

# VITAE

## MICHAEL S. LANDY

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### **EDUCATION**

- 1981 University of Michigan, Ph.D. Computer and Communication Sciences
- 1976 University of Michigan, M.S. Computer and Communication Sciences
- 1974 Columbia University, B.S. Electrical Engineering and Computer Sci.

### **RESEARCH AND PROFESSIONAL EXPERIENCE**

- 2009– New York University, Coordinator, Program in Cognition and Perception
- 2002–2008 New York University, Coordinator, Program in Cognition and Perception
- 2000 New York University, Coordinator, Program in Cognition and Perception
- 1999–2002 University of California at Berkeley, Visiting Scholar
- 1998–1999 New York University, Coordinator, Program in Cognition and Perception
- 1998 Institut d'Ingénierie de la Vision, Université Jean Monnet de Saint-Étienne, Visiting Researcher
- 1997– New York University, Professor of Psychology and Neural Science
- 1996 Acting Coordinator, Experimental Psychology Program
- 1992–1993 NASA Ames Research Center, NRC Senior Associate
- 1990–1997 New York University, Associate Professor of Psychology and Neural Science
- 1988– New York University, Member, Center for Neural Science
- 1984–1990 New York University, Assistant Professor of Psychology
- 1983–1984 New York University, Technical consultant, part-time
- 1981–1984 New York University, Associate Research Scientist, part-time

### **AWARDS AND MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS**

- Rackham Fellowship for Graduate Studies 1974-1975
- Elected to Tau Beta Pi, an undergraduate Engineering society

Member, Vision Sciences Society

## **RESEARCH INTERESTS**

Visual Perception and Psychophysics  
Visuo-motor control and movement planning  
Computational and ideal observer models

## **EDITORIAL WORK**

Editor for Vision (1997-2003): Journal of the Optical Society of America A  
Senior Editor (2007-): Vision Research  
Associate Editor: Spatial Vision  
Editor (2009-): Journal of Vision  
Member, Editorial Board: Visual Neuroscience  
Ad hoc reviewing: Behavior Research Methods, Instruments & Computers, Cognition, Experimental Brain Research, IEEE Transactions on Pattern Analysis & Machine Intelligence, Journal of Experimental Psychology: Human Perception and Performance, Journal of Mathematical Psychology, Journal of Neuroscience, Journal of Optical Society of America A, Journal of Physiology, Journal of Vision, Journal of Visual Communication and Image Representation, MIT Press, Network: Computation in Neural Systems, Neural Computation, Neural Networks, Optical Engineering, Oxford University Press, Pattern Recognition, Perception, Perceptual & Motor Skills, Perception & Psychophysics, Proceedings of the Royal Society London, Psychological Review, Spatial Vision, Trends in Cognitive Sciences, Trends in Neuroscience, Visual Neuroscience, Vision Research  
NIH VISB/CVP Study Section – Ad hoc member: June 1999, October 2002, February 2003, Member: October 2003 – present  
Grant reviewing: Air Force Office of Scientific Research, Human Frontier Science Program, Israel Science Foundation, National Institute of Health, National Science Foundation, NYU Research Challenge Fund

## **GRANT ACTIVITY**

NIH-NEI EY16165, “Visual Perception and Coding of Texture”, Principal Investigator (co-PIs: D. J. Heeger, E. P. Simoncelli), 08/09 direct costs (modular): \$250,000, Period: 9/1/05-6/30/09.

NIH-NEI EY08266, “Perception and Action: Ideal Observers and Actors”, Principal Investigator, 08/09 direct costs (modular): \$225,000, Period: 8/1/89-6/30/11, currently in 2nd year of a 3-year renewal.

Human Frontiers Science Program, “The representations underlying perceptual judgment and action”, total direct costs to NYU: \$199,584, Period: 9/1/99-8/30/02 (PI: Pascal Mamassian, Univ. of Glasgow; co-

PIs: Michael S. Landy & Laurence T. Maloney, NYU, Takao Sato, Univ. of Tokyo).

Bourse d'Accueil de la Région Rhône-Alpes, "Codage d'images et apparence des textures", summer 1998.

NIMH, "Segregation of First-Order Noise Textures", Sponsor for predoctoral fellowship for John Econopouly, Period: 10/1/92-9/30/94.

NRC, Resident Research Associateship at NASA Ames Research Center, "Fusion of Multiple Cues to Image Location of Visual Features", Period: 6/1/92-5/30/93.

NIH-NEI, "Integration of Three-Dimensional Shape Cues", Sponsor for postdoctoral fellowship for Elizabeth Johnston, Period: 3/1/91-2/28/93.

NSF, "Software Development for Neural and Behavioral Research", Co-PI (PI: M. J. Hawken), Total 2-year direct costs: \$161,883, Period: 9/15/90-9/14/92.

NIH, Small Instrumentation Program, "Fusion and Calibration of Multiple Depth Cues", Total 1-year direct costs: \$13,000, Period: 1991.

NYU 1989 Research Challenge Fund (NIH Biomedical Research Support Grant), "Software for Modeling Visual Neural Transformations", Principal Investigator, \$11,500.

ONR, "Representation of Images", Co-PI with R. A. Hummel (Courant Institute), Total 4-year budget: \$1,117,322. Period: 2/1/85-1/31/89.

NSF-IST, "Models of the Processing of Visual Information", Principal Investigator, Total 2-year budget: \$120,065. Period: 2/1/85-1/31/87.

NYU 1986 Whitehead Fellowship for Biological Sciences, Principal Investigator, \$2,000.

NYU 1984 Scientific Equipment Fund, "Image Processing Instrumentation for Experimental Psychology", Co-PI with S. M. Feldman and J. A. Movshon, \$64,931.

