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Education

B.A. University of California, Los Angeles, 1978, Quantitative Psychology.
 Ph.D. Massachusetts Institute of Technology, 1983, Computational Psychology.

Positions

1978 –1983 Member of the Technical Staff and Project Engineer, Hughes Aircraft Company, El Segundo, California.
 1983 –1983 Research Scientist, Laboratory for Artificial Intelligence, Massachusetts Institute of Technology.
 1983 –1986 Assistant Professor of Cognitive Science, and of Information and Computer Science, University of California, Irvine.
 1986 –1990 Associate Professor of Cognitive Science, and of Information and Computer Science, University of California, Irvine.
 1990 – Professor of Cognitive Science, and of Information and Computer Science, University of California, Irvine.
 1995 – 1996 Visiting Professor, Zentrum für interdisziplinäre Forschung der Universität Bielefeld, Germany.
 1996 – Professor of Philosophy, University of California, Irvine.

Research Interests

Vision
 Consciousness
 Virtual Reality
 Cognitive Science

Honors

Hughes Aircraft Company Bachelors, Masters, and Ph.D. fellowships.
 B.A., summa cum laude.
 Distinguished Scientific Award of the American Psychological Association for an Early Career Contribution to Psychology in Sensation and Perception (1989).
 Troland Research Award of the National Academy of Sciences (1994).
 Who's Who in America, Editions 50–56.
 Who's Who in the West, Editions 23–28.
 Who's Who in the World, Editions 11–13.
 Who's Who in Finance and Industry, Edition 28.
 Who's Who in Science and Engineering, Editions 2–6.
 Dictionary of International Biography, Editions 23, 24.
 My Last Lecture: Teaching award given by UCI students (1988).
 UCI Chancellors's Award for Excellence in Undergraduate Research (2002).

Contracts and Grants

| | |
|-----------|---|
| \$177,283 | NSF, “Object Recognition Using Visual Information from Images”, PI, 1984. |
| 369,110 | ONR, “An Interdisciplinary Investigation of Inferences from Images,” PI, 1985. |
| 126,000 | DOD, “Inferring 3-D Shape from Image Motion and Occluding Contours,” PI, 1986. |
| 271,064 | NSF, “A Formal Investigation of Perceptual Information Processing,” Co-PI with B. Bennett, 1987. |
| 458,239 | ONR, “Formal and Psychophysical Investigations of Vision,” PI, 1988. |
| 1,676,678 | NSF, “Research and Training Program in Mathematical Behavioral Science,” Faculty Participant (R.D. Luce, PI), 1990–1995. |
| 13,701 | ONR, “Workshop on Image Representation in Biological and Machine Vision,” PI, 1992. |
| 85,015 | CalTrans, “Automatic Video Analysis For Transportation,” PI on subcontract, 1993. |
| 35,000 | NAS, Troland Research Award, 1994. |
| 10,000 | UCI COR, “Perception and Evolution,” Co-PI with A. Nelson, 1995. |
| 35,000 | German NSF, “Perception and Evolution,” Faculty Participant, 1995. |
| 530,000 | NSF, “Acquisition of Equipment for a VR Laboratory,” Faculty Participant (M. D’Zmura, PI), 1997. |
| 180,000 | Alzheimer’s Foundation, “Optimizing Object Perception in Alzheimer’s Disease,” Co-I (W.R. Shankle, PI), 1999. |
| 250,000 | Alzheimer’s Foundation, “Preclinical detection & disease measurement of AD,” Co-I (W.R. Shankle, PI), 2001. |
| 387,000 | NSF, “The role of parts in the visual perception of objects”, PI, 2001. |

Publications

1982

1. Equation counting and the interpretation of sensory data. *Perception*, **11**, 557–576. W. Richards, J. Rubin, D. Hoffman.
– also appeared as *MIT Artificial Intelligence Laboratory Memo 614*
2. The interpretation of biological motion. *Biological Cybernetics*, **42**, 3, 197–204. D. Hoffman, B. Flinchbaugh.
– also appeared as *MIT Artificial Intelligence Laboratory Memo 608*
3. Inferring local surface orientation from motion fields. *Journal of the Optical Society of America*, **72**, 7, 888–892. D. Hoffman.
– also appeared as *MIT Artificial Intelligence Laboratory Memo 592*
4. Representing smooth plane curves for recognition: Implications for figure-ground reversal. *Proceedings of the National Conference of the American Association for Artificial Intelligence*, 5–8. D. Hoffman, W. Richards.
– also appears in *Natural Computation*, W. Richards (Ed), MIT Press, 1988.
5. Interpreting time-varying images: The planarity assumption. *IEEE Workshop on Computer Vision*, 92–94. D. Hoffman.

