Curriculum Vitae
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Academic Background:

Occidental College (1966-1970), B.A. in Psychology.
University of California, San Diego (1971-1973), M.A. in Experimental Psychology.
University of Minnesota (1973-1976), Ph.D. in Developmental Psychology.
University of Texas at Austin (1976-1984), Assistant and Associate Professor of Psychology.
University of California at Berkeley (1984-present), Associate and Full Professor of Optometry; (1985-present), Adjunct Professor of Psychology; (1985-present); Professor in Wills Neuroscience Institute (2003-present); Professor of Bioengineering (2003-present).
University of California at Berkeley, Chairman of the Vision Science Program (1995-2002; 2012).

Publications:

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Kim, J., Johnson, P.V., & Banks, M.S. (2014). Stereoscopic 3D display with color interlacing improves perceived depth. *Optics Express*, 22, 31924-31934.

Johnson, P.V., Kim, J., & Banks, M.S. (2014). The visibility of color breakup and a means to reduce it. *Journal of Vision*, 14(14):0, 1-13.

Hoffman, D.H., Johnson, P.V., Kim, J., Vargas, A., & Banks, M.S. (2015). 240Hz OLED technology properties that can enable improved image quality. *Journal of the Society for Information Display*, 22, 346-356. DOI: 10.1002/jsid.258.

Johnson, P.V., Kim, J., Hoffman, D.M., Vargas, A., & Banks, M.S. (2015). Motion artifacts on 240Hz OLED stereoscopic 3D displays. *Journal of the Society for Information Display*, 22, 393-403. DOI: 10.1002/jsid.257.

Johnson, P.V., Kim, J., & Banks, M.S. (2015). Stereoscopic 3D display technique using spatiotemporal interlacing has improved spatial and temporal properties. *Optics Express*, 23, 9252-9275.

Banks, M.S. (2015). The importance of focus cues in stereo 3D displays. *Journal of the Society for Information Display,* 22, 393-403. DOI: 10.1002/jsid.257.

Sprague, W.W., Cooper, E.A., Tosic, I., & Banks, M.S. (2015). Stereopsis is adaptive for the natural environment. *Science Advances*, 1(4), 1-17.

Banks, M.S., Sprague, W.W., Schmoll, J., Parnell, J.A.Q., & Love, G.D. (2015). Why do animal eyes have pupils of different shapes? *Science Advances*, 1(9), 1-9.

Narain, R., Albert, R.A., Bulbul, A., Ward, G.J., Banks, M.S., & O'Brien, J.F. (2015). Optimal presentation of imagery with focus cues on multi-plane displays. *ACM Transactions on Graphics (SIGGRAPH)*, 34.4: 59, 1-12.

Holmes, O., Banks, M.S., & Farid, H. (2015). Assessing and improving the identification of computer generated portraits. *ACM Transactions on Applied Perception*, 13.2, 7:1-7:12.

Johnson, P.V., Parnell, J.A.Q., Kim, J., Saunter, C.D., Love, G.D., & Banks, M.S. (2016). Dynamic lens and monovision 3D displays to improve viewer comfort. *Optics Express*, 24, 11808-11827.

Guan, P. & Banks, M.S. (2016). Stereoscopic depth constancy. *Philosophical Transactions of the Royal Society B*, 371(1697), 1-15, 20150253.

Zannoli, M., Love, G.D., Narain, R., & Banks, M.S. (2016). Blur and the perception of depth at occlusions. *Journal of Vision*, 16(6):17, 1-25.

Banks, M.S., Hoffman, D.M., Kim, J., & Wetzstein, G. (2016). 3D displays. *Annual Reviews of Vision Science*, 2, no. 1.

Sprague, W.W., Cooper, E.A., Reissier, S., Yellapragada, B., & Banks, M.S. (2016). The natural statistics of blur. *Journal of Vision*, 16(10):23, 1-27.

Mader, B., Banks, M.S., & Farid, H. (2017). Assessing and improving the identification of computer generated portraits: The importance of training and incentives. *Perception*, 46(9), 1062-1076.

Koulieris, G., Bui, B., Banks, M.S., & Drettakis, G. (2017). Accommodation and comfort in head-mounted displays. *ACM Transactions of Graphics (SIGGRAPH)*, 36(4), 87:1-87:11.

Kim, J. & Banks, M.S. (2017). Resolution of temporal-multiplexing and spatial-multiplexing stereoscopic televisions. *Current Optics and Photonics,* 1(1), 34-44.

Aksit, K., Lopes, W., Kim, J., Spjut, J., Patney, A., Shirley, P., Luebke, D., Cholewiak, S.A., Srinivasan, P., Ng, R., Banks, M.S., & Love, G.D. (2017). Varifocal virtuality: A novel optical layout for near-eye display. *ACM SIGGRAPH Emerging Technologies*, 25.

