

Bartlett W. Mel

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PERSONAL

Birthdate May 29, 1960
Status Married, 4 children

EDUCATION

1977 – 1982 **University of California, Berkeley**
B.S. with Honors, Electrical Engineering and Computer Science

1983 – 1989 **University of Illinois, Urbana-Champaign**
Ph.D. in Computer Science
Thesis topic: *Neural algorithms for vision-guided robotics* – S. Omohundro,
adviser

ADDITIONAL TRAINING

1974 – 1975 **Lycée Montaigne, Paris** – Awarded B.E.P.C. degree

Summer 1980 **GTE Laboratories** - Lexington, MA
Research assistant for experiments in human psychophysics

June - Dec. 1982 **Hewlett-Packard Company**- Data Terminals Division, Sunnyvale, CA
Co-op work study: Developed custom industrial applications

Summer 1984 **Thinking Machines Corporation** - Boston, MA
Research and Development - David Waltz, supervisor

Summer 1986 **Connectionist Summer School** – Carnegie Mellon University
Course organized by J. McClelland, D. Touretzky, D. Rumelhart,
G. Hinton, & T. Sejnowski

Summer 1988 **Institute of Cognitive Neuroscience** – Harvard University
Course organized by S. Kosslyn

Summer 1989 **Marine Biology Laboratory** – Woods Hole
Neural Systems and Behavior – 7 week laboratory course in systems
neurobiology

PROFESSIONAL POSITIONS

1989 – 1994 **California Institute of Technology** – Pasadena, CA
Postdoctoral/Senior Research Fellow in Biology, Laboratory of Christof
Koch

1994 – 2000 **University of Southern California** – Los Angeles, CA
Assistant Professor of Biomedical Engineering

2000 – present **University of Southern California** – Los Angeles, CA
Associate Professor of Biomedical Engineering (with tenure)

1997 – present **University of Southern California** – Los Angeles, CA
Member of Neuroscience Graduate (Ph.D.) Program

2002 – 2003 **University College London** – London, UK
Visiting Lecturer, Sabbatical in Laboratory of Dr. Michael Hausser

AWARDS AND HONORS

- Hewlett-Packard/AEA Faculty Development Fellowship, 1983 – 1987
- University of Illinois Cognitive-Science/AI Fellowship, 1987 – 1989
- NIMH - National Research Service Award, 1990 – 1992
- McDonnell-Pew - Post-doctoral Training Fellowship, 1992 – 1994
- NSF Career Award, 1998 – 2003
- COSYNE Conference General co-Chair, 2010 – 2011
- USC Steven B. Sample Parents Association Teaching and Mentoring Award Nominee, 2012
- Maseeh Entrepreneurial Prize Contest (MEPC) – Finalist (Team Leader), 2012
- Bosco S. Tjan Mentoring Award, 2017 (1st Recipient, selected by USC Neuroscience Ph.D. students)
- Elected as Co-Chair of 2023 GRC Conference on Dendrites (with Judit Makara)