1983

6. The interpretation of visual illusions. *Scientific American*, **249**, 6, 154–162. D. Hoffman.
– also appears in *The Mind’s Eye. Readings From Scientific American*, J. Wolfe (Ed), Freeman Press, 1986.

1984

7. Parts of recognition. *Cognition*, **18**, 65–96. D. Hoffman, W. Richards.
– also appears as *MIT Artificial Intelligence Laboratory Memo 732*, 1983.
– also appears in *Visual Cognition*, S. Pinker (Ed), MIT Press, 1985.

- also appears in *From Pixels to Predicates: Recent Advances in Computational Vision*, A. Pentland (Ed), Ablex Publishing Company, 1986.
- also appears in *Readings in Computer Vision*, M. Fischler and O. Firschein (Eds), Morgan and Kaufmann Publishers, Inc., 1987.

1985

8. The computation of structure from fixed-axis motion: Nonrigid structures. *Biological Cybernetics*, **51**, 293–300. B. Bennett, D. Hoffman.
 9. Inferring the relative 3-D positions of two moving points. *Journal of the Optical Society of America A*, **2**, 350–353. D. Hoffman, B. Bennett.
 10. Codon constraints on closed 2-D shapes. *Computer Vision, Graphics, and Image Processing*, **31**, 265–281. W. Richards, D. Hoffman.
- also appears in *Human and Machine Vision II*, A. Rosenfeld (Ed), Academic Press, 1986.

1986

11. Regularities of nature: The interpretation of visual motion. In *From Pixels to Predicates: Recent Advances in Computational Vision*, A. Pentland (Ed), Ablex Publishing Company, New Jersey, 201–226. S. Reuman, D. Hoffman.
12. The computation of structure from fixed-axis motion: Rigid structures. *Biological Cybernetics*, **54**, 71–83. D. Hoffman, B. Bennett.

1987

13. Description of solid shape and its inference from occluding contours. *Journal of the Optical Society of America, A*, **4**, 1155–1167. J. Beusmans, D. Hoffman, B. Bennett.
 14. Inferring three-dimensional shapes from two-dimensional silhouettes. *Journal of the Optical Society of America, A*, **4**, 1168–1175. W. Richards, J. Koenderink, D. Hoffman.
- also appears as *MIT Artificial Intelligence Laboratory Memo 840*
 - also appears in *Natural Computation*, W. Richards (Ed), MIT Press, 1988.
15. Perception and computation. *IEEE First International Conference on Computer Vision, London*, 356–364. B. Bennett, D. Hoffman, C. Prakash.
 16. Minimum points and views for the recovery of three-dimensional structure. *Journal of Experimental Psychology: Human Perception and Performance*, **13**, 335–343. M. Braunstein, D. Hoffman, L. Shapiro, G. Andersen, B. Bennett.
 17. Shape decompositions for visual shape recognition: The role of transversality. In *Image Understanding*, W. Richards (Ed), Ablex Publishing Company, New Jersey, 215–256. B. Bennett, D. Hoffman.

1988

18. Perceptual representations: Meaning and truth conditions. In *Cognition and representation*, S. Schiffer and S. Steele (Eds), Westview Press, Boulder, 87–128. D. Hoffman, B. Bennett.

1989

19. *Observer Mechanics: A formal theory of perception*. Academic Press, New York. B. Bennett, D. Hoffman, C. Prakash.
20. Inferring structure from motion: A homotopy algorithm. *Proceedings of the IEEE Workshop on Visual Motion, Irvine*, 238–245. B. Bennett, D. Hoffman, J. Nicola, C. Prakash.