Zannoli, M. & Banks, M.S. (2017). The perceptual consequences of curved screens. *ACM Transactions on Applied Perception*, in press.

Cholewiak, S.A., Love, G.D., Srinivasan, P., Ng, R., & Banks, M.S. (2017). ChromaBlur: Rendering chromatic eye aberration improves accommodation and realism. *ACM Transactions on Graphics (SIGGRAPH Asia)*, in press.

Book Reviews:

The Scanning Patterns of Human Infants: Implications for Visual Learning by G.W. Bronson. *Child Development Abstracts and Bibliography, 57,* 1983, Nos. 5 and 6.

Development in Infancy by M. Lamb and J. Campos. *Contemporary Psychology,* 1984 (with E. Waters).

Invited Presentations:

1974: Pennsylvania College of Optometry.
1976: University of Minnesota; University of California, Berkeley; University of Michigan; University of Florida; Michigan State University; University of Wisconsin.
1977: Presidential Symposium, SRCD.
1978: CVS Symposium, University of Rochester.
1979: Brown County Conference, Indiana University.
1980: University of Washington; University of Wisconsin.
1981: Presidential Symposium, Optical Society of America; University of Washington.
1982: Southwest Society for Research in Child Development; University of Houston College of Optometry; NICHHD Conference on Infant Assessment.
1983: National Academy of Sciences Joint US-China Conference on Infant Assessment.
1984: Southern Methodist University; International Conference on Infant Studies; Beijing University; 15 lectures at Beijing Normal University; University of Illinois; University of California, Berkeley; Carnegie-Mellon University; Case-Western Reserve University; University of Michigan.
1985: Vanderbilt University; University of Alberta; Stanford University; University of Wisconsin; Minnesota Symposium on Child Psychology.
1986: University of California, Santa Cruz; Smith-Kettlewell Institute of Visual Science, Colorado Optometric Center.
1987: University of Rochester; University of Toledo; Badenweiler Conference; University of California, Davis.
1988: University of Virginia; College of Visual Development Conference; New York University; Western Regional Conference.
1989: Cognitive Science Institute (UC Berkeley); Stanford Association of Perception Students; NASA Ames Research Center; Eastern States Optometric Conference; SUNY College of Optometry; Carnegie-Mellon Symposium on Cognitive Psychology; Stanford University; University of California, Santa Barbara; American Association of Artificial Intelligence; University of Washington; Vanderbilt University; Johns Hopkins University; Ohio State University; Dean's Lecturer, University of California.
1990: Colorado University; Cambridge University; University of Umea; Karolinska Medical Institute; CVS Symposium at the University of Rochester; Swarthmore College; AOA Workshop on Clinical Research; George Peabody College; Vanderbilt University.
1991: NRC Committee on Vision; Alameda-Contra Costa Optometric Society; University of Washington Conference on Developmental Psychoacoustics; Rodin Remediation Society, Bern, Switzerland; Instituto de Optica, Madrid, Spain; Cornell University; University of Toronto; York University; Berkeley Practicum, University of California.
1992: National Eye Institute; Meredith Morgan Lectures, University of California; Dean's Lectures, University of California; Optical Society of America; Smith-Kettlewell Eye Research Institute.
1993: Transportation Research Board, Washington, D.C.; American Psychological Society, Chicago; University of Chicago; National Eye Institute; Ophthalmic Optics Meeting.
1994: Air Force Conference on Spatial Orientation; Univ of California, Davis; Univ of Texas at Austin; NSF Workshop on Sensorimotor Behavior.
1995: California Institute of Technology; Univ of California, Los Angeles; International Symposium on Head/Neck System, Vail; American Psychological Society, New York; Gottsdanker Memorial Lecture, Univ. of California, Santa Barbara; Aerospace Medical Group, Brooks Air Force Base.
1996: Air Force Conference on Vision and Spatial Orientation; Key Curriculum Summer Institute; FASEB Meeting on the Retina and Visual Performance; Max-Planck Institute of Biological Cybernetics; Helmholtz Institute, University of Utrecht; Department of Psychology, Stanford University; Vision Science Lecturer, UC Berkeley Continuing Education; Human Factors Group, SAAB Military Aircraft.
1997: Vision Science Lecturer, UC Berkeley Continuing Education in Southern California; Division of Biology, Caltech; Active Vision Conference, Wissenschaftskolleg zu Berlin; Vision and Action Conference, York University; Minnesota Conference on Vision for Reach and Grasp; University of Wisconsin, Madison; Interval Research Corporation; Transportation Engineering Program, UC Berkeley.
1998: Institute of Biological Cybernetics, Max-Planck Institute, Tuebingen, Germany; Neurological Clinic; University of Tuebingen; Optical Society of America; University of Rochester; Exploratorium.
1999: University of Pennsylvania; Brown University; NEC Research, Princeton; Interval Research Corporation; European Conference on Neuroscience, Castelvecchio; Ecole Normale Superiore, Pisa; Visual Attention Conference, York University; University of Western Ontario; Symposium on Self-motion Perception, European Conference on Visual Perception, Trieste; Claremont-McKenna College; Pomona College; UC Irvine.