RESEARCH FUNDING

1. *Further Work on a Neurally-Inspired Approach to Visual Object Recognition*
PI: Bartlett W. Mel
Agency: ONR N00014-95-1-1210
Type: N00014-95-1-1210; Period: 7/1/95 – 6/30/98; \$268,830
Objective: To extend neurally-inspired algorithms for viewpoint invariant object recognition.
2. *"Dendritic Subunits in Cortical Visual Processing and Development"*
PI: Bartlett W. Mel
Agency: National Science Foundation
Type: NSF Career Award (IBN-9734350, Years 1-5) Period: 9/1/98 – 8/31/02: \$336,261
Objective: Modeling the possible contributions of active dendritic processing to nonlinear receptive field properties in primary visual cortex, and to provide guidance for experimental approaches to the study of dendritic function.
3. *"Adaptive Optoelectronic Eyes: Hybrid Sensory/Processing Architectures"*
PI: Armand Tanguay, Jr. (I. Biederman, K. Jenkins, A. Madhukar, B.W. Mel, C. v.d. Malsburg, J.D. O'Brien)
Agency: DARPA/MURI
Type: (DAAG55-98-1-293, Years 1-5) Period: 4/3/98 – 4/29/03: \$2,166,500
Objective: To map neurally-inspired visual processing algorithms onto layered processing architectures constructed from alternating layers of silicon interconnected with optical interconnects.
4. *"Dense 3-D Integrated Photonic Multichip Modules for Adaptive Spatial and Spectral Image Processing Applications"*
PI: Armand Tanguay, Jr. (I. Biederman, K. Jenkins, A. Madhukar, B.M. Mel, C. v.d. Malsburg, J.D. O'Brien)
Agency: Army Research Office
Type: (DAAD19-00-1-0356, Years 1-4) Period: 6/15/00 – 6/14/04: \$1,630,720
Objective: To develop adaptive spatial-spectral photonic visual processing hardware for object recognition, targeting, and tracking.
5. *"Automated Extraction of Line Drawings for Image Recognition and Compression"*
PI: Bartlett W. Mel
Agency: Office of Naval Research
Type: DARPA (N00014-00-1-0355, Years 1-3) Period: 3/15/00 – 3/14/03: \$265,205
Objective: To develop a state-of-the-art neuromorphic image-processing architecture to extract the contour/junction structure from complex natural scenes.
6. *"In Vitro and Modeling Studies of Synaptic Integration"*
PI: Bartlett W. Mel; collaborator: Jackie Schiller, Technion Medical School, Israel
Agency: NIH
Type: R01 (MH065918-01, Years 1-5) Period: 4/1/03 – 3/31/08: \$1,359,890
Objective: Using combined physiological and modeling studies to characterize the arithmetic of excitatory synaptic integration in neocortical pyramidal neurons.
7. *Next-Generation Image and Sound Processing Strategies: Exploiting the Biological Model*
PI: Bartlett W. Mel, Co-PI's: Norberto Grzywacz, Laurent Itti, Shri Narayanan

Agency: Office of Naval Research

Type: (N00014-06-01-0746, Years 1-3) Period: 5/1/06 – 9/30/09, \$1,143,085 (\$285,989)

Objective: To extend the technical state-of-the-art in mid-level visual and auditory signal processing using an integrative biologically inspired approach.

8. *“Anatomical, Physiological and Modeling Studies of Memory-Related Neural Form and Function”*

PI: Bartlett W. Mel; Collaborators: G. Elston, P. Poirazi, and J. Schiller

Agency: NSF

Type: CRCNS grant (IIS-0613583) Period: 10/1/06 – 9/30/09, \$625,697 (\$427,697);

Objective: To study the impact of morphological and physiological abnormalities in pyramidal neuron dendrites in relation to memory function and dysfunction in aging and Down’s syndrome.

9. *Mid-Level Vision Systems for Low Vision*

PI: Norberto M. Grzywacz; Co-PIs: Irving Biederman, Mark Humayun, Zhong-Lin Lu, Gerard Medioni, Bartlett Mel, Bosco Tjan; Collaborators: Susana Chung (University of Houston), Eli Peli (Harvard Medical School)

Agency: NIH/NEI (EY016093)

Type: R01, Period: 9/30/07 – 8/31/12, \$5,925,286 (\$1,070,956)

Objective: (1) Further developing a neuromorphic contour enhancement system; (2) developing new methods to boost image intelligibility using extracted contours, and (3) psychophysical testing to assess improvements in visual performance and aesthetic preferences of AMD and elderly subjects.

10. *Computational Roles of Excitatory-Inhibitory Interactions in Neocortical Pyramidal Neurons.*

Co-PIs: Bartlett Mel, Jackie Schiller (Technion Medical School, Haifa, Israel);

Agency: BSF

Type: BSF: (2009341, Years 1-3) Period: 07/01/10– 8/30/15: \$230,000 (\$115,000)

Objective: To elucidate the mechanisms of synaptic integration in neocortical pyramidal cells through coordinated modeling and neurophysiological studies; focus on excitatory-inhibitory interactions.

11. *Broadening Participation at the Computational and Neural Systems Conference (COSYNE)*

PI: Bartlett W. Mel

Agency: NSF (IIS-1144185)

Years 1-3, Period 9/1/11 – 8/31/14: \$30K

Objective: To support broadening of participation at the COSYNE meeting for members of under-represented groups.