21. Structure from two orthographic views of rigid motion. *Journal of the Optical Society of America, A*, **6**, 1052–1069. B. Bennett, D. Hoffman, J. Nicola, C. Prakash.
– also appears as *UCI Mathematical Behavioral Sciences Memo MBS 89-01*.
22. Parts of visual objects: An experimental test of the minima rule. *Perception*, **18**, 817–826. M. Braunstein, D. Hoffman, A. Saidpour.

1990

23. Discriminating rigid from nonrigid motion: Minimum points and views. *Perception & Psychophysics*, **47**, 3, 205–214. M. Braunstein, D. Hoffman, F. Pollick.

1991

24. Unity of perception. *Cognition*, **38**, 295–334. B. Bennett, D. Hoffman, C. Prakash.
– also appears as *UCI Mathematical Behavioral Sciences Memo MBS 90-13*.

1992

25. Vision. *1992 McGraw-Hill Yearbook of Science and Technology*, 487–489. D. Hoffman.
26. Interpolation in structure from motion. *Perception & Psychophysics*, **51 (2)**, 105–117. A. Saidpour, M. Braunstein, D. Hoffman.
27. Perception is no accident. *Optics & Photonics News*, **3 (9)**, 50–51. M. Albert, D. Hoffman.

1993

28. Recognition polynomials. *Journal of the Optical Society of America, A*, 10, 4, 759–764. B. Bennett, D. Hoffman, C. Prakash.
– also appears as *UCI Mathematical Behavioral Sciences Memo MBS 92-17*.
29. Lebesgue logic for probabilistic reasoning and some applications to perception. *Journal of Mathematical Psychology*, 37, 1, 63–103. B. Bennett, D. Hoffman, P. Murthy.
– also appears as *UCI Mathematical Behavioral Sciences Memo MBS 90-07*.
30. No perception without representation. Commentary in *Behavioral and Brain Sciences*, 16, 2, 247–247. D. Hoffman.
31. Modeling performance in observer theory. *Journal of Mathematical Psychology*, 37, 2, 220–240. B. Bennett, D. Hoffman, R. Kakarala.
– also appears as *UCI Mathematical Behavioral Sciences Memo MBS 90-25*.
32. Inferring 3D structure from image motion: The constraint of Poinot motion. *Journal of Mathematical Imaging and Vision*, 3, 143–166. B. Bennett, D. Hoffman, J. Kim, S. Richman.
– also appears as *UCI Mathematical Behavioral Sciences Memo MBS 91-01*.
33. Inferring structure from motion in two-view and multi-view displays. *Perception*, 22, 1441–1465. J. Liter, M. Braunstein, D. Hoffman.

1994

34. Interpolation Across Surface Discontinuities in Structure-from-motion. *Perception & Psychophysics*, 55, 611–622. A. Saidpour, M. Braunstein, D. Hoffman.
35. Detection of one versus two objects in structure from motion. *Journal of the Optical Society of America, A*, 11, 3162–3166. J. Liter, M. Braunstein, D. Hoffman.
36. Inferring 3D structure from three points in rigid motion. *Journal of Mathematical Imaging and Vision*, 4, 401–406. B. Bennett, D. Hoffman.
– also appears as *UCI Mathematical Behavioral Sciences Memo MBS 92-16*.

1995

37. The perception of color from motion. C. Cicerone, D. Hoffman, P. Gowdy, J. Kim. *Perception & Psychophysics*, 57(6), 761–777.
38. Genericity in spatial vision. In D. Luce, K. Romney, D. Hoffman, & M. D’Zmura (Eds.), *Geometric Representations of Perceptual Phenomena: Articles in Honor of Tarow Indow’s 70th Birthday*. Erlbaum, New York, pp. 95–112. M. Albert, D. Hoffman.

