

Lavanya Sharan

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Education

- Massachusetts Institute of Technology** September 2009
Ph.D., Electrical Engineering and Computer Science
Thesis: The perception of material qualities in real-world images
Advisor: *Edward H. Adelson*
- Massachusetts Institute of Technology** September 2005
S. M., Electrical Engineering and Computer Science
Thesis: Image statistics and the perception of surface reflectance
Advisor: *Edward H. Adelson*
- Indian Institute of Technology Delhi** August 2003
B. Tech, Electrical Engineering
GPA 9.62/10.00, awarded *Institute Silver Medal* for academic excellence.

Work Experience

- Netflix, Inc.** Jan 2016 – present
Senior Data Scientist, Streaming Science & Algorithms Group
- Insight Data Science** Sep 2015 – Dec 2015
Data Science Fellow
- Massachusetts Institute of Technology** May 2014 – Dec 2015
Research Scientist, Dept. of Brain & Cognitive Sciences
Postdoctoral Associate, Dept. of Brain & Cognitive Sciences
Advisor: *Ruth Rosenholtz*
October 2012 – April 2014
- Disney Research, Pittsburgh** September 2009 – September 2012
Postdoctoral Associate
Advisor: *Jessica K. Hodgins*
- Carnegie Mellon University** Spring 2011
Instructor, 16-899A Visual Perception for Computer Vision & Graphics
Co-Instructor: *Alexei A. Efros*
- Massachusetts Institute of Technology** September 2003 – August 2009
Research Assistant, Dept. of Electrical Engg. & Computer Science
Teaching Assistant, 6.02 Digital Communication Systems
Teaching Assistant, 6.002 Electronic Circuits
Spring 2009
Fall 2004
- NTT Communication Sciences Laboratory**, Atsugi, Japan March 2006
Visiting Researcher, Human and Information Science Laboratory

Research Interests

Human visual perception, computer vision, computational neuroscience, computational perception

Refereed Publications

1. Minghui Tan, Jean-Francois Lalonde, Lavanya Sharan, Holly Rushmeier, and Carol O'Sullivan
The perception of lighting inconsistencies in composite outdoor scenes
ACM Transactions on Applied Perception, 12(4), Article 18, 2015.
2. Lavanya Sharan, Ruth Rosenholtz, and Edward H. Adelson
Accuracy and speed of material categorization in real-world images
Journal of Vision, 14(9), Article 12, 2014.
3. Lavanya Sharan, Zhe Han Neo, Kenny Mitchell, and Jessica K. Hodgins
Simulated motion blur does not improve player experience in racing game
Proceedings of ACM Conference on Motion in Games, pp. 149-154, 2013.
4. Lavanya Sharan, Ce Liu, Ruth Rosenholtz, and Edward H. Adelson
Recognizing materials using perceptually inspired features
International Journal of Computer Vision, 108(3):348-371, 2013. (Citations: 19)
5. Elizabeth Carter*, Lavanya Sharan*, Laura C. Trutoiu, Iain Matthews, and Jessica K. Hodgins
Perceptually motivated guidelines for voice synchronization in film
ACM Transactions on Applied Perception, 7(4), Article 23, 2010. (* equal contribution)
6. Ce Liu, Lavanya Sharan, Edward H. Adelson, and Ruth Rosenholtz
Exploring features in a Bayesian framework for material recognition
Proc. IEEE Conf. on Computer Vision and Pattern Recognition, pp. 239-246, 2010. (Citations: 68)
7. Lavanya Sharan, Yuanzhen Li, Isamu Motoyoshi, Shinya Nishida, and Edward H. Adelson
Image statistics for surface reflectance perception
Journal of the Optical Society of America A, 25(4):846-865, 2008. (Citations: 60)
8. Isamu Motoyoshi, Shinya Nishida, Lavanya Sharan, and Edward H. Adelson
Image statistics and the perception of surface qualities
Nature, 447:206-209, 2007.
Cited 257 times, covered by CNET News, Phys.org, and MIT Homepage Spotlight.
9. Yuanzhen Li, Lavanya Sharan, and Edward H. Adelson
Compressing and companding high dynamic range images with subband architectures
ACM Transactions on Graphics (SIGGRAPH), 24(3):836-844, 2005. (Citations: 183)

Patent

Jessica K. Hodgins, Edilson de Aguiar, Lavanya Sharan, Moshe Mahler, Ariel Shamir
Perceptually guided capture and stylization of 3D human figures
US Patent No. 20130226528 A1, issued August 2013.
Received **Disney Inventor Award** for successful filing of this patent.

