mathematics, software, and practical details necessary to build homemade 3D displays using inexpensive commercial off-the-shelf parts. Topics covered included: OpenGL-based software for multi-view rendering and display, as well as GLSL fragment shaders for real-time antialiasing and interlacing operations.

07/10, 12/09 **Build Your Own 3D Display**, Presenter
SIGGRAPH 2010 – Los Angeles, CA and SIGGRAPH Asia 2010 – Seoul, South Korea

Presented an introductory course on 3D displays addressing, through concrete examples, the mathematics, software, and practical details necessary to build several homemade 3D displays using inexpensive commercial off-the-shelf parts. Topics covered included: LCD shutter glasses, lenticular and hexagonal lenslet arrays for integral imaging, and parallax barriers.

07/09, 12/09 **Build Your Own 3D Scanner: Optical Triangulation for Beginners**, Presenter
SIGGRAPH 2009 – New Orleans, LA and SIGGRAPH Asia 2009 – Yokohama, Japan

Presented an introductory course on 3D photography addressing, through concrete examples, the mathematics, software, and practical details necessary to build several homemade 3D scanners using inexpensive commercial off-the-shelf parts. Topics covered included: 3D triangulation, camera/projector calibration, and the general use of projector-camera systems in computer graphics and vision research.

09/08 – 12/08 **Linear System Analysis**, Teaching Assistant
Brown University – EN 157 – Providence, RI

Served as the main TA for an upper-level undergraduate course on signal and system analysis. Primary responsibilities included: (1) teaching a weekly recitation section covering applications, Matlab programming, and problem-solving techniques, (2) holding office hours, and (3) grading problem sets.

01/07 – 05/07 **3D Photography and Geometry Processing**, Teaching Assistant
Brown University – CS 220/EN 292-34 – Providence, RI

Served as the main TA for an advanced graduate course on 3D capture, modeling, and mesh processing. Primary responsibilities included: (1) creating an assignment in which the students implemented Bouguet's desktop 3D scanner using only a webcam, a halogen lamp, and a stick, (2) managing student projects, and (3) implementing a custom 3D scanner using structured light and a DLP projector.

Journal Articles

D. Lanman and D. Luebke. **Near-Eye Light Field Displays**. ACM Transactions on Graphics (SIGGRAPH Asia 2013), November 2013, Hong Kong

A. Maimone, G. Wetzstein, M. Hirsch, D. Lanman, R. Raskar, and H. Fuchs. **Focus 3D: Compressive Accommodation Display**. ACM Transactions on Graphics, September 2013

F-C. Huang, D. Lanman, B. Barsky, and R. Raskar. **Correcting for Optical Aberrations using Multilayer Displays**. ACM Transactions on Graphics (SIGGRAPH Asia 2012), November 2012, Singapore

G. Wetzstein, D. Lanman, M. Hirsch, W. Heidrich, and R. Raskar. **Compressive Light Field Displays**. IEEE Computer Graphics and Applications, September 2012

Journal Articles (continued)

G. Wetzstein, D. Lanman, M. Hirsch, and R. Raskar. **Tensor Displays: Compressive Light Field Synthesis using Multilayer Displays with Directional Backlighting**. ACM Transactions on Graphics (SIGGRAPH 2012), August 2012, Los Angeles

D. Lanman, G. Wetzstein, M. Hirsch, W. Heidrich, and R. Raskar. **Polarization Fields: Dynamic Light Field Display using Multi-Layer LCDs**. ACM Transactions on Graphics (SIGGRAPH Asia 2011), December 2011, Hong Kong

G. Wetzstein, I. Ihrke, D. Lanman, and W. Heidrich. **Computational Plenoptic Imaging**. Computer Graphics Forum, December 2011

G. Wetzstein, D. Lanman, W. Heidrich, and R. Raskar. **Layered 3D: Tomographic Image Synthesis for Attenuation-based Light Field and High Dynamic Range Displays**. ACM Transactions on Graphics (SIGGRAPH 2011), August 2011, Vancouver, British Columbia, Canada