1996

39. Observer theory, Bayes theory, and psychophysics. In D. Knill and W. Richards (Eds) *Perception as Bayesian inference*, Cambridge University Press, pp. 163–212. B. Bennett, D. Hoffman, C. Prakash, S. Richman.
– also appears as UCI Mathematical Behavioral Sciences Memo MBS 93-12.
40. What do we mean by the structure of the world? In D. Knill and W. Richards (Eds) *Perception as Bayesian inference*, Cambridge University Press, pp. 219–221. D. Hoffman.

1997

41. Salience of visual parts. *Cognition*, 63, 29–78. D. Hoffman, M. Singh.
– also appears as UCI Mathematical Behavioral Sciences Memo MBS 94-27.
42. Constructing and representing visual objects. *Trends in Cognitive Sciences*, 1, 98-102. M. Singh, D. Hoffman.
43. Color from motion: Dichoptic activation and a possible role in breaking camouflage. *Perception*, 26, 1367–1380. C. Cicerone, D. Hoffman.

1998

44. *Visual intelligence: How we create what we see*. W.W. Norton & Co. D. Hoffman.
45. Part boundaries alter the perception of transparency. *Psychological Science*, 9, 370–378. M. Singh, D. Hoffman.
46. Active vision and the basketball problem. Commentary in *Behavioral & Brain Sciences*, 21, 772–773. M. Singh, D. Hoffman.

1999

47. Parsing silhouettes: The short-cut rule. *Perception & Psychophysics*, 61, 636–660. M. Singh, G. Seyranian, D. Hoffman.
48. Completing visual contours: The relationship between relatability and minimizing inflections. *Perception & Psychophysics*, 61, 943–951. M. Singh, D. Hoffman.
49. Contour completion and relative depth: Petter’s rule and support ratio. *Psychological Science*, 10, 423–428. M. Singh, D. Hoffman, M. Albert.
50. Perception, inference, and the veridicality of natural constraints. Commentary in *Behavioral and Brain Sciences*, 22, 395–396. M. Singh, D. Hoffman.

2000

51. The generic-viewpoint assumption and illusory contours. *Perception*, 29, 303–312. M. Albert, D. Hoffman.
52. Constructing surfaces and contours in displays of color from motion: The role of nearest neighbors and maximal disks. *Perception*, 29, 567–580. C. Fidopiastis, D.D. Hoffman, W.D. Prophet, M. Singh.

2001

53. The data problem for color objectivism. *Consciousness and Cognition*, 10, 74–77. D. Hoffman.
54. Mereology of visual form. *Proceedings of the Fourth International Workshop on Visual Form, Capri, Italy* 40–50. D. Hoffman.
55. Flank transparency: Transparent filters seen in dynamic two-color displays. *Perception*, 30, 1423–1426. D. Wollschläger, A. Rodriguez, D. Hoffman.
56. Part-based representations of visual shape and implications for visual cognition. In *From fragments to objects: Segmentation and grouping in vision* P. Kellman and T. Shipley (Eds), Elsevier Science, pp. 401–459. M. Singh, D. Hoffman.
57. Contours from apparent motion: A computational theory. In *From fragments to objects: Segmentation and grouping in vision* P. Kellman and T. Shipley (Eds), Elsevier Science, pp. 509–530. W. Prophet, D. Hoffman, C. Cicerone.

2002

58. Perception and evolution. In *Perception and the Physical World: Psychological and Philosophical Issues in Perception*, D. Heyer and R. Mausfeld (Eds.) Chichester, UK: Wiley, pp. 229–245. B. Bennett, D. Hoffman, C. Prakash.

In Press

59. The interaction of color and Motion. In *Perception and the Physical World*, D. Heyer and R. Mausfeld (Eds.) Chichester, UK: Wiley. D. Hoffman.
60. Visual worlds: Construction or reconstruction?. *Journal of Consciousness Studies*. T. Davies, D. Hoffman, A. Rodriguez.
61. Attention to faces: A change-blindness study. *Perception*. T. Davies, D. Hoffman.
62. Vision: Form perception. *Encyclopedia of Cognitive Science*. D. Hoffman, M. Singh.