Grant Writing

1. Co-Author (Postdoctoral Role), *Google Research Award*, Rethinking augmented reality in terms of peripheral vision, PI: Ruth Rosenholtz, August 2013.
2. Co-Author (Postdoctoral Role), *NIH/NEI R01 EY019262: Mechanisms for the Perception of Surfaces and Materials & NIH/NEI R21 EY019741: Rapid Material Perception*, PI: Edward H. Adelson, Award amount: \$573,255, September 2009.

Press Coverage

- Visual.ly Blog*: How do our brains process infographics? November 19, 2013.
Fast Company: The science of a great subway map. October 29, 2013.
MIT News: Taking a new look at subway map design. October 4, 2013.
MIT CSAIL News: Taking a new look at subway map design. September 24, 2013.
MIT Alumni Profile: Lavanya Sharan SM'05, September 27, 2009.
Photonics.com: Linking perceived surface properties to image statistics. June 1, 2007.
MIT Homepage: Grainy or glossy? MIT researchers show how the brain tells texture. April 24, 2007.
MedGadget: How the brain analyzes surface appearance and implications for robotics. April 23, 2007.
CNET News: MIT discovery may improve robotic eyes. April 20, 2007.
Nature.com Blog: How the brain tells rough from smooth. April 20, 2007.
Phys.org: Study shows how brain interprets surfaces. April 20, 2007.
MIT News: MIT shows how brain tells glossy from grainy surfaces. April 19, 2007.

Conference Presentations

1. Lavanya Sharan and Ruth Rosenholtz
Peripheral discriminability is correlated with change detection performance
Poster presentation at *Vision Sciences Society Meeting*, St. Petersburg, FL, 2014.
2. Lavanya Sharan, Zhe Han Neo, Kenny Mitchell, and Jessica K. Hodgins
Simulated motion blur does not improve player experience in racing game
Oral presentation at *ACM Conference on Motion in Games*, Dublin, Ireland, 2013.
Winner of Best Oral Presentation Award
3. Lavanya Sharan and Ruth Rosenholtz
Visual conspicuity in real-world scenes is correlated with fixations
Oral presentation at *Vision Sciences Society Meeting*, Naples, FL, 2013.
4. Lavanya Sharan, Leonid Sigal, and Jessica K. Hodgins
Recognizing activities and poses: lessons from computer vision
Poster presentation at *Vision Sciences Society Meeting*, Naples, FL, 2012.
5. Lavanya Sharan, Matthew Kaemmerer, Moshe Mahler, Kwang Won Sok, and Jessica K. Hodgins
Animated character appearance does not affect judgments of motion trajectory
Poster presented at *Vision Sciences Society Meeting*, Naples, FL, 2011.
6. Elizabeth J. Carter, Lavanya Sharan, Laura C. Trutoiu, Iain Matthews, and Jessica K. Hodgins
Perceptually motivated guidelines for voice synchronization in film
Joint oral presentation at *ACM Symposium on Applied Perception*, Los Angeles, CA, 2010.