2000: Brooks Air Force Base, Spatial Disorientation Workshop; International Congress of Psychology, Stockholm, Sweden; SAAB Aircraft, Sweden; Department of Psychology, University of California, San Diego; Interval Research Corp., Hewlett-Packard Labs; Silicon Graphics; Department of Psychology, University of California, Los Angeles.

2001: Bayesian Workshop, Smith-Kettlewell; Scuola Normale, University of Pisa; Pediatric Grand Rounds, UCSF; Department of Psychology, Penn State University; National Eye Institute; MIT; Department of Psychology, UC Berkeley.

2002: INSERM, Lyon, France; Department of Psychology, University of Newcastle; Department of Psychology, University of Sheffield; Department of Psychology, Cardiff University; Max-Planck Institute for Biological Cybernetics, Tuebingen, Germany; Oxyopia Colloquium, UC Berkeley; IEEE Workshop on Virtual Reality; Minnesota Symposium on Child Psychology; Center for Neural Science, New York University.

2003: Department of Psychology, University of Minnesota; Conference on Statistical Models of Vision and Action, New York University; Lab for Sensorimotor Research, National Eye Institute; Center for Cognitive Science, University of Minnesota; Department of Mathematics, Sonoma State University; Department of Physics, Durham University; Max-Planck Institute for Biological Cybernetics, Tuebingen, Germany; Department of Psychology, Northeastern University; Department of Psychology, Institute for Research in Cognitive Science, University of Pennsylvania; Department of Psychology, Swarthmore College.

2004: Department of Psychology, University of California, Berkeley; Department of Psychology, North Dakota State University; Center for Visual Science, University of Rochester; Max-Planck Institute for Biological Cybernetics, Tuebingen.

2005: Department of Anatomy and Neurobiology, Washington University; Department of Psychology, Indiana University; Department of Computer Science, UC Davis; Julesz Symposium, SPIE conference; Department of Psychology, University of Giessen; Department of Psychology, University of Wales, Bangor, Department of the Physics of Man, Utrecht University, Holland: Sightlines: An American Studies Conference on the Science and Culture of Vision, Worcester, MA; Department of Physiology, Oxford University; School of Psychology, Cardiff University; Department of Psychology, Rene Descartes University, Paris; Department of Robotics, University of Genoa; Department of Psychology, Westfaelische, Wilhelms Universitaet, Muenster; Neurokolloquium, University of Tuebingen; Scuola Normale Superiore, Pisa.

2006: Center for Perceptual Studies, University of Texas at Austin; Society for Information Display, San Francisco; Department of Computer Science, UC Berkeley; Department of Anatomy and Neurobiology, Washington University; Department of Neuroscience, Università Vita-Salute San Raffaele, Milano.

2007: Adobe Systems, San Jose; Hewlett-Packard Labs, Palo Alto; Department of Psychology, UCLA; Department of Cognitive Science, UC Merced; Department of Psychology, McMaster University; Howard Lecture, Center for Visual Research, York University; LucasFilm, San Francisco; Department of Mathematics, Sonoma State University; Fall Vision Meeting, San Francisco; Koffka Lecture, University of Giessen; Alumni Day Lecture, UC Berkeley.

2008: Workshop on Natural Environments, Tasks, and Intelligence, UT Austin; Department of Neurobiology and Anatomy, University of Texas at Houston Medical School; Department of Psychology, Rice University; Department of Neuroscience, University of Texas at Austin; keynote speaker, Applied Perception, Graphics, and Visualization, Los Angeles; Giessen workshop.

2009: Keynote speaker, Society for Information Display, Los Angeles; banquet speaker, SPIE, San Jose; National Association of Broadcasters Convention, Las Vegas; Society for Information Display, Cupertino; COSYNE workshop, Salt Lake City; Virtual Reality Applications Center, Iowa State University; York Conference, Toronto, Canada; Computational Neuroscience Workshop, Giessen, Germany; Qualcomm, San Diego; Frontiers in Optics, San Jose; Redwood Center, UC Berkeley; Graphics Lunch, UC Berkeley, International 3D Stereo Film & Technology Festival, Liege, Belgium: Compass Lecture, UC Berkeley.

2010: Pixar Corporation, Emeryville; COSYNE workshop; Gatsby Center for Computational Neuroscience, London; Wavefront Congress, San Francisco; Hollywood Post Alliance, Palm Springs; keynote speaker, Sports Video Group Chairman's Forum, National Association of Broadcasters, Las Vegas; Society for Information Display, Seattle; Technicolor, Inc.; Burbank; keynote speaker, 3DTV-CON 2010, Tampere, Finland; Workshop on 3D Vision, SIGGRAPH; S3D workshop, Adobe, San Jose; keynote speaker, TV Ecosystem, San Jose; Google, Mt View; Distinguished Engineer Lecture, SONY, San Jose; Optical Sciences, Univ of Arizona, Tucson; plenary speaker, NIPS 2010, Vancouver; CineGrid 2010, San Diego.