Invited Lectures

- 1983 Natural Computation. Massachusetts Institute of Technology.
 Recovery and Recognition of Shape. University of Oregon, Eugene.
 Recovery and Recognition of Shape. Stanford University.
 Recovery and Recognition of Shape. University of California, Irvine.
 Recovery and Recognition of Shape. Stanford Research International.
 Recovery and Recognition of Shape. Fairchild Camera Corporation, Palo Alto.
- 1984 Shape Recognition: An AI Approach. University of California, Irvine.
 Representing Shapes. NASA Ames.
 Shape Recognition. Texas Instruments Corp., Dallas.
 Parts of Recognition. Optical Society of America, San Diego.
 Recovery and Recognition of Shape. Odetics Inc., Anaheim.
 Recovery and Recognition of Shape. Ford Aerospace, Newport Beach.
 Vision: State of the Art. University of Arizona.
 Recovery and Recognition of Shape. California Institute of Technology.
- 1985 Recovery and Recognition of Shape. University of California, San Diego.
 Shape Recognition. University of California, Los Angeles.
 Recovery and Recognition of Shape. University of Pennsylvania, Phil.
 Recognizing Visual Shapes. Office of Naval Research (ONR), Pasadena.
 Perception as Inference. Event Perception Conference. Uppsala, Sweden.
 Shape Recognition. Center for Neurobiology of Learning and Memory, UCI.
- 1986 Observer Theory. ONR Contractors Conference. Dedham, Massachusetts.
 Parts of Recognition. Rochester Vision Conference. Rochester, NY.
 Observer Theory. State Developmental Research Inst., Asilomar, CA.
 Observer Theory. University of Illinois, Champagne.
 Parts of Shape Recognition. University of Illinois, Champagne.
 Observer Theory. Helmholtz Club, UC Irvine.
- 1987 Observer Theory. University of California, Berkeley.
 Observer Theory. American Philosophical Association, San Francisco.
- 1988 Observer Theory. ONR Contractors Meeting, UC Irvine.
 My Last Lecture. UC Irvine.
 The Cognitive Revolution: Vision. UCLA.
 Forms of Perception. Institute for Mathematical Behavioral Science, UC Irvine.
- 1989 Observer Theory. Philosophy Department, UC Irvine.
 Marr—Ten years later. Society of Philosophy and Psychology, Tucson.
 Empirical Tests of Formal Theories of Perception. Helmholtz Club, UC Irvine.
- 1990 Empirical Tests of Formal Theories of Perception. Cognitive Science, UC Irvine.
 The Cognitive Revolution: Vision. UCLA.
 Recognition of 3D Shape. International Conference on Computational and
 Biological Models of Visual Processes. Trieste, Italy.
 Formal Theories of Perception. Western Psychological Association. Los Angeles.
- 1991 Representing 3D Shapes for Visual Recognition. Society for Photo-Optical Instrumentation
 and Engineering: Medical Imaging V Conference. San Jose.
 Perception and Logic. MIT, Cambridge, Massachusetts.
 Representing 3D Shapes For Visual Recognition. UC Riverside.
 The Principle of Genericity in Visual Interpretations. California Institute of Technology.
- 1992 Representing 3D Shapes for Visual Recognition. Rockwell Science Center, Thousand Oaks, CA.
 Representing 3D Shapes for Visual Recognition. Center for High-Speed Image/Signal
 Processing, UC Irvine.
 Image Segmentation. ONR Workshop on Image Representation in Biological and Machine
 Vision, Laguna Beach.
 Recognition Polynomials. University of Southern California, Los Angeles.
 Recognition Polynomials. Center for High-Speed Image/Signal Processing, UC Irvine.