12. *Broadening Participation at the Computational and Neural Systems Conference (COSYNE)*

PI: Bartlett W. Mel

Agency: NSF (IIS-1144185)

Years 1-3, Period 9/1/14 – 8/31/17: \$48K

Objective: To support broadening of participation at the COSYNE meeting for members of under-represented groups.

13. *Implications of Dendritic Subunitization and Neuro-Architectural Gradients for Episodic Memory Function”*

PI: Bartlett W. Mel

Agency: Office of Naval Research

Type: Research grant, May 1, 2020 to April 30, 2023: \$622,564 (pending)

14. *Biologically-inspired shape pre-processing for image enhancement and recognition*

PI: Bartlett W. Mel

Agency: Office of Naval Research

Type: Research grant, May 1, 2020 to April 30, 2023: \$622,564 (pending)

15. *Impact of active dendritic processing on the storage and recall of episodic memories*

PI: Bartlett W. Mel

Agency: National Science Foundation

Type: Research grant, May 1, 2020 to April 30, 2023: \$500,000 (pending)

16. *Biologically-inspired shape pre-processing to speed learning, prevent forgetting, and improve generalization*

PI: Bartlett W. Mel

Agency: National Science Foundation

Type: Research grant, May 1, 2020 to April 30, 2023: \$500,000 (pending)

PUBLICATIONS

Books

1. Mel, B.W. Connectionist robot motion planning: A neurally-inspired approach to visually-guided reaching. Cambridge, MA: Academic Press, 1990.

Journal Articles

1. Mel, B.W., Omohundro, S.M., Robinson, A.D., Skiena, S.S., Thearling, K.H., Young, L.K., & Wolfram, S. (1988) TABLET: Personal computer in the year 2000. *CACM* 31: 638-646. (Winning entry in 1988 Apple Computer, Inc., design contest.)
2. Mel, B.W. (1991) A connectionist model may shed light on neural mechanisms for visually-guided reaching. *J. Cog. Neurosci.* 3: 273-292.
3. Mel, B.W. (1992) NMDA-Based pattern discrimination in a modeled cortical neuron. *Neural Comput.* 4: 502-516.
4. Mel, B.W. (1993) Synaptic integration in an excitable dendritic tree. *J. Neurophysiol.* 70: 1086-1101.
5. Mel, B.W. (1994) Information processing in dendritic trees. *Neural Comput.* 6: 1031-1085.
6. Mel, B.W. (1997) SEEMORE: Combining color, shape, and texture histogramming in a neurally-inspired approach to visual object recognition. *Neural Comput.* 9: 777-804.

7. Mel, B.W., Ruderman, D.L., & Archie, K. (1998) Translation-invariant orientation tuning in visual 'complex' cells could derive from intradendritic computations. *J. Neurosci.* 18: 4325-4334.
8. Mel, B.W. (1999) Think positive to find parts. *Nature (News and Views)*, 401: 759-760.
9. Poirazi, P. & Mel, B.W. (1999) Towards the memory capacity of neurons with active dendrites. *Neurocomputing* 26-27: 237-245.
10. Mel, B.W. (2000) In the brain, the model is the goal. *Nature Neurosci. Supp* 3, 1183.
11. Archie, K.A. & Mel, B.W. (2000) A model for intradendritic computation of binocular disparity. *Nature Neurosci.* 3: 54-63.
12. Mel, B.W. & Fiser, J. (2000) Minimizing binding errors using learned conjunctive features. *Neural Comput.* 12: 247-278.
13. Poirazi, P. & Mel, B.W. (2000) Choice and value flexibility jointly contribute to the capacity of a subsampled quadratic classifier. *Neural Comput.* 12, 1189-1205.
14. Poirazi, P. & Mel, B.W. (2001) Impact of active dendrites and structural plasticity on the storage capacity of neural tissue. *Neuron* 29: 779-796.
15. Mel, B.W. (2002) What the synapse tells the neuron. *Science* 295:1845-1846.
16. Mel, B.W. (2003) Have we been Hebbing down the wrong path? *Neuron* 34: 275-88.
17. Poirazi, P., Brannon T. & Mel, B.W. (2003) Arithmetic of synaptic integration in a model CA1 pyramidal cell. *Neuron* 37: 977-987.
18. Poirazi, P., Brannon, T. & Mel, B.W. (2003) Pyramidal neuron as two-layer neural network. *Neuron* 37: 989-999.
19. Hausser, M. & Mel, B.W. (2003) Dendrites: bug or feature. *Curr. Opin. Neurobiol.* 13: 372-83.
20. Polsky, A., Mel, B.W. & Schiller, J. (2004) Computational subunits in thin dendrites of pyramidal cells. *Nature Neurosci.* 7: 621-627.
21. Mel, B.W. & Schiller, J. (2004) On the fight between excitation and inhibition: location is everything. *Science STKE*, 2004(250): pe44.
22. Chklovskii, D.B., Mel, B.W. & Svoboda, K. (2004) Cortical rewiring and information storage. *Nature*, 7:782-788.
23. Behabadi, B. & Mel, B.W. (2007) J4 at sweet 16: A new wrinkle? *Neural Comput* 19:2865-70.