2011: Stanford 3D Imaging Workshop; Biological Sciences Institute, Durham University; IAS Public Lecture, Durham University; Institute of Neuroscience, Newcastle University; Dept of Psychology, St. Andrews University; INRIA, Sophie-Antopole, France; Philips Corp., Eindhoven, The Netherlands; Bielefeld University, Germany; Disney Research Zurich; SMPTE, New York; 3D-FLIC, Toronto; School of Psychology, Bangor University; keynote speaker, Asia-Pacific Conference on Vision, Hong Kong; Ludwig-Maximilians-University, Munich; IMAX, Toronto; CCW Expo, New York City: Samsung Technology

Conference, Seoul, Korea; Taiwan National University; Dolby Labs, San Francisco.

2012: Emily Carr University of Art and Design, Vancouver, BC; Univ of British Columbia, Dept of Psychology, Vancouver, BC; Optical Society of America 3D Workshop, Washington, DC; SMPTE Workshop, Las Vegas; ICCNS, Boston Univ.; keynote speaker, CVPR 2012 Workshop for Computational Cameras and Displays, Providence, RI; Fall Vision Meeting, Rochester NY; Hewlett-Packard Labs, Palo Alto; Dept of Psychology, University of Nevada, Reno; Distinguished Lecturer, Dolby, San Francisco.

2013: zCon Conference, Mt. View; SPIE Security & Defense, Baltimore; Applied Research Labs, Johns Hopkins; keynote speaker, 3D Vision, Seattle; keynote speaker, IEEE IVMSP, Seoul, Korea; KAIST, Seoul, Korea; SMPTE Conference, San Jose; keynote speaker, Hot'3D Workshop, San Jose; 3D FLIC, Toronto; Distinguished Lecturer, Adobe, San Jose; Dept of Neuroscience, Univ. of Toulouse, France; School of Optometry, University of Waterloo.

2014: Dept of Psychology, UC Santa Cruz; Annual Interdisciplinary Conference, Jackson, WY; Center for Mind, Brain, & Computation; Stanford; Microsoft Research, Redmond, WA; Disney Research, Glendale, CA; 3DTV-CON 2014, Budapest; Rochester Institute of Technology, Rochester, NY; Center for Visual Science, University of Rochester; SUNY College of Optometry, New York City; Dept of Neuroscience, Univ. of Toulouse, France; INRIA, Sophie-Antipolis, France; Neuroscience Institute, Newcastle University, UK.

2015: SCIEN colloquium, Stanford; invited talk, Apple, Cupertino; ICRA Workshop, Seattle; plenary speaker, SID Display Week, San Jose; International Pupil Colloquium, Oxford University; Perceptual Computing Group, Intel Corp., Cupertino.

2016: Invited talk, Apple, Cupertino; DARPA, Toward the Bionic Eye, San Jose; INRIA Sophie-Antipolis, France; Istituto Italiano di Tecnologia, Genoa, Italy; Dept of Neuroscience, Univ. of Toulouse, France; keynote talk at ACM ETRA, Charleston, SC; Oculus Research, Redmond, WA; MagicLeap, Hollywood, FL; plenary talk at Society for Information Display, San Francisco; keynote speaker at Bay Area Vision Research Day, Berkeley; Peters Lecturer, UC Berkeley School of Optometry, Alumni weekend; keynote speaker at Sierra Nevada chapter of Society for Neuroscience, Reno; Department of Psychology, Northeastern University; Department of Psychology, Boston University; Charles Prentice Lecture at American Academy of Optometry, Anaheim; Smith-Kettlewell Eye Research Institute, San Francisco.

2017: Sacramento Ophthalmology Association; Google Vision Science Day, Mountain View; Sonoma State University; Wavefront Congress, San Jose; Photonics West, San Francisco; University of Houston College of Optometry; Borish Lecturer, Indiana University; Intel Light Field Workshop, Santa Clara; Applied Materials, Santa Clara; NVIDIA, Santa Clara; Johnson & Johnson Vision Care, Jacksonville; Microsoft, Seattle; Google, Mountain View; Apple, Cupertino.