Invited Lectures

- 1993 Lebesgue Logic and the Bayesian Foundations of Observer Theory. AFOSR Workshop on Visual Perception: Computation and Psychophysics. Chatham, Massachusetts. Generic Visions. Franz Hall, UCLA.
 Detecting and Segmenting Rigid Body Motion in Cinematic Images. School of Engineering, UC Irvine.
 Bayesian Estimation in Vision. Cognitive Sciences, UC Irvine.
 Genericity in Spatial Vision. Conference on Geometric Representations of Perceptual Phenomena. Institute for Mathematical Behavioral Sciences, UCI.
 Genericity in Spatial Vision. Pacific Construction Management Incorporated, Long Beach.
 Genericity in Spatial Vision. Department of Psychology, UC Santa Barbara.
- 1994 Automated Interpretation of Digital Video for IVHS. Institute for Transportation Studies and School of Engineering, UC Irvine.
 Eye and Virtual Reality. Department of Psychology, Arizona State University, Tempe.
 Eye and Virtual Reality. Russian Academy of Science, All-Russian Institute of Scientific and Technical Information, Moscow, Russia.
 Eye and Virtual Reality. International Symposium on Reflexive Processes, Moscow, Russia.
 Eye and Virtual Reality. ATR Labs, Nara, Japan.
 Eye and Virtual Reality. Keihanna Corporation, Nara, Japan.
 Eye and Virtual Reality. NTT Basic Research, Tokyo, Japan.
 Eye and Virtual Reality. University of Tokyo, Tokyo, Japan.
 Genericity in Spatial Vision. The Salk Institute, La Jolla, California.
 Unconscious Inferences and the Mind/Body Problem. Helmholtz Centennial Conference, Kiel, Germany.
- 1995 Bayes and Darwin: What You See Is What You Beget. Zentrum für interdisziplinäre Forschung, Bielefeld, Germany.
 Vision. College of Engineering, California State Polytechnic University, Pomona.
 What You See Is What You Beget. California State University, San Bernardino.
 Dynamic Color Spreading. Universität Freiburg, Germany.
 Vision and Reality. Zentrum für interdisziplinäre Forschung, Bielefeld, Germany.
 Visual Motion. Zentrum für interdisziplinäre Forschung, Bielefeld, Germany.
- 1996 The Creative Genius of Vision. Christian Albrechts Universität, Kiel, Germany.
 Illusory Contours. Claremont College, Claremont, California.
 Visual Recognition. Southern California Robotics Society.
- 1997 Does the Brain Create Consciousness, Or Vice Versa? Irvine Consciousness Conference, Laguna Beach, California.
 Observer Theory and Quantum Theory. California State University, Long Beach, California.
- 1998 Visual Intelligence. HNC Software, San Diego, California.
 Constructing Visual Objects. Brain and Cognitive Sciences, Massachusetts Institute of Technology.
 Constructing Visual Objects. Cognitive Science Symposium, UC Riverside.
 Visual Object Recognition. Neuroscience Symposium, The MITRE Corporation, McLean, Virginia.
 Visual Object Recognition. George Washington University, District of Columbia. (Spring)
 Visual Intelligence. Graduate School of Management, UC Irvine.
 Visual Intelligence. George Washington University, District of Columbia. (Fall)
- 1999 Visual Intelligence. Department of Mathematics, UCLA.
 Visual Intelligence. New England Complex Systems Institute: Managing the Complex. Boston, Massachusetts.
 Visual Intelligence. Bard College. Annandale-on-Hudson, New York.
 Visual Intelligence. UC Irvine Faculty Associates.
 Seeing Digital: The Synergy of Human Senses and Digital Technology. The Franke Institute for the Humanities, University of Chicago.
 Vision and Bayesian Inference. DARPA/ISO. Airlie, Virginia.

Invited Lectures

- 2000 Visual Intelligence. Department of Mathematics, UCI.
 Visual Intelligence. Skidmore College. Saratoga Springs, New York.
 Face Perception. Skidmore College. Saratoga Springs, New York.
 Object Recognition. Skidmore College. Saratoga Springs, New York.
 Visual Intelligence. American Philosophical Association. Albuquerque, New Mexico.
 Visual Intelligence. Timberland Company. Stratham, New Hampshire.
 Visual Intelligence. Hedrick Hall, UCLA.
- 2001 Visual Intelligence. Neurosciences and Psychology, Johns Hopkins University.
 Independent Component Analysis and Object Detection. Boeing Aircraft, Saint Louis.
 Visual Intelligence. Sigma Xi Society, UC Riverside.
 Visual Intelligence. Skeptics Society. UCI.
 Mereology of Visual Form. IWVF4. Capri, Italy.
 Visual Intelligence. Minary Conference on Humanities and Neuroscience. Dartmouth College.
- 2002 Face Attention. Western Psychological Association, Irvine.
 Face Attention. Cognitive Sciences Conference, CSU Long Beach.
 Perceptions and realities. UCI UROP Symposium Keynote Address.