## **ADVISEMENT**

Ph.D. Adviser: Lev Manovich (MS, 8/88), Sophie Wuerger (PhD, 3/91, currently Lecturer at the University of Liverpool), Mark Young (PhD, 12/95, currently at Google in San Francisco, CA), John Econopouly (PhD, 12/95, currently a consultant/programmer), Sabina Wolfson (PhD, 12/97, currently a research scientist at Columbia University), Ipek Oruç (PhD, 8/03, currently a postdoctoral researcher at the University of British Columbia), Erica Alliston (PhD, 4/04), Jinrong Li (MS, 5/93, currently a staff scientist with SUNY in Albany), Yun-Xian Ho (PhD, 4/08, currently working at Vanderbilt University Medical

Center), Hadley Tassinari (MS, 1/09, currently a researcher at SUNY Downstate Medical Center), John Ackermann, Zachary Westrick  
Co-adviser: David Parish (PhD, 10/87), Ching-Fan Sheu (PhD, 2/89, currently Professor at National Chung Cheng University, Taiwan), Miki Fukui (joint with David Poeppel)  
Postdoctoral adviser: Mark Perkins (currently at AT&T Bell Laboratories), Koichi Oda (currently Chair of Psychology, Tokyo Women's Christian University), Elizabeth Johnston (currently Associate Professor at Sarah Lawrence College), Pascal Mamassian (currently CNRS Researcher, Université de Paris 5), Ivan Lamouret, Paul Warren (currently Lecturer in Cognition and Cognitive Neuroscience, Univ. of Manchester), Uta Wolfe (currently Assistant Professor at Hobart and William Smith Colleges), Haruyuki Kojima (currently Associate Professor at Kanazawa University), Julia Trommershäuser (currently Research Scientist, NYU), Jonas Larsson (currently faculty at Royal Holloway, University of London), Todd Hudson, Mikhail Katkov, Ahna Girshick, Luke Hallum, Rama Natarajan (joint with Eero Simoncelli), Toni Saarela  
Masters: Tianhao Cai (MS in Biomedical Engineering, Polytechnic Institute of NYU, 5/11)  
Undergraduate Honors student adviser: Deepali Gupta, Allison Greene, Angel Patel, Megan Chambard

### **COMMITTEE SERVICE**

Program in Cognition and Perception committees: Graduate Admissions, Vax Users, NIMH Training Grant, Cognitive Science Committee, Administration and Oversight - Experimental Program Computer Facilities  
Psychology Department committees: Computer/Shop (joint Psych/CNS), Equipment, Honor's, Personnel, Advisory, Perception Search, Quantitative Search, Cognitive Neuroscience Search, Ad Hoc Service Personnel Hiring Committee, Developmental Search  
CNS committees: Curriculum, Sloan Search  
Faculty of Arts & Sciences committees: ACF Planning, Advisory Committee – Peace and Global Policy Studies Undergraduate Minor, Committee on Freshman Advisement, Dean's Users Committee, Science Council, Technology Transfer Fund Committee, Psychology/CNS/Physics Shop Consolidation Committee, Graduate Curriculum Committee, Graduate Financial Aid Committee, Promotion and Tenure Committee (Chair, 2006-2008), MRI Committee, Science Faculty Advisory Group on Technology (Chair, 2007-2008)  
University committees: Conflict of Interest, The University Committee on Activities Involving Human Subjects  
External: Promotion and tenure reviews, Optical Society of America Edgar C. Tillyer Award Committee

PhD Committees: Erich Weichselgartner, Charles Chubb, Karl Gegenfurtner, Michael Villano, Maria Kambouri, Ferenc Mechler, Hai-Jung Wu, Jong-Ho Nam (Rutgers Univ.), Aaron Hoffman, Sam Ling, Sarah Shuwairi, Stuart Fuller, Barbara Montagna, James Hedges, Yasmine El-Shamayleh, Rama Natarajan (Univ. of Toronto), Leila Montaser-Kouhsari, Katinka van der Kooij (Univ. of Utrecht), Chris Henry, John Franchak, Katrin Herrmann

Dissertation Reader: Elaine Eisenman, Janet Lincoln, Lisa Richland, Thomas Kelly, Dario Ringach, Mehrdad Jazayeri, Shaziela Ishak, Simone Gill, Jacqueline Fulvio, Eric DeWitt

Undergraduate advisement: Psychology majors, FAS freshman, FAS Pre-Health Interviews

### ***TEACHING EXPERIENCE***

Undergraduate: Perception, Psychological Statistics, Laboratory in Perception, Advanced Perception, Computational Neuroscience, Honor's Seminar, Mathematical Models and Computer Techniques in Psychology.

Graduate: Intermediate Psychological Statistics, Sensation & Perception, Human Factors of Computer Systems, Mathematical Psychology, Readings in Computer Vision.

Doctoral Seminars: Area Seminar in Sensation and Perception, Binocular Stereopsis, Computer and Mathematical Models in Visual Perception, Connectionist Models of Learning and Memory, Estimation of 3-Dimensional Shape, Reaching and Grasping, The Sensor Fusion Problem, Space Perception, 2nd-Order Vision.

## Publications and Talks

Michael S. Landy

### **MANUSCRIPTS AND REFEREED JOURNAL PUBLICATIONS**

Manuscripts Hudson, T. E. & Landy, M. S. (2012). Motor learning reveals the existence of multiple codes for movement planning. Under review.

Hudson, T. E. & Landy, M. S. (2012). Measuring adaptation with a sinusoidal perturbation function. Under review.

Landy, M. S., Trommershäuser, J. & Daw, N. D. (2012). Dynamic estimation of task-relevant variance in movement under risk. Under review.

Saarela, T. & Landy, M. S. (2012). Combination of texture and color cues in visual segmentation. *Vision Research*, in press.

Wang, H. X., Heeger, D. J. & Landy, M. S. (2012). Responses to second-order texture modulations undergo surround suppression. Under review.

2012 Hudson, T. E. & Landy, M. S. (2012). Adaptation to sensory-motor reflex perturbations is blind to the source of the errors. *Journal of Vision*, 12(1):4, 1-10.

Saarela, T. & Landy, M. S. (2012). Combination of texture and color cues in visual segmentation. *Vision Research*, in press.

2011 Barbot, A., Landy, M. S. & Carrasco, M. (2011). Exogenous attention enhances 2nd-order contrast sensitivity. *Vision Research*, 51, 1086-1098.