24. Zhou, C. & Mel, B.W (2008). Optimal cue combination and color edge detection in natural scenes. *Journal of Vision*, 8(4):4, 1-25, <http://journalofvision.org/8/4/4/>, DOI:10.1167/8.4.4.
25. Wu, X. & Mel, B.W. (2009). Capacity enhancing synaptic learning rules in a medial temporal lobe online learning model. *Neuron*, 62: 31-41.
26. Polsky, A., Mel, B.W. & Schiller, J. (2009) Encoding and decoding bursts by NMDA-spikes in basal dendrites of layer 5 pyramidal neurons. *J. Neurosci*, 29:11891-903.
27. Gomez Gonzales, J.F., Mel, B.W. & Poirazi, P. (2011). Distinguishing linear vs. non-linear integration in CA1 radial oblique dendrites: it's about time. *Front in Comput. Neurosci*. 5:44. DOI:10.3389/fncom.2011.00044.
28. Kwon M., Ramachandra C., Mel B.W. & Tjan B. (2012). Contour enhancement benefits older adults with simulated central field loss. *Optom Vis Sci*, 89:1374-84.
29. Satgunam P., Woods R.L., Luo G., Bronstad P.M., Reynolds Z., Ramachandra C., Mel B.W. & Peli E. (2012). Effects of contour enhancement on low-vision preference and visual search. *Optom Vis Sci*, 89:E1364-73.
30. Behabadi, B.F., Polsky, A., Jadi, M., Schiller, J. & Mel, B.W. (2012). Location-dependent excitatory synaptic interactions in pyramidal neuron dendrites. *PLoS Comput Biol*, 8: e1002599. DOI:10.1371/journal.pcbi.1002599.
31. Jadi, M., Polsky, A., Schiller, J. & Mel, B.W. (2012). Location-dependent effects of inhibition on local spiking in pyramidal neuron dendrites. *PLoS Comput Biol*, 8: e1002550. DOI:10.1371/journal.pcbi.1002550.
32. Ramachandra, C.A. and Mel, B.W. (2013) Computing local edge probability in natural scenes from a population of oriented simple cells. *J. Vision*, 13(14).
33. Behabadi, B.F. & Mel, B.W. (2014). Mechanisms underlying subunit independence in pyramidal neuron dendrites. *PNAS, U S A*, 111(1):498-503.
34. Jadi, M., Behabadi, B.F., Poleg-Polsky, A., Schiller J. & Mel, B.W. (2014). An augmented 2-layer model captures nonlinear analog spatial integration effects in pyramidal neuron dendrites. *Proc. of the IEEE (Special issue on Computational Neuroscience)*, 102(5):782-798.
35. Jain, R., Millin R. & Mel, B.W. (2016). Multimap formation in visual cortex. *Journal of Vision*, 15(16):3. DOI: 10.1167/15.16.3.
36. Mel, B.W., Schiller, J., and Poirazi, P. (2017). Synaptic plasticity in dendrites: complications and coping strategies. *Curr Opin Neurobiol*, 43:177-186, PMID: 28453975.
37. Kumar, A., Schiff, O., Barkai, E., Mel, B.W., Poleg-Polsky, A. and Schiller, J. (2018). NMDA spikes mediate amplification of inputs in the rat pyriform cortex. *eLife*, 7:e38446 DOI: 10.7554/elife.38446