D. Lanman, M. Hirsch, Y. Kim, and R. Raskar. **Content-Adaptive Parallax Barriers: Optimizing Dual-Layer 3D Displays using Low-Rank Light Field Factorization**. ACM Transactions on Graphics (Proc. of SIGGRAPH Asia 2010), December 2010, Seoul, South Korea

M. Hirsch, D. Lanman, H. Holtzman, and R. Raskar. **BiDi Screen: A Thin, Depth-Sensing LCD for 3D Interaction using Light Fields**. ACM Transactions on Graphics (Proc. of SIGGRAPH Asia 2009), December 2009, Yokohama, Japan

D. Lanman, R. Raskar, A. Agrawal, and G. Taubin. **Shield Fields: Modeling and Capturing 3D Occluders**. ACM Transactions on Graphics (Proc. of SIGGRAPH Asia 2008), December 2008, Singapore

D. Lanman, D. Crispell, and G. Taubin. **Surround Structured Lighting: 3-D Scanning with Orthographic Illumination**. Elsevier Journal for Computer Vision and Image Understanding (CVIU), Special Issue on New Advances in 3D Imaging and Modeling, Spring 2009

Books

D. Lanman and G. Taubin. **Introduction to 3D Photography**. CRC Press, 2014 (to appear)

Book Chapters

D. Crispell, D. Lanman, P. G. Sibley, Y. Zhao, and G. Taubin. **Shape from Depth Discontinuities**. Emerging Trends in Visual Computing, Lecture Notes in Computer Science Series, Springer-Verlag, Vol. 5416, 2009

R. Raskar, J. Tumblin, and D. Lanman. **Processing and Reconstruction**. Computational Photography: Mastering New Techniques for Lenses, Lighting, and Sensors, CRC Press, 2014

Conference Publications

D. Lanman, G. Wetzstain, M. Hirsch, and R. Raskar. **Depth of Field Analysis for Multilayer Automultiscopic Displays**. In Proc. of the OSA International Symposium on Display Holography (ISDH 2012), June 2012, Cambridge, MA

G. Wezstein, D. Lanman, M. Hirsch, and R. Raskar. **Real-Time Image Generation for Compressive Light Field Displays**. In Proc. of the OSA International Symposium on Display Holography (ISDH 2012), June 2012, Cambridge, MA

Conference Publications (continued)

M. Hirsch, D. Lanman, G. Wezstein, and R. Raskar. **Construction and Calibration of Optically Efficient LCD-based Multi-Layer Light Field Displays**. In Proc. of the IEEE International Workshop on Projector-Camera Systems (PROCAMS 2012), June 2012, Providence, RI

A. Arpa, G. Wetzstain, D. Lanman, and R. Raskar. **Single Lens Off-Chip Cellphone Microscopy**. IEEE International Workshop on Projector-Camera Systems (PROCAMS 2012), June 2012, Providence, RI

A. Arpa, G. Wetzstain, D. Lanman, and R. Raskar. **Computational Cellphone Microscopy**. In Proc. of the OSA International Symposium on Display Holography (ISDH 2012), June 2012, Cambridge, MA

D. Lanman, G. Wetzstein, M. Hirsch, W. Heidrich, and R. Raskar. **Beyond Parallax Barriers: Applying Formal Optimization Methods to Multi-Layer Automultiscopic Displays**. In Proc. of SPIE Stereoscopic Displays and Applications XXIII, January 2012, San Francisco, CA

G. Wetzstein, I. Ihrke, D. Lanman, and W. Heidrich. **State of the Art Report in Computational Plenoptic Imaging**. In Proc. of Eurographics 2011, April 2011, Llandudno, Wales, United Kingdom