Girshick, A. R., Landy, M. S. & Simoncelli, E. P. (2011). Cardinal rules: Visual orientation perception reflects knowledge of environmental statistics. *Nature Neuroscience*, 14, 926-932.

Hallum, L. E., Landy, M. S. & Heeger, D. J. (2011). Human primary visual cortex (V1) is selective for second-order spatial frequency. *Journal of Neurophysiology*, 105, 2121-2131.

- 2010 Hudson, T. E., Tassinari, H. & Landy, M. S. (2010). Compensation for changing motor uncertainty. *PLoS Computational Biology*, 6(11), e1000982.
- Mamassian, P., & Landy, M. S. (2010). It's that time again: Familiar context reduces temporal uncertainty. *Nature Neuroscience*, 13, 914-916 [News & Views review].
- Larsson, J., Heeger, D. J. & Landy, M. S. (2010). Orientation selectivity of motion-boundary responses in human visual cortex. *Journal of Neurophysiology*, 104, 2940-2950.
- 2009 Ho, Y.-X., Serwe, S., Trommershäuser, J., Maloney, L. T. & Landy, M. S. (2009). The role of visuo-haptic experience in visually perceived depth. *Journal of Neurophysiology*, 101, 2789-2801.
- Oruç, I. & Landy, M. S. (2009). Scale dependence and channel switching in letter identification. *Journal of Vision*, 9(9):4, 1-19. <http://journalofvision.org/9/9/4/>.
- 2008 Ho, Y.-X., Landy, M. S. & Maloney, L. T. (2008). Conjoint measurement of gloss and surface texture. *Psychological Science*, 19, 196-204.
- Hudson, T. E., Maloney, L. T. & Landy, M. S. (2008). Optimal compensation for temporal uncertainty in movement planning. *PLoS Computational Biology*, 4(7), e1000130.
- Trommershäuser, J., Maloney, L. T. & Landy, M. S. (2008). Decision making and movement planning. *Trends in Cognitive Sciences*, 12, 291-297.
- 2007 Ho, Y.-X., Maloney, L. T. & Landy, M. S. (2007). The effect of viewpoint on perceived visual roughness. *Journal of Vision*, 7(1):1, 1-16. <http://journalofvision.org/7/1/1/>.
- Hudson, T. E., Maloney, L. T. & Landy, M. S. (2007). Movement planning with probabilistic target information. *Journal of Neurophysiology*, 98, 3034-3046.
- Landy, M. S. (2007). Perception of gloss and lightness. *Nature*, 447, 158-159 [News & Views review].
- Landy, M. S., Goutcher, R., Trommershäuser, J. & Mamassian, P. (2007). Visual estimation under risk. *Journal of Vision*, 7(6):4, 1-15, <http://journalofvision.org/7/6/4>.

- Montaser-Kouhsari, L., Landy, M. S., Heeger, D. J. & Larsson, J. (2007). Orientation-selective adaptation to illusory contours in human visual cortex. *Journal of Neuroscience*, *27*, 2186-2195.
- 2006 Ho, Y.-X., Landy, M. S. & Maloney, L. T. (2006). How direction of illumination affects visually perceived surface roughness. *Journal of Vision*, *6*, 634-648, <http://journalofvision.org/6/5/8/>.
- Larsson, J., Landy, M. S. & Heeger, D. J. (2006). Orientation-selective adaptation to first- and second-order patterns in human visual cortex. *Journal of Neurophysiology*, *95*, 862-881.
- Oruç, I., Landy, M. S. & Pelli, D. G. (2006). Noise masking reveals channels for second-order letters. *Vision Research*, *46*, 1493-1506.
- Tassinari, H., Hudson, T. E. & Landy, M. S. (2006). Combining priors and noisy visual cues in a rapid pointing task. *Journal of Neuroscience*, *26*, 10154-10163.
- Trommershäuser, J., Landy, M. S. & Maloney, L. T. (2006). Humans rapidly estimate expected gain in movement planning. *Psychological Science*, *17*, 981-988. Reprinted in Chater, N. K. (Ed.) (2009). *Judgement and Decision Making, Vol. 2: Individual Decision Making*. SAGE Publications Ltd.
- Trommershäuser, J., Mattis, J., Maloney, L. T. & Landy, M. S. (2006). Limits to human movement planning with delayed and unpredictable onset of needed information. *Experimental Brain Research*, *175*, 276-284.
- Wu, S.-W., Trommershäuser, J., Maloney, L. T. & Landy, M. S. (2006). Limits to human movement planning in tasks with asymmetric gain landscapes. *Journal of Vision*, *6*, 53-63, <http://journalofvision.org/6/1/5/>.
- 2005 Trommershäuser, J., Gepshtein, S., Maloney, L. T., Landy, M. S. & Banks, M. S. (2005). Optimal compensation for changes in task-relevant movement variability. *Journal of Neuroscience*, *25*, 7169-7178.
- 2004 Banks, M. S., Gepshtein, S. & Landy, M. S. (2004). Why is stereoresolution so low? *Journal of Neuroscience*, *24*, 2077-2089.
- Chubb, C., Landy, M. S. & Econopouly, J. (2004). A visual mechanism tuned to black. *Vision Research*, *44*, 3223-3232.