38. Wu, X.E., Strouse, D.J., Mel, G.C., and Mel, B.W. (2019). How dendrites affect online recognition memory. *PLoS Comput Biol*, 15(5): e1006892.
DOI: <https://doi.org/10.1371/journal.pcbi.1006892>

Submitted Articles

1. Jin, L., Behabadi, B.F., Ramachandra, C.A. & Mel, B.W. (2018) Contextual interactions in V1 may depend on dendritic computations. *Submitted to J. Neurosci, in revision. Preprint available here: <https://www.biorxiv.org/content/10.1101/436956v1.abstract>.*
2. Mel, G.C., Ramachandra, C.A. and Mel, B.W. (2018) Detecting object boundaries in natural images requires 'incitatory' cell-cell interactions. *Submitted to J. Neurosci, in revision. Preprint available here: <https://www.biorxiv.org/content/10.1101/436949v1.abstract>.*

Refereed Conference Proceedings and Book Chapters

1. Mel, B.W. (1986) A connectionist learning model for 3-D mental rotation, zoom, and pan. In *Proc. of the 8th Ann. Conf. of the Cognitive Science Soc.*, pp. 562-571.
2. Mel, B.W. (1988) MURPHY: A robot that learns by doing. In *Neural Information Processing Systems (NIPS)*, D.Z. Anderson, (Ed.), New York: American Institute of Physics, pp. 544-553.
3. Mel, B.W. (1988) Building and using metal models in a sensory-motor domain: a connectionist approach. In *Proc. of the 5th Ann. Conf. on Machine Learning*, Ann Arbor, MI.
4. Mel, B.W. (1989) Further explorations in the learning of visual-guided reaching: making MURPHY smarter. In *Advances in Neural Information Processing Systems (NIPS)*, vol. 1, D.S. Touretzky, (Ed.), San Mateo, CA: Morgan Kaufmann, pp. 348-355.
5. Mel, B.W. & Koch, C. (1990) Sigma-pi learning: on radial basis functions and cortical associative learning. In *Advances in Neural Information Processing Systems (NIPS)*, vol. 2, D.S. Touretzky, (Ed.), San Mateo, CA: Morgan Kaufmann, pp. 474-481.
6. Mel, B.W. & Omohundro, S. (1991) How receptive field parameters affect neural learning. In *Advances in Neural Information Processing Systems (NIPS)*, vol. 3, R. Lippman, J. Moody, & D.S. Touretzky, (Eds.), San Mateo, CA: Morgan Kaufmann, pp. 757-763.
7. Mel, B.W. (1992) Vision-based robot motion planning. In *Neural Networks for Control*, pp. 229-254, W.T. Miller, III & R. Sutton, (Eds.), Cambridge, MA: MIT Press.
8. Mel, B.W. (1992) The clusteron: toward a simple abstraction for a complex neuron. In *Advances in Neural Information Processing Systems (NIPS)*, vol. 4, J. Moody, S. Hanson, & R. Lippmann, (Eds.), San Mateo, CA: Morgan Kaufmann, pp. 35-42.