J. Kim, D. Lanman, Y. Mukaigawa, and R. Raskar. **Descattering Transmission via Angular Filtering**. In Proc. of the European Conference on Computer Vision (ECCV 2010), September 2010, Crete, Greece

D. Lanman, D. C. Hauagge, and G. Taubin. **Shape from Depth Discontinuities under Orthographic Projection**. In Proc. of the IEEE International Workshop on 3D Digital Imaging and Modeling (3DIM 2009), October 2009, Kyoto, Japan

A. Mohan, D. Lanman, S. Hiura, and R. Raskar. **Image Destabilization: Programmable Defocus using Lens and Sensor Motion**. In Proc. of the IEEE International Conference on Computational Photography (ICCP 2009), April 2009, San Francisco, CA

D. Lanman, R. Raskar, and G. Taubin. **Modeling and Synthesis of Aperture Effects in Cameras**. In Proc. of the International Symposium on Computational Aesthetics in Graphics, Visualization, and Imaging (CAe 2008), June 2008, Lisbon, Portugal

D. Lanman, D. Crispell, and G. Taubin. **Surround Structured Lighting for Full Object Scanning**. In Proc. of 3D Digital Imaging and Modeling (3DIM 2007), August 2007, Montréal, Québec, Canada

D. Lanman, M. Wachs, G. Taubin, and F. Cukierman. **Reconstructing a 3D Line from a Single Catadioptric Image**. In Proc. of the Third International Symposium on 3D Data Processing, Visualization and Transmission (3DPVT 2006), June 2006, Chapel Hill, NC

D. Lanman, D. Crispell, M. Wachs, and G. Taubin. **Spherical Catadioptric Arrays: Construction, Multi-View Geometry, and Calibration**. In Proc. of the Third International Symposium on 3D Data Processing, Visualization and Transmission (3DPVT 2006), June 2006, Chapel Hill, NC

D. Crispell, D. Lanman, P. G. Sibley, Y. Zhao and G. Taubin. **Beyond Silhouettes: Surface Reconstruction using Multi-Flash Photography**. In Proc. of the Third International Symposium on 3D Data Processing, Visualization and Transmission (3DPVT 2006), June 2006, Chapel Hill, NC

D. Lanman, E. Hines and K. Schultz. **Physics-based Laser Radar Simulation Tool**. Eighth Annual Workshop on High Performance Embedded Computing, September 2004, Lexington, MA

J-S. Smokelin, D. Lanman, R. Dufour and K. Schultz. **Seeker Super-Resolution and CSO Detection**. In Proc. of the 2003 Military Sensing Symposium Specialty Group Meeting on Missile Defense Sensors, Environments and Algorithms, November 2003, Monterey, CA

Conference Publications (continued)

J-S. Smokelin, D. Tessier, D. Lanman and R. Dufour. **Advanced Algorithms for Endgame Aimpoint Selection**. In Proc. of the First Missile Defense Conference, March 2003, Washington, DC

D. Lanman and A. Jorgensen. **Distributed Sensor Networks with Collective Computation**. Technical Report LA-UR-01-4388, Los Alamos National Laboratory, August 2001

D. Lanman, B. Eng and R. Mayes. **Model-based Face Capture from Orthogonal Images**. Symposium 2001: Championing Scientific Careers, August 2001, Santa Fe, NM

Technical Reports

D. Lanman. **Distributed Sensor Networks with Collective Computation: A Preliminary Report on Real-time Optimization Algorithms**. Technical Report, Los Alamos National Laboratory, September 2001

D. Lanman and A. Jorgensen. **Distributed Sensor Networks with Collective Computation**. Technical Report LA-UR-01-4388, Los Alamos National Laboratory, August 2001

Refereed Posters

A. Arpa, G. Wetzstein, D. Lanman, and R. Raskar. **Computational Cellphone Microscopy**. In Proc. of the 39th International Conference and Exhibition on Computer Graphics and Interactive Techniques (SIGGRAPH 2012), August 2012, Los Angeles, CA