- Hillis, J. M., Watt, S. J., Landy, M. S. & Banks, M. S. (2004). Slant from texture and disparity cues: optimal cue combination. *Journal of Vision*, 4, 967-992, <http://journalofvision.org/4/12/1/>.
- Warren, P. A., Maloney, L. T. & Landy, M. S. (2004). Interpolating sampled contours in 3D: Perturbation analysis. *Vision Research*, 44, 815-832.
- 2003 Oruç, I., Maloney, L. T. & Landy, M. S. (2003). Weighted linear cue combination with possibly correlated error. *Vision Research*, 43, 2451-2468.
- Trommershäuser, J., Maloney, L. T. & Landy, M. S. (2003a). Statistical decision theory and the selection of rapid, goal-directed movements. *Journal of the Optical Society of America A*, 20, 1419-1433.
- Trommershäuser, J., Maloney, L. T. & Landy, M. S. (2003b). Statistical decision theory and trade-offs in the control of motor response. *Spatial Vision*, 16, 255-275.
- Trommershäuser, J., Maloney, L. T. & Landy, M. S. (2003c). The consistency of bisection judgments in visual grasp space. *Journal of Vision*, 3(11), 795-807, <http://journalofvision.org/3/11/13/>.
- 2002 Hillis, J. M., Ernst, M. O., Banks, M. S. & Landy, M. S. (2002). Combining sensory information: mandatory fusion within, but not between, senses. *Science*, 298, 1627-1630.
- Landy, M. S. & Oruç, I. (2002). Properties of 2nd-order spatial frequency channels. *Vision Research*, 42, 2311-2329.
- Warren, P. A., Maloney, L. T. & Landy, M. S. (2002). Interpolating sampled contours in 3D: Analyses of variability and bias. *Vision Research*, 42, 2431-2446.
- 2001 Brenner, E., Smeets, J. B. J. & Landy, M. S. (2001). How vertical disparities assist judgements of distance. *Vision Research*, 41, 3455-3465.
- Landy, M. S. & Kojima, H. (2001). Ideal cue combination for localizing texture-defined edges. *Journal of the Optical Society of America A*, 18, 2307-2320.
- Mamassian, P. & Landy, M. S. (2001). Interaction of visual prior constraints. *Vision Research*, 41, 2653-2688.

- 1999 Brenner, E. & Landy, M. S. (1999). Interaction between the perceived shape of two objects. *Vision Research*, 39, 3834-3848.
- Wolfson, S. S. & Landy, M. S. (1999). Long range interactions between oriented texture elements. *Vision Research*, 39, 933-945.
- 1998 Mamassian, P. & Landy, M. S. (1998). Observer biases in the 3D interpretation of line drawings. *Vision Research*, 38, 2817-2832.
- Wolfson, S. S. & Landy, M. S. (1998). Examining edge- and region-based texture mechanisms. *Vision Research*, 38, 439-446.
- 1995 Landy, M. S., Maloney, L. T., Johnston, E. B. & Young, M. J. (1995). Measurement and modeling of depth cue combination: In defense of weak fusion. *Vision Research*, 35, 389-412.
- Wolfson, S. S. & Landy, M. S. (1995). Discrimination of orientation-defined texture edges. *Vision Research*, 35, 2863-2877.
- 1994 Chubb, C., Econopouly, J. & Landy, M. S. (1994). Histogram contrast analysis and the visual segregation of IID textures. *Journal of the Optical Society of America A*, 11, 2350-2374.
- Johnston, E. B., Cumming, B. G. & Landy, M. S. (1994). Integration of stereopsis and motion shape cues. *Vision Research* 34, 2259-2275.
- 1993 Wuerger, S. M. & Landy, M. S. (1993). The role of chromatic and luminance contrast in inferring structure from motion. *Journal of the Optical Society of America A*, 10, 1363-1372.
- Young, M. J., Landy, M. S. & Maloney, L. T. (1993). A perturbation analysis of depth perception from combinations of texture and motion cues. *Vision Research* 33, 2685-2696.
- 1991 Landy, M. S. & Bergen, J. R. (1991). Texture segregation and orientation gradient. *Vision Research* 31, 679-691.
- Landy, M. S., Doshier, B. A., Sperling, G. & Perkins, M. E. (1991). The kinetic depth effect and optic flow II. Fourier and non-Fourier motion. *Vision Research* 31, 859-876.
- Perkins, M. E. & Landy, M. S. (1991). Nonadditivity of masking by narrow-band noises. *Vision Research*, 31, 1053-1065.

- 1990 Landy, M. S., Manovich, L. Z. & Stetten, G. D. (1990). Applications of the EVE software for visual modeling. *Vision Research*, 30, 329-338.
- Parish, D. H., Sperling, G. & Landy, M. S. (1990). Temporal subsampling of American Sign Language. *Journal of Experimental Psychology: Human Perception and Performance*, 16, 282-294.
- Sperling, G., Doshier, B. A. & Landy, M. S. (1990). How to study the kinetic depth effect experimentally. *Journal of Experimental Psychology: Human Perception and Performance*, 16, 445-450.
- 1989 Doshier, B. A., Landy, M. S. & Sperling, G. (1989). Ratings of Kinetic Depth in multi-dot displays. *Journal of Experimental Psychology: Human Perception and Performance*, 15, 816-825.
- Doshier, B. A., Landy, M. S. & Sperling, G. (1989). The kinetic depth effect and optic flow - I. 3D shape from Fourier motion. *Vision Research*, 29, 1789-1813.
- Landy, M. S., Manovich, L. Z. & Stetten, G. D. (1989). All about EVE: The Early Vision Emulation software. *Behavior Research Methods, Instruments & Computers*, 21, 491-501.
- Sperling, G., Landy, M. S., Doshier, B. A. & Perkins, M. E. (1989). Kinetic depth effect and identification of shape. *Journal of Experimental Psychology: Human Perception and Performance*, 15, 826-840.
- Wuerger, S. M. & Landy, M. S. (1989). Depth interpolation with sparse disparity cues. *Perception*, 18, 39-54.
- 1988 Hummel, R. A. & Landy, M. S. (1988). A statistical viewpoint on the theory of evidence. *IEEE Transactions on Pattern Analysis & Machine Intelligence*, 10, 235-247.
- 1987 Landy, M. S. (1987). A parallel model of the Kinetic depth effect using local computations. *Journal of the Optical Society of America*, 4, 864-876.
- 1986 Landy, M. S. (1986). The gap from sensation to cognition: A commentary on Dana Ballard's "Cortical connections and parallel processing: Structure and function." *Behavioral and Brain Sciences*, 9, 101-102.