Recent News Reports, Television Appearances, Magazine Articles

ABC News: http://abclocal.go.com/kgo/story?section=news/entertainment&id=7278834

EE Times: http://www.eetimes.com/electronics-news/4087927/Researchers-say-eye-strain-a-concern-as-3-D-TVs-debut

SF Chronicle: http://www.sfgate.com/cgi-bin/article.cgi?f=/c/a/2010/02/20/MN7G1C3O2O.DTL

EE Times: http://www.eetimes.com/electronics-news/4088655/3-D-TV-disparities-said-to-cause-physical-mental-strain

iVillage: http://www.ivillage.com/3-d-movies-are-they-bad-kids-eyes/6-a-167220

Technology Review: http://www.technologyreview.com/printer_friendly_article.aspix?id=24976&channel=computing&section=

KGO News: http://abclocal.go.com/kgo/story?section=news/drive_to_discover&id=7637965

Daily Californian: http://www.dailycal.org/article/110163/scientists_aim_to_make_3-d_more_comfortable

New Scientist: http://www.newscientist.com/article/dn26624-is-it-harmful-for-children-to-watch-3d-movies-and-games.html

New York Times: http://www.nytimes.com/2015/08/08/science/eye-shape-may-help-distinguish-predator-from-prey.html?action=click&contentCollection=science&region=rank&module=package&version=highlights&contentPlacement=1&pgtype=sectionfront&_r=0

National Public Radio: http://www.npr.org/sections/health-shots/2015/08/07/430149677/eye-shapes-of-the-animal-world-hint-at-differences-in-our-lifestyles

Science News: https://www.sciencenews.org/article/power-pupils-their-shape?tgt=nr

Spiegel Online: http://www.spiegel.de/wissenschaft/natur/pupillen-ihre-form-verraet-bei-tieren-die-lebensweise-a-1047210.html

The Guardian: http://www.theguardian.com/science/2015/aug/07/eye-shape-reveals-whether-an-animal-is-predator-or-prey-new-study-shows

Recent Grants:

Large Federal and International Grants for Banks Lab

Principal Investigator, NICHD Research Grant: The development of form perception in infancy, 12/78-12/81, $104,295; 12/81-12/84, $156,583; 1/85-12/88, $381,494; 1/89-12/93, $664,560; 6/94-5/99, approx. $700,000.

Principal Investigator, NIMH Research Career Development Award: The development of infant form vision, 8/80-8/85, $156,045.

Principal Investigator, NSF Research Grant: The efficiency of heading perception, 8/93-7/96, $225,000, 10/96-9/99, $335,000, 6/00-5/03, $210,000.

Principal Investigator, AFOSR Research Grant: Visually-guided navigation, 3/94-2/97, $332,900, 2/98-1/01, $345,000, 3/01-3/04, $425,000.

Principal Investigator, NIH Research Grant: Stereoscopic surface perception, 2/1/00-1/31/05, approx $1,000,000; 2/1/05-1/31/10, approx $1,500,000.

Principal Investigator, NIH Research Grant: Improvements in 3D visualization for vision research, 10/1/02-9/30/06, approx. $1,500,000; 4/1/08-3/31/12, approx. $1,500,000.

Principal Investigator, NSF Research Grant: The psychology of picture perception, 10/1/06-9/30/09, approx. $500,000.

Principal Investigator, NSF Research Grant: Blur, accommodation, and vision, 9/1/10-8/31/13, approx. $500,000.

Principal Investigator, NSF Research Grant: The perception of surface material, 3/1/14-2/28/17, approx. $550,000.

Co-Principal Investigator, Human Frontiers in Science Research Grant, Visual and non-visual factors in orienting behaviour, 7/96-6/99, $171,000 (our portion).

Co-Principal Investigator, NSBRI Research Grant: Enhancement of spatial orientation capability of astronauts on the lunar surface, 8/1/08, 7/31/11, approx. $250,000 (Berkeley share).

Co-Principal Investigator, IARPA Research Grant: Construction and evaluation of volumetric display, 3/1/2012-2/28/2016, approx. $400,000 (Berkeley share).

Principal Investigator, NSF Research Grant: The perception of surface material, 5/1/2014-4/30/2017, approx. $400,000.

Principal Investigator, NSF Research Grant: Accommodation of the human eye, 8/1/2017-7/31/2020, approx. $500,000.

Principal Investigator, Intel University Cooperative Grant: Specifications for an effective light-field display, 9/1/2016-8/30/2019, $300,000.

Small State, Federal, and Industry Grants for Banks Lab

Principal Investigator, NASA Ames Research Center Research Grant: Optic flow and perception of heading and depth, 7/1/90-6/30/91, $28,000; 7/1/91-7/1/92, $29,135.

Principal Investigator, General Motors Research Labs Research Contract, Development of motion perception tests for the elderly driver, 1/94-3/94, $11,000.

Principal Investigator, Smith-Kettlewell Eye Research Foundation Research Grant, Applied visual performance tests, 1/94-3/94, $14,000.

Principal Investigator, AFOSR AASERT Grant: Dynamic stereopsis, 6/96-5/99, $32,000.