M. Henninger, R. Horstmeyer, A. Zorzos, J. Scholvin, D. Lanman, C. Fonstad, R. Raskar, and E. Boyden. **A Novel Concept for an Implantable Probe for Deep-Brain Optical Measurement**. In Society for Neuroscience Annual Meeting, November 2011,Washington, DC

D. Lanman, M. Hirsch, Y. Kim, S. Jakubczak, and R. Raskar. **Content-Adaptive Parallax Barriers for Automultiscopic 3D Display**. In Proc. of the 37^{th} International Conference and Exhibition on Computer Graphics and Interactive Techniques (SIGGRAPH 2010), July 2010, Los Angeles, CA

J. Kim, D. Lanman, Y. Mukaigawa, and R. Raskar. **Descattering Transmission via Angular Filtering**. In Proc. of the IEEE International Conference on Computational Photography (ICCP 2010), March 2010, Cambridge, MA

M. Hirsch, D. Lanman, R. Raskar, and H. Holtzman. **BiDi Screen: Depth and Lighting Aware Interaction and Display**. In Proc. of the 36^{th} International Conference and Exhibition on Computer Graphics and Interactive Techniques (SIGGRAPH 2009), August 2009, New Orleans, LA

S. B. Oh, R. Raskar, D. Lanman, and G. Barbastathis. **Mask-based Vision Systems by Use of the Wigner Distribution Function and Ambiguity Function**. In Proc. of Advances in Imaging: OSA Optics & Photonics Congress and Tabletop Exhibit, Topical Meeting on Digital Holography and Three-Dimensional Imaging (DH), April 2009, Vancouver, BC, Canada

T. Aoki, D. Miaw, D. Lanman, R. Raskar, and M. Sato. **High-Speed Hand Tracking for Gesture Recognition**. In Proc. of the 1^{st} ACM SIGGRAPH Conference and Exhibition in Asia (SIGGRAPH Asia 2008), December 2008, Singapore

D. Lanman, P. G. Sibley, D. Crispell, Y. Zhao and G. Taubin. **Multi-Flash 3D Photography: Capturing Shape and Appearance**. In Proc. of the 33^{rd} International Conference and Exhibition on Computer Graphics and Interactive Techniques (SIGGRAPH 2006), August 2006, Boston, MA

Refereed Posters (continued)

Mika L. M. MacInnis, Marcelo S. Caetano, Douglas Lanman, and Russell M. Church. **Does adjunctive behavior play in a role timing?**. In Proc. of the 31st Annual Meeting of the Society for the Quantitative Analyses of Behavior (SQAB 2008), May 2008, Chicago, IL

D. Lanman, E. Hines and K. Schultz. **Physics-based Laser Radar Simulation Tool**. In Proc. of the 2004 Military Sensing Symposium Specialty Group Meeting on Missile Defense Sensors, Environments and Algorithms, October 2004, Monterey, CA

Invited Talks

D. Lanman. **Near-Eye Light Field Displays**. At Stanford University, SCIEN Seminar Series, October, 2013

D. Lanman. **Near-Eye Light Field Displays**. At Silicon Valley Virtual Reality (SVVR) Meetup, October, 2013

D. Lanman. **Near-Eye Light Field Displays**. Silicon Valley SIGGRAPH Chapter, October, 2013

D. Lanman. **Near-Eye Light Field Displays**. Bay Area Society for Information Display (BA-SID), October, 2013

D. Lanman. **Near-Eye Light Field Displays**. At University of California, Berkeley, Computer Graphics Group, September, 2013

D. Lanman. **Computational Displays: An Introduction and Do-It-Yourself Guide to Fabrication**. At University of California, Berkeley Department of Electrical Engineering and Computer Sciences, November 2012

D. Lanman, G. Wetzstein, M. Hirsch, and R. Raskar. **An Overview of Automultiscopic Display Research at the MIT Media Lab**. At 3M Optical Systems Division, January 2012, St. Paul, MN