9. Mel, B.W. (1995) Connectionist planning. In *Handbook of Brain Theory and Neural Networks*, M. Arbib, (Ed.), Cambridge, MA: MIT Press, pp. 741-745.
10. Mel, B.W. (1995) Animal behavior in four components. In *Comparative Approaches to Cognitive Science*, H. L. Roitblat & J.-A. Meyer, (Eds.) , Cambridge, MA: MIT Press, pp. 69-91.
11. Mel, B.W. (1996) A view-based approach to 3-D object recognition using multiple visual cues. In *Proc. of the Int. Conf. on Pattern Recognition, Track A*, Los Alamitos, CA: IEEE Computer Society Press, pp. 570-574.
12. Mel, B.W. (1996) SEEMORE: A view-based approach to 3-D object recognition using multiple visual cues. In *Advances in Neural Information Processing Systems (NIPS), vol. 8*, Cambridge, MA: MIT Press.
13. Mel, B.W., Ruderman, D.L., & Archie, K. (1997) Complex-cell responses derived from center-surround inputs: The surprising power of intradendritic computation. In *Advances in Neural Information Processing Systems (NIPS), vol. 9*, M.C. Mozer, M.I. Jordan, & T. Petsche, (Eds.), Cambridge, MA: MIT Press, pp. 83-89.
14. Mel, B.W., Archie, K.A. & Ruderman, D.L. (1998) Binocular disparity tuning in cortical 'complex' cells: yet another role intradendritic computation? In *Computational Neuroscience: Trends in Research*, J.M. Bower (Ed.), New York: Plenum, pp. 227-231.
15. Mel, B.W., Ruderman, D.L., & Archie, K. (1998) Toward a single cell account of binocular disparity tuning: An energy model may be hiding in your dendrites. In *Advances in Neural Information Processing Systems (NIPS), vol. 10*, Cambridge, MA: MIT Press.
16. Archie, K.A. & Mel, B.W. (1999) Dendritic nonlinearities could mediate competitive effects of visual attention. In *Proc. of the 6th Joint Symposium on Neural Computation*, Caltech, UCSD, and USC.
17. Mel, B.W. (1999) Why have dendrites? A computational perspective. In *Dendrites*, G. Stuart, N. Spruston, & M. Hausser, (Eds.), Oxford University Press, pp. 271-289.
18. Poirazi, P. & Mel, B.W. (2000) Memory capacity of linear vs. nonlinear models of dendritic integration. In *Advances in Neural Information Processing Systems (NIPS), vol. 12*, Cambridge, MA: MIT Press.
19. Mel, B.W. (2001) Integration of information in neurons and dendrites. In the *International Encyclopedia of the Social and Behavioral Sciences*, J. McClelland and R. Thompson, (section Eds.), Oxford: Elsevier.
20. Archie, K.A. & Mel, B.W. (2001) Dendritic compartmentalization could underlie competition and attentional biasing of simultaneous visual stimuli. In *Advances in Neural Information Processing Systems (NIPS), vol. 13*, Cambridge, MA: MIT Press, pp. 82-88.
21. Mel, B.W. (2002) Structural plasticity at the axo-dendritic interface: Some functional implications. In *Modeling Neural Development*, A. van Oojen, (Ed.), Cambridge, MA: MIT

Press, 273-290.

22. Mel, B.W. (2008) Why have dendrites: A computational perspective. In *Dendrites* (2nd edition), G. Stuart, N. Spruston, & M. Hausser, (Eds.), Oxford University Press, pp. 421-440.
23. Mel, B.W. (2016) Toward a simplified model of an active dendritic tree. In *Dendrites* (3rd edition), G. Stuart, N. Spruston, & M. Hausser, (Eds.), Oxford University Press.

Conference Abstracts

104 meeting abstracts (through Dec. 2017) presented at Society for Neuroscience (SFN), Neural Information Processing Systems (NIPS), Computation and Neural Systems (CNS), Vision Sciences Society (VSS), Joint Symposium for Neural Computation (JSNC), and COSYNE conferences.

INVITED TALKS

1. "Biological and Artificial Neural Networks: A Search for Synergy" Workshop, La Jolla, California, Invited talk, Fall 1996.
2. Workshop on "Experiments and Models of Visual Cortex", Technical University of Berlin, Invited talk, 1996.
3. Technical University of Berlin, Computer Science Department Seminar, Invited talk, December 1996.
4. Smith-Kettlewell Seminar, San Francisco, CA, Invited talk, February 1997.
5. UCSF, Keck Center Computational Neuroscience Seminar, San Francisco, CA, Invited talk, February 1997.
6. Caltech, Computation and Neural Systems Seminar, Pasadena, CA, Invited talk, February 1997.
7. UC Irvine, Center for the Neurobiology of Learning and Memory Annual Meeting Irvine, CA, Invited talk, May 1997.
8. University of Bonn Computer Science Department Colloquium, Bonn, Germany, Invited lecture, June 1997.
9. Max Plank Institute Seminar, Goettingen, Germany, Invited lecture, June 1997.
10. Cambridge University Newton Institute Workshop, "Computer Vision Meets Computer Learning", Cambridge, England, Invited talk, October 1997.
11. NIPS*97 Workshop "Dendritic Computation", Organizers: Z.Mainen, V.Murthy,