Principal Investigator, DiMI & Silicon Graphics: Deformable lens and 3d visualization, 5/00-4/02, $75,000

Principal Investigator, NEI Administrative Supplement: Deformable lens and 3d visualization, 6/00-5/01, $50,000.

Principal Investigator, Sharp Research Labs; Stereo displays, unrestricted gift, $32,000.

Principal Investigator, Samsung Advanced Institute of Technology, 8/10-8/12, $200,000.

Principal Investigator, Samsung Displays, 1/13-1/14, $200,000, 2/14-2/15, $110,000.

Principal Investigator, ESPN, 6/12-6/13, $150,000.

Principal Investigator, Huawei, 9/17-8/18, $136,000.

Equipment Grants for Department

Principal Investigator, BRSG Shared Instrumentation Grant: Image processing station, 11/87 -10/88, $191,034.

Professional Organizations (current):

American Association for the Advancement of Science
Association for Research in Vision and Ophthalmology
Vision Sciences Society
Applied Perception, Graphics, and Visualization
Society for Information Display

Other Professional Activities:

Editorial Boards: *Journal of Experimental Child Psychology* (1983-1986), *Developmental Psychology* (1985-1990), *Infant Behavior and Development* (1984-1990), *Clinical Visual Science* (1989-1994), *Child Development* (1989-1993), *Vision Research* (1997-2006), *Journal of Vision* (2002-present), *ACM Transactions on Applied Perception* (2009-present), *PeerJ* (2013-present).

Scientific Advisory Boards: *Public Library of Science* (2003-present).

Consulting (ad hoc) Reviewer: *Child Development, Science, Investigative Ophthalmology and Visual Science, Perception and Psychophysics, Perception, Behavioral Research Methodology and Instrumentation, Journal of Experimental Psychology, Development Psychobiology, Psychological Bulletin, Monographs of SRCD, Journal of the Optical Society of America, Merrill-Palmer Quarterly, Perception, Visual Neuroscience, Ecological Psychology, Proceedings of the National Academy of Science, Neuroreports, Neural Computation, Nature, Nature Neuroscience, Public Library of Science, Trends in Neuroscience, Learning & Memory, Neural Networks, Neuron, Current Biology, Journal of Neuroscience, Journal of Neurophysiology, Journal of Vestibular Research, SIGGRAPH,* National Science Foundations, National Institute of Mental Health, March of Dimes, National Institute of Child Health & Human Development, Society for Research in Child Development, Air Force Office of Scientific Research, US Army, Human Frontier of Science.

Site Visiting Consultant: National Institute of Mental Health; National Eye Institute; Virtual Reality Application Center, Iowa State University.

Ad-Hoc Study Section Member: National Institute of Mental Health (1984), National Institutes of Health (1985, 2002, 2003, 2004, 2007).

Study Section Member: National Institute of Health, Visual Sciences B (1986-1990).

Program Committees: Association for Research in Vision and Ophthalmology (1988-1991; Chairman, 1990-1991); Applied Perception in Graphics and Visualization (2006); Fall Vision Meeting (2007).

Program Chairman: Applied Perception in Graphics and Visualization (2010).

Tillyer Award Committee: Optical Society of America (1995-2001); Chairman (1997).

NEI 5-year Planning Committee (1997).

Advisory Committees: University of Minnesota, Cognitive Science Training Grant (2003-2009); Washington University Neuroscience Training Grant (2005-present), Center for Visual Research, York University (2010), Gatsby Computational Neuroscience Unit (2010).

Honors:

D.O. (Occidental College, 1969); outstanding senior men.
Young Investigator Award, National Research Council meetings (Committee on Vision, 1978).
Boyd R. McCandless Award: Distinguished Early Career Award (Division 7, APA, 1981).
Distinguished Scholar Exchange Program, National Academy of Sciences, (Beijing, China, 1984).
Fellow, Center for the Advanced Study of the Behavioral Sciences (Stanford, 1988-89).
Gottsdanker Memorial Lecturer, University of California, Santa Barbara (1995).
Honorary Research Fellow, Department of Psychology, Cardiff University (2007-2010).
Howard Lectureship, York University (2007).
Koffka Medal, Department of Psychology, Giessen University, Germany (2007).
Fellow, American Association for the Advancement of Science (2008).
Fellow, American Psychological Society (2009).
Holgate Fellow, Durham University (2011).
WICN Fellow, Bangor University (2011).
Certificate of Merit, SMPTE Journal (2013).
Distinguished Paper, SID International Symposium (2014).
Charles F. Prentice Medal, American Academy of Optometry (2016).
Henry B. Peters Lecture, UC Berkeley School of Optometry (2016).
Borish Scholar, Indiana University School of Optometry (2017).
Honorary Professor, University of Wales (2017).
Otto Schade Prize, Society for Information Display (2017).