Professional Service

- 1983 Referee: Journal of the Optical Society of America (JOSA).
 Referee: ACM SIGGRAPH and SIGART Interdisciplinary Workshop on Motion.
- 1984 Referee: Perception; National Science Foundation (NSF); JOSA; MIT Press.
 Session chair: Optical Society of America National Conference.
- 1985 Referee: Cognitive Sciences Society National Conference; NSF.
 Referee: IEEE Pattern Analysis and Machine Intelligence (PAMI).
 Panelist: MIT Corporation Visiting Committee.
- 1986 Referee: NSF; JOSA; Philosophy of Science; Cognition.
- 1987 Referee: NSF; JOSA; Air Force Office of Scientific Research (AFOSR).
- 1988 Referee: NSF; JOSA; PAMI.
 Referee: International Journal of Computer Vision (IJCV).
 Panelist: NSF Science and Technology Centers.
 Site Visitor: NSF Science and Technology Centers.
 Host: ONR contractors conference (with B. Bennett and M. Braunstein).
- 1989 Session chair and host: IEEE Workshop on Visual Motion, (host with M. Braunstein).
 Referee: Journal of Mathematical Psychology; Psychological Review.
 Referee: The Behavioral and Brain Sciences (BBS).
 Referee: NSF; AFOSR.
- 1990 Associate: BBS.
 Referee: JOSA; NSF; AFOSR; Academic Press; Perception & Psychophysics.
 Referee: University of California Microelectronics Innovation and Computer Research Opportunities.
- 1991 Referee: AFOSR; NSF; JOSA; Journal of Visual Communication and Image Representation.
 Referee: California Space Institute.
 Editorial Board: Cognition; Associate: BBS.
- 1992 Editorial Board: Cognition; Associate: BBS.
 Host: ONR Workshop on Image Representation in Biological and Machine Vision.
 Referee: Psychological Review; PAMI; Science and Engineering Research Council.
 Referee: Machine Vision and Applications; Perception; JOSA.
- 1993 Editorial Board: Cognition; Associate: BBS.
 Referee: Journal of Experimental Psychology: Human Perception and Performance (JEP:HPP).
 Referee: Perception & Psychophysics (P & P); Academic Press; IEEE Transactions in Medical Imaging.
- 1994 Editorial Board: Cognition; Associate: BBS.
 Referee: Journal of Mathematical Psychology; JEP:HPP; Spatial Vision; Perception.
 Referee: Psychological Review.

Professional Service

- 1995 Editorial Board: Cognition; Associate: BBS.
 Editorial Board: Psychological Review.
 Referee: Perception.
- 1996 Editorial Board: Cognition; Associate: BBS.
 Editorial Board: Psychological Review.
 Referee: Psychonomic Bulletin & Review; Journal of Mathematical Psychology.
 Referee: NSF; Perception.
- 1997 Editorial Board: Cognition; Associate: BBS.
 Editorial Board: Psychological Review.
 Referee: P & P.
- 1998 Editorial Board: Cognition; Associate: BBS.
 Referee: P & P; NSF; UC Digital Media Innovation Program.
 Referee: Journal of Cognitive Neuropsychology.
- 1999 Editorial Board: Cognition; Associate: BBS.
 Referee: Psychological Review; Perception; P & P.
 Referee: Psychonomic Bulletin & Review; Cognitive Neuropsychology; NSF.
 Reviewer: W.W. Norton & Co.
- 2000 Editorial Board: Cognition; Associate: BBS.
 Referee: Psychonomic Bulletin & Review; Nature; Journal of Mathematical Psychology.
 Reviewer: W.W. Norton & Co.
 Referee: Trends in Cognitive Science; P & P; University of Leuven; NSF.
 Program Committee: 7th Joint Symposium on Neural Computation, USC.
 Advisory Panel: National Imaging and Mapping Agency (NIMA).
- 2001 Editorial Board: Cognition; Associate: BBS.
 Program Committee: 8th Joint Symposium on Neural Computation, USC.
 Reviewer: W.W. Norton & Co.
 Referee: NSF; Perception; Journal of Consciousness Studies.
 Created Illusions Exhibit for Smithsonian, Washington DC (with student Jason Thornton).
- 2002 Editorial Board: Cognition; Associate: BBS.
 Referee: Perception; Psychological Review.