- 1985 Cohen, Y., Landy, M. S. & Pavel, M. (1985). Hierarchical coding of binary images. *IEEE Transactions on Pattern Analysis and Machine Intelligence, PAMI-7*, 284-298.
- Landy, M. S. & Cohen, Y. (1985). Vectorgraph coding: Efficient Coding of line drawings. *Computer Vision, Graphics, and Image Processing*, 30, 331-344.
- Sperling, G., Landy, M. S., Cohen, Y. & Pavel, M. (1985). Intelligible encoding of ASL image sequences at extremely low information rates. *Computer Vision, Graphics, and Image Processing*, 31, 335-391. Also published in: *Human and Machine Vision II* (Rosenfeld, A., Ed.). Volume 13 in *Perspectives in Computing* (Rheinboldt, W. & Siewiorek, D., Series Eds.). New York: Academic Press, 1986, pp. 256-312.
- 1984 Landy, M. S., Cohen, Y. & Sperling, G. (1984). HIPS: Image processing under UNIX. Software and applications. *Behavior Research Methods, Instrumentation, and Computers*, 16, 199-216.
- Landy, M. S., Cohen, Y. & Sperling, G. (1984). HIPS: A Unix-based image processing system. *Computer Vision, Graphics, and Image Processing*, 25, 331-347.

### **EDITED BOOKS**

- 2011 Trommershäuser, J., Körding, K. & Landy, M. S., Eds. (2011). *Sensory Cue Integration*. New York: Oxford University Press.
- 1995 Landy, M. S., Maloney, L. T. & Pavel, M., eds. (1995). *Exploratory Vision: The Active Eye*. New York: Springer-Verlag.
- 1991 Landy, M. S. & Movshon, J. A., eds. (1991). *Computational Models of Visual Processing*. Cambridge, MA: MIT Press.

### **BOOK CHAPTERS, REFEREED PROCEEDINGS, ETC.**

- Manuscripts Landy, M. S. (2012). Texture analysis and perception. In J. S. Werner & L. M. Chalupa (Eds.), *The New Visual Neurosciences*. Cambridge, Mass.: MIT Press. Under review.
- 2011 Landy, M. S., Ho Y.-X., Serwe, S., Trommershäuser, J. & Maloney, L. T. (2011). Cues and pseudocues in texture and shape perception. In Trommershäuser, J., Landy, M. S. & Körding, K. (Eds.), *Sensory Cue Integration* (Ch. 14, pp. 263-278). New York: Oxford University Press.

- Landy, M. S., Banks, M. S. & Knill, D. C. (2011). Ideal-observer models of cue integration. In Trommershäuser, J., Landy, M. S. & Körding, K. (Eds.), *Sensory Cue Integration* (Ch. 1, pp. 5-29). New York: Oxford University Press.
- 2010 Heeger, D. J. & Landy, M. S. (2010). Signal detection theory. In Goldstein, E. B. (Ed.), *Encyclopedia of Perception, Vol. 2* (pp. 887-892). Washington, DC: Sage.
- 2009 Trommershäuser, J., Maloney, L. T. & Landy, M. S. (2009). The expected utility of movement. In Glimcher, P. W., Camerer, C. F., Fehr, E. & Poldrack, R. A. (Eds.), *Neuroeconomics: Decision Making and the Brain* (pp. 95-111). New York: Academic Press.
- 2007 Maloney, L. T., Trommershäuser, J. & Landy, M. S. (2007). Questions without words: A comparison between decision making under risk and movement planning under risk. In Gray, W. (Ed.), *Integrated Models of Cognitive Systems* (pp. 297-315). New York: Oxford University Press.
- 2004 Landy, M. S. (2004). Texture Perception. In Adelman, G. & Smith, B. H. (Eds.), *Encyclopedia of Neuroscience, 3rd Ed. on the WWW*. Amsterdam: Elsevier.
- Landy, M. S. & Graham, N. (2004). Visual perception of texture. In Chalupa, L. M. & Werner, J. S. (Eds.), *The Visual Neurosciences* (pp. 1106-1118). Cambridge, MA: MIT Press.
- 2002 Mamassian, P., Landy, M. S. & Maloney, L. T. (2002). Bayesian modelling of visual perception. In Rao, R. P. N., Olshausen, B. A. & Lewicki, M. S. (Eds.), *Probabilistic Models of the Brain: Perception and Neural Function* (pp. 13-36). Cambridge, MA: MIT Press.
- 2001 Landy, M. S. & Brenner, E. (2001). Motion-disparity interaction and the scaling of stereoscopic disparity. In Harris, L. R. & Jenkin, M. R. M. (Eds.), *Vision and Attention* (pp. 129-151). New York: Springer Verlag.
- 1998 Landy, M. S. & Maloney, L. T. (1998). Combination of cues and priors in depth perception. In Saida, S. & Sagawa, K. (Eds.), *Proceedings of the International Workshop on Visual Cognition* (pp. 151-161). Tsukuba, Japan: National Institute of Bioscience and Human-Technology.

- 1997 Hon, A. K., Maloney, L. T. & Landy, M. S. (1997). The influence function for visual interpolation. In Rogowitz, B. E. & Pappas, T. N. (Eds.), *Human Vision and Electronic Imaging II, Proceedings of the SPIE*, 3016, 409-419.
- 1996 Landy, M. S. (1996). Texture Perception. In Adelman, G. (Ed.), *Encyclopedia of Neuroscience*. Amsterdam: Elsevier.
- 1994 Landy, M. S. (1994). Review of 'Visual Science and Engineering (D. H. Kelly, Ed.)'. *Optics & Photonics News*, 5(12), 60-63.
- 1993 Landy, M. S. (1993). The HIPS-2 software for image processing: Goals and directions. In Boyer, K. L. & Stark, L. (Eds.), *Applications of Artificial Intelligence 1993: Machine Vision and Robotics, Proceedings of the SPIE*, 1964, 382-391.
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- 1984 Landy, M. S. & Sperling, G. (1984). Image processing and psychophysical research. *Invest. Ophth. & Visual Science*, 25, 72.