Dissertation and Orals Examination Committees:

Chairman:

Edward Leitner, Psychology (Texas), Ph.D. (1980, deceased)
James L. Dannemiller, Psychology (Texas), Ph.D. (1982) (Professor of Psychology, Rice University)
Benjamin R. Stephens, Psychology (Texas), Ph.D. (1984) (Professor of Psychology, Clemson University)
Patrick J. Bennett, Psychology, Ph.D. (1988) (Chaired Professor of Psychology, McMaster University)
Gary L. Savage, Physiological Optics, Ph.D. (1988) (Professor of Optometry, University of Houston)
Dale Allen, Physiological Optics, Ph.D. (1990) (deceased, former Professor of Optometry, Univ of Houston)
Allison B. Sekuler, Psychology, Ph.D. (1991) (Chaired Professor of Psychology, McMaster University)
Momi Furuya, Physiological Optics, M.S. (1991)

Elizabeth S. Shannon, Psychology, Ph.D. (1993) (Professor of Psych, Moorhead State Univ)
James A. Crowell, Psychology, Ph.D. (1993) (Director Virtual Reality Lab, Univ of Illinois)
T. Rowan Candy, Vision Science, Ph.D. (1997) (Professor of Optometry, Indiana Univ)
Benjamin T. Backus, Vision Science, Ph.D. (1997) (Professor of Optometry, SUNY)
Sheryl T. Ehrlich, Psychology, Ph.D. (1998) (User Research Manager, Adobe)
Danielle Mikes, Bioengineering, M.S. (2000)
James M. Hillis, Vision Science, Ph.D. (2002) (Reader, Glasgow University; Engineer, 3M)
Matthew P. Sibigtroth, Psychology, M.S. (2002) (Software Engineer)
Tandra Ghose, Vision Science, M.S. (2004) (Assistant Professor, Technical University Kaiserslautern)
Rob Meyerson, Vision Science, M.S. (2006) (working in advertising industry in Los Angeles)
Paul MacNeilage, Vision Science, Ph.D. (2007) (Lecturer, Ludwig-Maximilians-University Munich)
Carmel Levitan, Bioengineering, Ph.D. (2007) (Assoc. Professor of Cognitive Science, Occidental College)
Ahna Girshick, Vision Science, Ph.D. (2007) (Postdoc, NYU, UC Berkeley)
Peiyi Ko, Vision Science, M.S. (2007) (transferred to Ergonomics Program at UC Berkeley)
Heather Filippini, Bioengineering, Ph.D. (2008) (Engineer at Northrup-Grumman)
Johannes Burge, Vision Science, Ph.D. (2008) (Assistant Professor, Univ of Pennsylvania)
Robert Held, Bioengineering, Ph.D. (2010) (Engineer at Microsoft Research)
David Hoffman, Vision Science, Ph.D. (2010) (Engineer at Samsung Displays)
Jamie O'Shea, Vision Science, Ph.D. (2012) (Engineer at Albany Engineering)
Emily Cooper, Neuroscience, Ph.D. (2012) (Assistant Professor, Dartmouth College)
Valerie Morash, Psychology, Ph.D. (2014) (Postdoc, Smith Kettlewell)
Bill Sprague, Vision Science, Ph.D. (2015) (Research Engineer at Apple)
Phil Guan, Bioengineering, Ph.D. (2015) (Research Engineer at Microsoft Research)
Elise Piazza, Vision Science, Ph.D. (2015) (Postdoc, Princeton)
Paul Johnson, Bioengineering, Ph.D. (2015) (Research Engineer at Apple)

Member (Berkeley only):
John Kotulak, Physiological. Optics, M.S. (1986).
Peter Howarth, Physiological Optics, Ph.D. (1989).
Frank Kooi, Physiological Optics, Ph.D. (1990).
David Grossof, Neurobiology, Ph.D. (1990).
Leslie Welch, Physiological Optics, Ph.D. (1990).
Javier Rodriguez-Movellan, Psychology, Ph.D. (1990).
Karla Zadnik, Physiological Optics, Ph.D. (1992).
Donald Mutti, Physiological Optics, Ph.D. (1992).
Carol Higgins, Psychology, Ph.D. (1992).
Chang Cheng-Yu, Physiological Optics, Ph.D. (1992).
Larry Cormack, Physiological Optics, Ph.D. (1992).
Roger Miller, Neurobiology, Ph.D. (1993).
Su-Ling Yeh, Psychology, Ph.D. (1994).
Bryan Gros, Vision Science, Ph.D. (1995).
Chris Linnett, Psychology, Ph.D. (1993).
Karoush Saberi, Psychology, Ph.D. (1994).
Joseph Weber, Computer Science, Ph.D. (1994).
Johanna Weber, Psychology, Ph.D. (1994).
Sarah Schlussel, Psychology, Ph.D. (1995).
Mathew Schlesinger, Psychology, Ph.D. (1997).
Kathy O'Connell, Psychology, Ph.D. (1996).
Amnon Silverstein, Vision Science, Ph.D. (1999).
Nancy Kim, Psychology, Ph.D. (1997)
Rebecca Lloyd, Psychology, Ph.D. (1997)
Lynn Marran, Vision Science, Ph.D. (1997)
Jeff McCandless, Vision Science, Ph.D. (1996)
Gregory Klein, Vision Science, Ph.D. (1999)
Zhen Shi, Molecular & Cell Biology, Ph.D. (1998)
Ethan Newby, Psychology, Ph.D. (1999)
Diane Beck, Psychology, Ph.D. (1998)
Dimitri Chernyak, Vision Science, Ph.D. (2000)
Erich Graf, Vision Science, Ph.D. (2001)