D. Lanman. **Computational Displays**. At Stanford Computer Graphics Group, January 2012, Stanford, CA

D. Lanman. **Computational Imaging and Display Systems**. At NVIDIA Research, January 2012

D. Lanman. **Beyond Parallax Barriers**. At USC Institute for Creative Technology (ICT), August 2011

D. Lanman. **Compressive Displays: Applying Formal Optimization Methods to Multi-Layered, Glasses-free Displays**. At Society of Motion Picture & Television Engineers (SMPTE) 2nd International Conference on Stereoscopic 3D for Media and Entertainment, June 2011, New York, NY

D. Lanman. **Hacking Bits and Photons: Behind the Scenes at the MIT Media Lab**. The Photographic Universe, Parsons The New School for Design, March 2011, New York, NY

D. Lanman, R. Horstmeyer, and Erick Passos. **Camera Culture**. At the MIT Museum, STS.096 Intersections: Blindness, Robotics, Art, and Culture, February 2011, Cambridge, MA

D. Lanman and M. Hirsch. **Camera Culture**. At Samsung Advanced Institute of Technology (SAIT), December 2010, Yongin, South Korea

D. Lanman. **Mask-based Light Field Capture and Display**. At the 24th Annual Conference on Neural Information Processing Systems (NIPS 2010), Machine Learning Meets Computational Photography, December 2010, Vancouver, British Columbia, Canada

D. Lanman. **Content-Adaptive Parallax Barriers for Automultiscopic 3D Display.** At the University of British Columbia (UBC) Department of Computer Science, December 2010, Vancouver, British Columbia, Canada

Invited Talks (continued)

D. Lanman, M. Hirsch, Y. Kim, S. Jakubczak, and R. Raskar. **Content-Adaptive Parallax Barriers for Automultiscopic 3D Display**. At the 37^{th} International Conference and Exhibition on Computer Graphics and Interactive Techniques (SIGGRAPH 2010), July 2010, Los Angeles, CA

D. Lanman. **Do-It-Yourself Graphics: Hands-on Projects in Computational Photography, 3D Scanning, and Automultiscopic Display**. At HP Labs, April 2010, Palo Alto, CA

D. Lanman. **Do-It-Yourself Graphics: Hands-on Projects in Computational Photography, 3D Scanning, and Automultiscopic Display**. At the MIT Computer Science and Artificial Intelligence Laboratory (CSAIL), April 2010, Cambridge, MA

D. Lanman. **Light Fields Tutorial**. At the IEEE International Conference on Computational Photography (ICCP), March 2010, Cambridge, MA

D. Lanman. **3D Scanning Tutorial: Historical, Do-It-Yourself, and State-of-the-Art Methods**. At Mitsubishi Electric Research Laboratories (MERL), September 2009, Cambridge, MA

M. Hirsch, D. Lanman, R. Raskar, and H. Holtzman. **BiDi Screen: Depth and Lighting Aware Interaction and Display**. In Proc. of the 36^{th} International Conference and Exhibition on Computer Graphics and Interactive Techniques (SIGGRAPH 2009), August 2009, New Orleans, LA

D. Lanman. **New Directions for Active Illumination in 3D Photography**. At the Multi-View Image and Geometry Processing for 3D Cinematography Workshop, Banff International Research Station, July 2008

D. Lanman, R. Ronfard, and G. Taubin. **Silhouette Interpolation Using Trinocular Camera Arrays**. At the VAMP Associate Team Student Seminar on Video and Mesh Processing for 3D Cinematography, INRIA Rhne-Alpes, July 2006, Montbonnot, France

D. Lanman. **Enhanced 3D Acquisition: Multi-Flash Photography and Silhouette Consistency**. At the REUSSI Seminar, INRIA Rocquencourt, July 2006, Rocquencourt, France