#### **UNPUBLISHED TECHNICAL MEMORANDA**

- 2003 Landy, M. S. (2003). A tool for determining image discriminability.
- Landy, M. S. (2003). DISCRIM: A Matlab program for testing image discrimination models.
- 1988 Landy, M. S. (1988). The EVE Early Vision Emulation Software Reference Manual. Mathematical Studies in Perception and Cognition 88-11, New York University.
- 1983 Landy, M. S. & Cohen, Y. (1983). The HIPL picture processing software reference manual. Human Information Processing Lab Memo, New York University.

- 1982 Landy, M. S. (1982). The HIPL picture/header format standard. Human Information Processing Lab Memo, New York University.
- 1981 Landy, M. S. (1981). The formation of cell assemblies: A neural network simulation. Ph.D. Dissertation, University of Michigan, Ann Arbor, Michigan.

### **EXHIBITIONS**

- 1997 Sweep Texture Grating. In *Thresholds: Limits of Perception*, an exhibition and catalogue curated by Denis Pelli and Ana Maria Torres, Eighth Floor Gallery, New York, Oct. 14-25, 1997.

### **CONFERENCE PANELS AND WORKSHOPS**

- 2008 Co-organizer (with J. Trommershäuser and K. Körding), Workshop on “Cue Combination — Unifying Perceptual Theory, Rauschholzhausen, Germany, October 12-15, 2008.
- 1990 Member, Organizing Committee, Scottish Universities Summer School in Physics, “Pattern Recognition and Image Processing in Physics”, held at the University of Dundee, Scotland, August, 1990.
- 1989 Co-organizer (with J. A. Movshon), Workshop on “Computational Models of Visual Processing”, Banbury Center, Cold Spring Harbor Harbor Laboratory, Cold Spring Harbor, New York, June 26 - July 1, 1989.
- 1988 Presider, session on “Vision: Motion and Velocity Discrimination”, Optical Society of America, Annual Meeting, Santa Clara, California, November 3, 1988.
- 1986 Session Organizer/Chair, Relaxation methods in computer vision, 1986 Annual Meeting of the Operations Research Society of America, Miami, Florida, October, 1986.

### **TALKS AND COLLOQUIA**

- 2012 Landy, M. S., Texture perception and coding, February 27, 2012, Department of Psychology, Columbia University, New York, NY.
- 2011 Landy, M. S., Movement planning, coding and adaptation, April 5, 2011, Dept. of Neuroscience, CUNY, New York, NY.

- 2010 Girshick, A. R., Landy, M. S., & Simoncelli, E. P., Bayesian line orientation perception: Human prior expectations match natural image statistics, March, 2010, Computational and Systems Neuroscience 2010, Salt Lake City, UT.
- Landy, M. S., Visual texture: Discrimination, pattern identification and cortical coding, February 21, 2010, Department of Psychology, University of Pennsylvania, Philadelphia, PA.
- Landy, M. S., Optimality in movement planning and perceptual estimation, October 14, 2010, Dept. of Psychology, Univ. of Utrecht, Utrecht, The Netherlands.
- Landy, M. S., Optimality in movement planning and perceptual estimation, October 15, 2010, Dept. of Movement Science, Free University of Amsterdam, Amsterdam, The Netherlands.
- 2009 Landy, M. S., Optimality in movement planning and perceptual estimation, April 2, 2009, Center for Cognitive Neuroscience, Duke University, Durham, NC.
- Landy, M. S., Optimality in movement planning, June 17, 2009, Dept. of Psychology, UCLA, Los Angeles, CA.
- 2008 Landy, M. S., Ho, Y.-X., Maloney, L. T. & Trommershäuser, J., Recalibration of visual cue combination by correlation with haptics, October 14, 2008, Workshop on “Cue Combination — Unifying Perceptual Theory,” Rauschholzhausen, Germany.
- Landy, M. S. Optimality in movement planning, October 17, 2008, California Institute of Technology, Pasadena, CA.
- 2007 Landy, M. S., Visual texture: Discrimination, pattern identification and cortical coding, January 9, 2007, Institut Henri Poincaré, Paris, France.
- Landy, M. S., Second-order spatial vision: psychophysics, computation and brain mechanisms, *Frontiers in Human Information Processing*, A Festschrift in Honor of George Sperling, July 28, 2007, University of California, Irvine, CA.
- Landy, M. S., Visual texture: Appearance, discrimination, pattern identification and cortical coding, October 19, 2007, MIT, Cambridge, MA.

- Landy, M. S., Optimality in movement planning, December 6, 2007, Johns Hopkins Medical School, Baltimore, MD.
- 2006
- Landy, M. S., Optimality in movement planning and perceptual estimation, September 7, 2006, New York University, New York, NY.
- Landy, M. S., Optimality in movement planning, August 1, 2006, University of California, Santa Barbara, California.
- Landy, M. S., Visual texture: discrimination, pattern identification and cortical coding, July 20, 2006, Univ. of Giessen, Giessen, Germany.
- Landy, M. S., The influence of prior information on movement planning, July 14, 2006, Workshop: Bridging the gap between sensation and motor control, Schloss Rauischholzhausen, Germany.
- Landy, M. S., Optimality in movement planning, July 12, 2006, Max Planck Institute for Biological Cybernetics, Tübingen, Germany.
- 2005
- Landy, M. S., Recent studies in visual texture analysis, December 21, 2005, Smith-Kettlewell Eye Research Institute, San Francisco, CA.
- Landy, M. S., Optimality in movement planning, June 13, 2005, National Institutes of Health, Bethesda, MD.
- Landy, M. S. & Maloney, L. T., Optimality in movement planning, January 27, 2005, New York University, New York, NY.
- Trommershäuser, J., Maloney, L. T. & Landy, M. S. (2005). Optimality in movement planning. Computational and Systems Neuroscience 2005, post-conference workshop on Bayesian Approaches to Sensory and Motor Processing, Salt Lake City, UT, March 22, 2005.
- Trommershäuser, J., Maloney, L. T. & Landy, M. S., Decision making and movement planning under risk. Computational and Systems Neuroscience 2005, Salt Lake City, UT, March 19, 2005.
- 2003
- Landy, M. S., Distance scaling perceived size, depth and shape, December 8, 2003, University of Pennsylvania, Philadelphia, PA.