University Service

- 1983 – 1984 Campus Computer Evaluation Committee.
 Graduate Committee, School of Social Sciences.
 Computing Committee, School of Social Sciences.
 Graduate Admissions, Cognitive Science.
 Faculty Search Committee, Cognitive Science.
- 1984 – 1985 Graduate Admissions, Cognitive Science.
- 1985 – 1986 School of Social Sciences Merit and Promotions.
 Graduate Admissions, Cognitive Science.
- 1986 – 1987 Chair, Faculty Search Committee, Cognitive Science.
 Graduate Admissions, Cognitive Science.
- 1987 – 1988 Senate Committee on Research.
 Graduate Admissions, Cognitive Science.
 Faculty Search Committee, Cognitive Science.
 Ad hoc tenure review committee.
- 1988 – 1989 Senate Committee on Research.
 Graduate Admissions, Cognitive Science.
 Faculty Search Committee, Cognitive Science.
 Chair, Committee for Review of ITS.
 Search Committee for Vice-Chancellor of Research and Graduate Studies.
- 1989 – 1990 Senate Committee on Research.

- Graduate Admissions, Cognitive Science.
Chair, Committee for Review of CNLM.
- 1990 – 1991 Sabbatical: Fall and Winter.
Computer Acquisition Committee of the IRU in Mathematical Behavioral Sciences.
Computer Administration Committee of the IRU in Mathematical Behavioral Sciences.
- 1991 – 1992 Chair, Graduate Committee of Cognitive Science.
Computer Administration Committee of the IRU in Mathematical Behavioral Sciences.
Senate Ad Hoc Committee for Review of Teaching Loads.
\$100K Committee.
- 1992 – 1993 Chair, Graduate Committee of Cognitive Science.
Computer Administration Committee of the IRU in Mathematical Behavioral Sciences.
Chair, Graduate Fellowship Committee for Social Sciences.
Acting Chair, Department of Cognitive Science (spring quarter).
- 1993 – 1994 Chair, Graduate Committee of Cognitive Science.
Chair, Graduate Fellowship Committee for Social Sciences.
Executive Committee of the School of Social Sciences.
Ad Hoc Committee for CAP.
- 1994 – 1995 Chair, Graduate Committee of Cognitive Science.
Chair, Faculty Search Committee, Cognitive Science.
Chair, Ad Hoc Personnel Committee for School of Social Sciences.
Executive Committee of the School of Social Sciences.
- 1995 – 1996 Sabbatical and leave.
- 1996 – 1997 Undergraduate Research Opportunity Program, Faculty Advisory Committee.
Ad Hoc University Committee.
- 1997 – 1998 Undergraduate Research Opportunity Program, Faculty Advisory Committee.
Member of Formal Hearing Panel for Tenure Grievance.
Neuroscience Webpage Committee.
- 1998 – 1999 Undergraduate Research Opportunity Program, Faculty Advisory Committee.
Committee on Privilege and Tenure.
Member of Ad Hoc Panel for Tenure Appointment.
Neuroscience Webpage Committee.
Preliminary Investigation Committee for CPT
- 1999 – 2000 Undergraduate Research Opportunity Program, Faculty Advisory Committee. (Fall)
Committee on Privilege and Tenure. (Fall)
- 2000 – 2001 Committee on Privilege and Tenure.
Preliminary Investigation Committee for CPT (twice)
Cognitive Science Web Page Revision Committee.
Undergraduate Research Opportunity Program, Faculty Advisory Committee.
Ad Hoc Tenure Review Committee.
- 2001 – 2002 Undergraduate Research Opportunity Program, Faculty Advisory Committee.
Cognitive Science Faculty Recruitment Committee.