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Awards and Recognition

2005-2008 ASEE National Defense Science and Engineering Graduate (NDSEG) Fellowship

2001-2002 California Institute of Technology Upper Class Merit Award (Carnation Award)

2000-2001 ARCS (Achievement Rewards for College Scientists) Scholar

1999-2000 ARCS (Achievement Rewards for College Scientists) Scholar

Best Presentation at NVIDIA nTECH 2013 (company-wide engineering conference)

Computer Vision and Pattern Recognition (CVPR) 2008 Outstanding Reviewer Award

Second Place in ACM SIGGRAPH 2009 Student Research Competition (Graduate Category) for "BiDi Screen: Depth and Lighting Aware Interaction and Display" by M. Hirsch (presenter), D. Lanman, R. Raskar, and H. Holtzman, August 2009

Semifinalist in ACM SIGGRAPH 2010 Student Research Competition (Graduate Category) for "Content-Adaptive Parallax Barriers for Automultiscopic 3D Display" by D. Lanman (presenter), M. Hirsch, Y. Kim, S. Jakubczak, and R. Raskar, July 2010

Awards and Recognition (continued)

Overall Best Numerical Analysis Paper for "Model-based Face Capture from Orthogonal Images", Symposium 2001: Championing Scientific Careers, hosted by Los Alamos National Laboratory, Santa Fe, NM, August 2001

Demonstrations

D. Lanman and D. Luebke. **Near-Eye Light Field Displays**. In ACM SIGGRAPH Conference and Exhibition (SIGGRAPH 2013: Emerging Technologies), July 2013, Anaheim, CA

M. Hirsch, D. Lanman, G. Wetzstein, and R. Raskar. **Tensor Displays: Compressive Light Field Synthesis using Multilayer Displays with Directional Backlighting**. In ACM SIGGRAPH Conference and Exhibition (SIGGRAPH 2012: Emerging Technologies), August 2012, Los Angeles, CA

M. Hirsch, D. Lanman, R. Raskar, and H. Holtzman. **BiDi Screen: A Thin, Depth-Sensing LCD for 3D Interaction using Light Fields**. In Proc. of the 2nd ACM SIGGRAPH Conference and Exhibition in Asia (SIGGRAPH Asia 2009: Emerging Technologies), December 2009, Yokohama, Japan

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Skills

Scientific Computing: Matlab, Mathematica, LaTeX

Programming: C/C++, OpenGL, GLSL, OpenCV

Professional Service and Membership

Member of SIGGRAPH Asia 2013 Technical Papers Committee
Member of SIGGRAPH Asia 2012 Technical Papers Committee

Co-chair for Workshop on Computational Cameras and Displays, co-located with IEEE CVPR 2012
Publications Coordinator for the 2010 IEEE International Conference on Computational Photography (ICCP)

Founded the Computer Vision Reading Group and Seminar Series (CVRG) at Brown University

ACM and IEEE Student Member since 2006
OSA Member since 2011

Reviewer for computer graphics journals and conferences, including: ACM SIGGRAPH, ACM SIGGRAPH Asia, Eurographics, Graphics Interface, IEEE VR, SIBGRAPI, IEEE Transactions on Visualization and Computer Graphics (TVCG), IEEE Computer Graphics and Applications (CG&A), Computer Graphics Forum (CGF)

Reviewer for computer vision journals and conferences, including: IEEE CVPR, IEEE ICCV, ECCV, IEEE ICCP, IEEE ICIP, IAPR ICPR, IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), IEEE Transactions on Image Processing (TIP), Elsevier Computer Vision and Imaging Understanding (CVIU), Elsevier Pattern Recognition Letters (PRL), IEEE Transactions on Circuits and Systems for Video Technology (TCSVT), IPSJ Transactions on Computer Vision and Applications (CVA)

Reviewer for optics journals and conferences, including: SPIE Optical Engineering (OE), OSA Applied Optics (AO), SPIE Journal of Electronic Imaging (JEI)