Landy, M. S., Combination of cues in the perception of slant, August 13, 2003, Smith-Kettlewell Eye Research Institute, San Francisco, CA.

Landy, M. S. & Ahumada, A., Jr., A tool for determining image discriminability, September 10, 2003, Federal Aviation Administration Office of the Chief Scientist for Human Factors (AAR-100) FY03 Aviation Maintenance, General Aviation, and Vertical Flight program review, University of Nevada Reno, NV.

2002 Landy, M. S., Statistical decision theory and trade-offs in the control of motor response. November 15, 2002, UC Berkeley School of Optometry Oxyopia Seminar.

2000 Landy, M. S., Combination of cues and priors in depth perception. August 23, 2000, Human Frontier Science Foundation project meeting, Onich, Scotland.

Landy, M. S., Combination of cues and priors in depth perception. May 19, 2000, Neuroscience Graduate Program, University of California, San Francisco.

Landy, M. S., Exploring early vision using oriented textures. April 14, 2000, Hewlett-Packard Laboratories, Palo Alto, California.

Landy, M. S., Combination of cues and priors in depth perception. February 25, 2000, Dept. of Psychology, University of California, Santa Cruz, California.

Landy, M. S., A Bayesian analysis of biases in the perception of shaded line drawings. February 22, 2000, Dept. of Computer Science, University of California, Berkeley, California.

Landy, M. S., A Bayesian analysis of biases in the perception of shaded line drawings. January 27, 2000, Center for Neuroscience, University of California, Davis, California.

Landy, M. S., A Bayesian analysis of biases in the perception of shaded line drawings. January 18, 2000, Department of Psychology, UCLA, Los Angeles, California.

Landy, M. S., A Bayesian analysis of biases in the perception of shaded line drawings. January 14, 2000, Department of Psychology, University of California, Santa Barbara, California.

Landy, M. S., Distance scaling of perceived size, depth and shape. January 11, 2000, NASA Ames Research Center, Moffett Field, California.

1999

Landy, M. S., Exploring early vision using oriented textures. December 13, 1999, Department of Psychology, Stanford University, Stanford, California.

Landy, M. S., A Bayesian analysis of biases in the perception of shaded line drawings, Dec. 7, 1999. School of Social Sciences, University of California, Irvine, California.

Landy, M. S., Statistical and Bayesian models of depth cue integration and what they tell us about making more realistic virtual 3D displays. December 2, 1999, Interval Research Corp., Palo Alto, California.

Landy, M. S., A Bayesian analysis of biases in the perception of shaded line drawings. October 29, 1999, Xerox Palo Alto Research Center, Palo Alto, California.

Landy, M. S., Exploring early vision using oriented textures. October 22, 1999, School of Optometry, University of California, Berkeley, California.

Landy, M. S., Exploring early vision using oriented textures. October 14, 1999, Smith-Kettlewell Eye Research Institute, San Francisco, California.

Landy, M. S. & Mamassian, P., A Bayesian analysis of biases in the perception of shaded line drawings. 32nd Annual Meeting of the Society for Mathematical Psychology, July 30, 1999, University of California, Santa Cruz, California.

Landy, M. S. & Brenner, E., Distance scaling of perceived size, depth and shape. Conference on Vision and Attention, June 23, 1999, Centre for Vision Research, York University, Toronto, Canada.

Landy, M. S., Combination of cues and priors in depth perception. Festschrift Conference in honor of John Holland, May 16, 1999, University of Michigan, Ann Arbor, Michigan.

1998

Landy, M. S., Combination of cues for depth perception and spatial localization, July 10, 1998, Laboratoire de Physiologie de la Perception et de l'Action CNRS, Collège de France, Paris, France.

Landy, M. S., Texture et perception, July, 1998, La 1<sup>ère</sup> Journée de l'Image, Compression et Perception, Le Laboratoire Electronique Informatique et Image, Université de Bourgogne, Dijon, France.

Landy, M. S., Textures et bases d'images, July 3, 1998, Les 4<sup>èmes</sup> Journées d'Ingénierie de la Vision à St. Étienne, Institut de l'Ingénierie de la Vision, Université Jean Monnet, St. Étienne, France.

Combination of cues to depth and texture edge location, June 29, 1998, Laboratoire des Images et des Signaux, Institut National Polytechnique de Grenoble, Grenoble, France.

Landy, M. S., Exploring low level vision using oriented textures, June 25, 1998, INSERM Cerveau et Vision, Unité 371, Lyon, France.

Landy, M. S., Recent research in texture perception, June 22, 1998, Institut de l'Ingénierie de la Vision, Université Jean Monnet, St. Étienne, France.

1997 Landy, M. S., Combination of cues and priors in depth perception, December 19, 1997, University of Tokyo.

Landy, M. S., Combination of cues and priors in depth perception, December 10, 1997, International Workshop on Advances in Research on Visual Cognition, National Institute of Bioscience and Human Technology, Tsukuba, Japan.

Landy, M. S., Computing with images, "Theories of Vision" Symposium, New York University, October 17, 1997, New York, NY.

Landy, M. S., 2nd-order spatial psychophysics, April 21, 1997, Rutgers University, Piscataway, NJ.

Mamassian, P., Landy, M. S. & Maloney, L. T., Perception and measurement of surface orientation, Applied Vision Association Meeting on Depth Perception, September 4, 1997, University of Surrey, Guildford, United Kingdom.

1996 Landy, M. S., Recent work on depth perception, texture edge localization and texture modulation sensitivity, December 12, 1996, NEC Research Institute, Princeton, NJ.