7. Ce Liu, Lavanya Sharan, Ruth Rosenholtz, and Edward H. Adelson
Exploring features in a Bayesian framework for material recognition
Poster presentation at *IEEE Conf. on Computer Vision & Pattern Recognition*, San Francisco, CA, 2010.
8. Lavanya Sharan, Ce Liu, Ruth Rosenholtz, and Edward H. Adelson
A computational model for material recognition
Poster presentation at *Vision Sciences Society Meeting*, Naples, FL, 2010.
9. Lavanya Sharan, Ruth Rosenholtz, and Edward H. Adelson
Rapid perception of material properties in natural images
Poster presentation at *International Conference on Cognitive and Neural Systems*, Boston, MA, 2009.
10. Lavanya Sharan, Ruth Rosenholtz, and Edward H. Adelson
Material Perception: What can you see in a brief glance?
Oral presentation at *Vision Sciences Society Meeting*, Naples, FL, 2009. **(Citations: 40)**
11. Lavanya Sharan, Ruth Rosenholtz, and Edward H. Adelson
Rapid visual perception of material properties
Poster presented at *Object Perception Attention and Memory Meeting*, Chicago, IL, 2008.
12. Lavanya Sharan, Ruth Rosenholtz, and Edward H. Adelson
Eye movements for material perception
Oral presentation at *Vision Sciences Society Meeting*, Naples, FL, 2008.
13. Lavanya Sharan, Edward H. Adelson, Isamu Motoyoshi, and Shinya Nishida
Non-oriented filters are better than oriented filters for skewness detection
Oral presentation at *European Conference on Visual Perception*, Arezzo, Italy, 2007.
14. Lavanya Sharan, Edward H. Adelson, Isamu Motoyoshi, and Shinya Nishida
Histogram skewness is useful and easily computed
Poster presentation at *Vision Sciences Society Meeting*, Sarasota, FL, 2007.
15. Lavanya Sharan, Yuanzhen Li, and Edward H. Adelson
Image statistics for surface reflectance estimation
Oral presentation at *Vision Sciences Society Meeting*, Sarasota, FL, 2006.
16. Lavanya Sharan, Yuanzhen Li, and Edward H. Adelson
Image statistics and reflectance estimation
Oral presentation at *Vision Sciences Society Meeting*, Sarasota, FL, 2005.
17. Yuanzhen Li, Lavanya Sharan, and Edward H. Adelson
Perceptually based range compression for high dynamic range images
Poster presentation at *Vision Sciences Society Meeting*, Sarasota, FL, 2005.

Professional Service

Journal reviews

Attention, Perception & Psychophysics, IEEE Transactions on Pattern Analysis & Machine Intelligence, International Journal of Computer Vision, Journal of Vision, Neurocomputing, Vision Research

Conference reviews

ACM Conference on Computer Graphics and Interactive Technologies (SIGGRAPH) 2011, 2012; European Conference on Computer Vision (ECCV) 2010; Haptics Symposium, 2013; IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2010, 2013, 2014, 2015; IEEE International Conference on Computer Vision (ICCV) 2013

Program Committee

ACM Symposium on Applied Perception 2012, ACM SIGGRAPH Conference on Motion in Games 2014, 2015

Honors & Awards

Awarded **Outstanding Reviewer** at the IEEE Conference on Computer Vision and Pattern Recognition (CVPR), Boston, MA, June 2015.

Awarded **Best Oral Presentation** at the ACM SIGGRAPH Conference on Motion in Games, Dublin, Ireland, November 2013.

Received **Disney Inventor Award** for successful filing of patent, *Perceptually Guided Capture and Stylization of 3D Human Figures*, February 2012.

Selected to attend the *Computational Neuroscience: Vision* summer school at Cold Spring Harbor Laboratories, Cold Spring Harbor, NY, June 2008.

Awarded the **Institute Silver Medal** for graduating top of the Electrical Engineering class at the Indian Institute of Technology Delhi, August 2003.

Mentoring Experience

Supervisor, undergraduate research assistant, <i>Emily Park</i> (Wellesley)	2014-2015
Supervisor, MIT undergraduate research assistant, <i>Keith Galli</i>	Spring 2014
Supervisor, CMU graduate student research assistant, <i>Zhe Han Neo</i>	2011-2012
Co-Supervisor, Lab Associates at Disney Research, Pittsburgh: <i>Matthew Kaemmerer, Spencer R. Diaz, and Ishita Kapur</i>	Spring & Summer 2010
Supervisor, MIT undergraduate research assistants: <i>William Yee, Aseema Mohanty, and Biyeun Buczyk</i>	2008
Supervisor, MIT undergraduate research assistant, <i>Cong Luo</i>	Summer 2006

References

1. Edward H. Adelson
John and Dorothy Wilson Professor of Vision Science
Department of Brain and Cognitive Sciences
Computer Science and Artificial Intelligence Laboratory

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2. Jessica K. Hodgins
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Director, Disney Research Laboratories
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3. Ruth Rosenholtz
Principal Research Scientist
Department of Brain and Cognitive Sciences
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Relationship: Postdoctoral Supervisor

4. Alexei A. Efros
Associate Professor
Computer Science Division
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University of California Berkeley
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Berkeley, CA 94720
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Email: efros@eecs.berkeley.edu
Relationship: Co-Instructor

Immigration Status

Permanent resident