- Keystone, Colorado, Invited talk, December 1997.
12. "Visual Attention and Neural Circuits Workshop", Organizers: A. Braun & C. Koch
Catalina Island, Invited talk, January 1999.
 13. USC - Multimedia Information Systems Seminar, Organizer S. Ghandeharizadeh,
Los Angeles, March 1999.
 14. Salk Institute, Computational Neurobiology Seminar, San Diego, Invited lecture, July 1999.
 15. Brandeis University, Biology Department Seminar, Waltham, MA, Invited talk, July 1999.
 16. Brown University, Neuroscience Department Seminar, Invited talk, Providence, RI, July
1999.
 17. Northwestern University, Department of Neurobiology and Physiology Seminar,
Chicago, IL, Invited talk, July 1999.
 18. University of Illinois, Urbana-Champaign, Beckman Institute Seminar
Champaign-Urbana, Illinois, Invited talk, July 1999.
 19. "Gain Fields" Workshop, Organizers: Richard Andersen & Larry Abbott, Pajaro Dunes,
Invited talk, April 2000.
 20. Juan March Foundation Workshop on "Dendrites", Organizer: R. Yuste, Columbia University,
New York, Invited talk, May 2000.
 21. Japanese Neuroscience Society Symposium on "Neuroinformatics in Vision",
Yokohama, Japan, Invited talk, September 2000.
 22. Caltech, Computation and Neural Systems Seminar, Pasadena, CA, October 2000.
 23. Banbury Center Workshop on "Neural Networks and Cognition", Cold Spring Harbor, Invited
talk, September 2000.
 24. NIPS 2000 Workshop on "Visual Representation", Organizers: S. Edelman & N. Intrator,
Invited talk, December, 2000.
 25. Technion Medical School, Neuroscience Seminar, Haifa Israel, Invited lecture, January
2001.
 26. Hebrew University of Jerusalem, Computational Neuroscience Seminar, Invited lecture,
January 2001.
 27. Washington University, Physics Department Colloquium, St. Louis, MO, Invited lecture,
February 2001.
 28. Joint Symposium on Neural Computation, UC San Diego, Invited talk, May 2001.

29. NICE*02 Workshop, Organizers: A. Pouget, Z. Mainen, J-P. Nadal, & A. Zador, Les Houches, France, Invited talk, March 2002.
30. Nasa/ONR/CASSL Workshop "Combating Uncertainty with Fusion", Woods Hole, Invited talk, April 2002.
31. Gatsby Unit & UCL Symposium, Organizers: Peter Dayan & Michael Hausser, London, Invited talk, Sept. 2002.
32. ETH/University of Zurich Institute for Neuroinformatics Seminar, Zurich, CH, Invited lecture, December 2002.
33. Gatsby Computational Neuroscience Unit Seminar, London, Invited lecture, January 2003.
34. University of St. Andrews, Psychology Department Seminar, St. Andrews, Scotland, Invited lecture, Feb 2003.
35. University of Edinburgh, Institute for Adaptive & Neural Computation Seminar, Edinburgh, Invited lecture, Feb 2003.
36. IMBB F.O.R.T.H. Institute Seminar, Heraklion, Crete, Invited lecture, Feb 2003.
37. UCLA Learning and Memory Symposium, Los Angeles, CA, Invited talk, June 2003.
38. IBRO Symposium "Role of Dendrites in Synaptic Plasticity", Organizers: M. Hausser & T. Bonhoeffer, Prague, Czech Republic, Invited talk, January 2003.
39. UC Davis, Center for Neuroscience "Perspectives in Neuroscience" Seminar, Invited lecture, October, 2003.
40. UC Irvine, Theoretical Neurobiology Seminar, Invited lecture, February 2004.
41. Carnegie Mellon University, Biological Sciences Seminar, Pittsburgh, PA, Invited lecture, March 2004.
42. Visual Cortex Workshop, Organizers: A. Braun & C. Koch, Isle of Mull, UK, April 2004.
43. Boston University, Cognitive and Neural Systems Conference, Organizer: S. Grossberg, Boston, MA, Invited talk, May 2004.
44. Baylor College of Medicine, Neuroscience Seminar, Houston, TX, Invited lecture, September 2004.
45. Redwood Neuroscience Institute Seminar, Menlo Park, CA, Invited talk, February 2005.
46. COSYNE*05 Workshop, Organizers: A. Silver, D. Johnston, W. Spain, Snowbird, Invited talk, March 2005.