- Landy, M. S., Combining multiple cues for depth and spatial location, March 12, 1996, SUNY College of Optometry, New York, NY.
- 1995 Landy, M. S., Combining multiple visual cues, December 11, 1995, Department of Psychology, University of Pennsylvania, Philadelphia, PA.
- Landy, M. S., Combining multiple cues for depth and spatial location, March 20, 1995, Department of Psychology, Brooklyn College, New York, NY.
- 1994 Landy, M. S., Combining multiple cues to depth and spatial location, February 17, 1994, Modeling and Simulation Seminar, New York University, New York, NY.
- 1993 Landy, M. S., Combining multiple cues to depth and spatial location, December 17, 1993, Rutgers University, Piscataway, NJ.
- Landy, M. S., Combining multiple cues to depth and spatial location, June 10, 1993, SRI Inc., Menlo Park, CA.
- Landy, M. S., Texture segregation in machine and human vision, June 4, 1993, Machine Perception Seminar, Xerox Palo Alto Research Center, Palo Alto, CA.
- Landy, M. S., Combining multiple cues to depth and spatial location, June 1, 1993, SAPS Seminar, Dept. of Psychology, Stanford University, Stanford, CA.
- Landy, M. S., Texture segregation: Energy, localization and configuration effects, April 15, 1993, Smith-Kettlewell Eye Research Institute, San Francisco, CA.
- Landy, M. S., Texture processing in machine and human vision, April 14, 1993, NASA Ames Research Center CCF Image Analysis meeting, Moffett Field, CA.
- Landy, M. S., Combining multiple cues to depth and spatial location, April 6, 1993, The Salk Institute, La Jolla, CA.
- Landy, M. S., Combining multiple cues to depth and spatial location, April 5, 1993, UCLA, Department of Psychology.

Landy, M. S., Texture processing in machine and human vision, March 8, 1993, UC Santa Cruz, Baskin Center for Computer Engineering and Information Science.

Landy, M. S., Texture processing in machine and human vision, March 3, 1993, Lawrence Berkeley Laboratories, UC Berkeley.

1992

Landy, M. S., Combining multiple cues to depth and spatial location, December 4, 1992, Oxyopia Seminar, UC Berkeley School of Optometry.

Landy, M. S., Combining multiple cues to depth and spatial location, November 9, 1992, UC Irvine Psychology Department.

Landy, M. S., Combining multiple cues to depth and spatial location, November 6, 1992, UC Santa Barbara Psychology Department.

Landy, M. S., The HIPS-2 image processing software, August 19, 1992, NASA Ames Research Center.

Maloney, L. T., Landy, M. S. & Young, M. J., Psychophysical assessment of the human depth combination rule: theory, methods, results. Invited talk presented at the annual meeting of the Society for Information Display, Boston, Massachusetts, May, 1992.

1991

Landy, M. S., "Measurement and Modeling of Depth Cue Combination", November 20, 1991, Yale University Computer Science Department.

1990

Landy, M. S., "Robust combination of multiple depth cues", Psychological Roundtable, December 8, 1990, Temple University Conference Center, Philadelphia, PA.

Short Course Instructor, "Graphics Display Systems for Psychophysics", Optical Society of America Annual Meeting, November 4, 1990, Boston.

Landy, M. S., "Image processing software", 4 lectures given at the Scottish Universities Summer School in Physics, July 31 - August 3, 1990, University of Dundee, Scotland, UK.

Participant in "Color Spaces in Psychophysics and Physiology II", a workshop held at The Rowland Institute, May 20-21, 1990, Boston.

- 1989 Participant in “Color Spaces in Psychophysics and Physiology”, a 2-day workshop held at The Neurosciences Institute, September 25-26, 1989, Rockefeller University, New York.
- Landy, M. S., “Psychophysical observations of early visual processing”, and “Psychophysical observations of structure-from-motion”, lectures given at the Cold Spring Harbor Summer Course in Computational Neuroscience, July 4 & 11, 1989, Cold Spring Harbor, New York.
- Parish, D. H., Sperling, G. & Landy, M. S., Intelligent temporal subsampling of American Sign Language using event boundaries, Topical Meeting on Applied Vision, Optical Society of America, July, 1989, San Francisco, California.
- 1988 Landy, M. S., The KDE and optic flow, October 7, 1988, University of Minnesota.
- Landy, M. S., A survey of neural network modeling, April 14, 1988, City College of New York.
- Landy, M. S., Kinetic depth effect and optic flow computation, April 12, 1988, New York Lighthouse for the Blind.
- Landy, M. S., Kinetic depth effect and optic flow computation, March 11, 1988, Rutgers University.
- 1987 Landy, M. S., Assessing the kinetic depth effect, Feb. 11, 1987, Whittaker College, MIT.
- Landy, M. S., A Model of the kinetic depth effect, and Assessing the kinetic depth effect, April 1-2, 1987, McGill University.
- Hummel, R. A., Arbogast, E. & Landy, M. S., Yet another iterative hierarchical stereo model, April 2, 1987, Neural Networks for Computing, Snowbird, Utah.
- 1986 Landy, M. S., A local parallel model of the KDE, October 3, 1986, Area Seminar on Sensation and Perception, New York University.
- 1985 Landy, M. S., An introduction to image processing, November 16, 1985, Area Seminar on Sensation and Perception, New York University.

Landy, M. S. & Hummel, R. A., Applications of spin systems annealing to computer vision, December 21, 1985, Area Seminar on Sensation and Perception, New York University.

Landy, M. S. & Hummel, R. A., A brief survey of knowledge aggregation methods, September, 1985, European Mathematical Psychology Group, Montpellier, France.

Landy, M. S. & Hummel, R. A., Models of iterative knowledge aggregation, May 6, 1985, Interdisciplinary Seminar on Mathematical Modeling, New York University.

Sperling, G. & Landy, M. S., Visual transmission of intelligible American Sign Language at extremely low information rates, November, 1985, Third Workshop on Human and Machine Vision, Boston.

1984 Landy, M. S., Intelligible low bandwidth images of American Sign Language, June 19, 1984, UC Irvine.

1983 Landy, M. S., Applications of image processing to experimental psychology, December 16, 1983, Area Seminar in Sensation and Perception, New York University.

Landy, M. S., Image intelligibility and encoding: Hierarchical coding methods, November, 1983, Stanford University, Stanford, California.

Landy, M. S., Cohen, Y., Pavel, M. & Sperling, G., HIPS: Picture processing under UNIX, Software and applications, Paper delivered to the Society for Computers in Psychology, 13th Annual Meeting, November 16, 1983, San Diego, California.