Joseph Hardy, Psychology, Ph.D. (2002)
Sergey Ioeffe, Computer Science, Ph.D. (2002)
Joern Diedrichsen, Psychology, Ph.D. (2002)
Chris Stecker, Psychology, Ph.D. (2001)
Laura Walker Renninger, Vision Science, Ph.D. (2003)
Erik Gallen, Psychology, Ph.D. (2003)
Shelly Fried, Vision Science, Ph.D. (2003)
Timothy Verstynen, Psychology, Ph.D. (2006)
Chris Cantor, Vision Science, Ph.D. (2006)
Shrikant Bharadwaj, Vision Science, Ph.D. (2006)
Prayrana Khadye, Vision Science, Ph.D. (2008, anticipated)
David Nguyen, Computer Science, Ph.D. (2008)
Chuoyao Yeo, Computer Science, Ph.D. (2009)
Chelsea Johnson, Architecture, M.S. (2009)
John Schlerf, Neuroscience, Ph.D. (2010)
Jimmy Wang, Vision Science, Ph.D. (2010)
Todd Templeton, Computer Science, Ph.D. (2009)
Jonathan Gardner, Psychology, Ph.D. (2012)
Jonathan Shih, Bioengineering, Ph.D. (2012)
Becca Stoloff, Bioengineering, Ph.D. (2012)
Adam Kirk, Computer Science, Ph.D. (2012)
Francesca Fortenbaugh, Psychology, Ph.D. (2013)
Jiamin Bai, Computer Science, Ph.D. (2014)
Ricardo Garcia, Computer Science, Ph.D. (2014)
Aaron K, Bioengineering, Ph.D. (2014)
Karthik Narayan, Computer Science, Ph.D. (2016).
Brent Parsons, Vision Science, Ph.D. (2017, anticipated).
Sara Popham, Neuroscience, Ph.D. (2019, anticipated).
Angelica Godinez, Vision Science, Ph.D. (2020, anticipated)
Elise Harb, Vision Science, Ph.D. (2020, anticipated)

Post-doctoral students supervised

Stephen Anderson, 1988-89 (now Professor at Aston University)
Kathleen Kleiner, 1987-89 (now Professor at George Fox University)
Constance Royden, 1989-90 (now Professor at Holy Cross College)
Ann Skoczenski, 1991-93 (now Research Associate at Smith-Kettlewell)
James Crowell, 1994-96 (now VR Lab Director at University of Illinois)
Tom Freeman, 1994-96 (now Senior Reader at Cardiff University)
Catherine Suttle, 1995-97 (now Professor of Optometry, University of New South Wales)
Raymond van Ee, 1996-99 (now Professor at Utrecht University)
Ignace Hooge, 1999 (now Professor at Utrecht University)
Fulvio Domini, 1998-1999 (now Associate Professor at Brown University)
Wendy Adams, 1998-1999 (now Reader at Southhampton University)
Marc Ernst, 2000-2001 (now Professor, Ulm University)
Sergei Gepshtein, 2001-2005 (now Research Scientist, Salk Institute)
Simon Watt, 2001-2004 (now Reader, University of Wales, Bangor)
Dhanraj Vishwanath, 2002-2005 (now Lecturer at St. Andrews University)
Bjorn Vlaskamp, 2006-2009 (now Engineer at Philips)
Takashi Shibata, 2008-2010 (now Associate Professor at Tokyo University of Social Welfare)
Johannes Burge, 2008-2009 (now Assistant Professor at Univ of Pennsylvana)
Joohwan Kim, 2009-2015 (now Engineer at NVIDIA)
David Kane, 2010-2012 (now postdoc at University of Barcelona)
Sowmya Ravikumar, 2010-2013 (now postdoc at UC Berkeley)
Sunah Kim, 2010-2012 (now Engineer at Samsung)
Abdullah Bulbul, 2012-2014 (now postdoc at University College, UK)
Marina Zannoli, 2012-2015 (now Engineer at Oculus)
Bill Sprague, 2015 (now Engineer at Apple)
Steven Cholewiak, 2015-present
George Koulieris, 2015-2016

Agostino Gibaldi, 2016-present