47. School of Dendrites, Organizers: I. Segev & B. Sakmann, Jerusalem, Israel, Invited lecture, April 2005.
48. Joint Symposium on Neural Computation, Organizer: Dario Ringach, UCLA, Invited talk, May 2005.
49. Max Planck Institute Seminar, Heidelberg, Germany, Invited talk, July 2005.
50. Woods Hole MBL Joint Seminar for NS&B and Computational Neuroscience Courses, Woods Hole, MA, Invited lecture, August 2005.
51. University of Rochester, Brain and Cognitive Sciences Seminar, Rochester, NY, Invited lecture, Jan 2006.
52. Caltech, Sloan-Swartz Seminar, Pasadena, CA, Invited lecture, April 2006.
53. University of Stony Brook, Neuroscience Seminar, Stony Brook, NY, Invited lecture, May 2006.
54. FIAS Summer School on Theoretical Neuroscience, Organizers: J. Triesch & G. Pipa, Frankfurt, Germany, Invited talk, August 2006.
55. COSYNE Meeting Plenary Talk, Salt Lake City, Utah, February 2007.
56. "Winter Conference on Neural Plasticity", Organizers: N. Spruston & Dan Johnston, Moorea, Tahiti, Invited talk, February 2007.
57. Gordon Conference "Dendrites: Molecules, Structure, and Function", Organizers: N. Spruston & M. Hausser, Ventura, CA, Invited talk, March 2007.
58. UCLA Dynamics of Neural Microcircuits Symposium, Organizer: J. Feldman, Invited lecture, May 2007.
59. Applied Dynamical Systems Conference, Snowbird, Invited talk, Utah, May 2007.
60. Santa Fe Institute Workshop on "High-Level Perception and Low-Level Vision", Organizers: G. Kenyon & M. Mitchell, Santa Fe, Invited talk, October 2007.
61. Columbia University, Neurotheory Seminar, Invited lecture, November, 2007.
62. Janelia Farm (HHMI) "Dendrites: Development and Plasticity" Conference, Organizer: J. Magee, Invited lecture, March 2008.
63. UCLA Learning and Memory Seminar, Invited lecture, May 2008.
64. Woods Hole, Methods in Computational Neuroscience Course, Organizers: A. Fairhall & M. Berry, Invited lecture, August 2008.
65. University of Zurich Ascona Conference on Cortical Circuits, Organizers: C. Petersen, F. Helmchen, & M. Larkum, Ascona, CH, Invited lecture, Sept. 2008.

66. Woods Hole MBL, Methods in Computational Neuroscience Course, Organizers: A. Fairhall & M. Berry, Invited lecture, August 2009.
67. IBM, Almaden Research Center Seminar, Almaden, CA, Invited lecture, December 2009.
68. USC Engineering, Neuroscience and Health Seminar, Organizer: Terry Sanger, Invited lecture, January 2010.
69. Qualcomm, Corp. Invited Seminar, San Diego, Invited lecture, April 2010.
70. Fourth International Neural Microcircuitry Conference, Organizer: Yoshi Kubota, Okinawa/Tokyo, Invited lecture, June 2010.
71. Woods Hole MBL, Methods in Computational Neuroscience Course, Organizers: M. Berry & A. Fairhall, Invited lecture, August 2010.
72. Northwestern University, Dept. of Neurobiology and Physiology Seminar, Chicago, IL, Invited lecture, November 2010.
73. Caltech, Computation and Neural Systems Seminar, Pasadena, CA, Invited lecture, February 2011.
74. Telluride Neuromorphic Engineering Workshop, Organizer: Terry Sejnowski, Invited lecture, June 2011.
75. Woods Hole, MBL, Methods in Computational Neuroscience Course, Organizers: M. Berry & A. Fairhall, Invited lecture, August 2011.
76. Johns Hopkins University, Krieger Mind-Brain Institute Seminar, Invited lecture, September 2011.
77. Johns Hopkins University, Biomedical Engineering Department Seminar, Invited lecture, September 2011.
78. University of Zurich Ascona Conference on Cortical Circuits, Organizers: S. Arber, T. Bonhoeffer, C. Dulac, R. Friedrich, T. Jessell, A. Luthi, E. Moser, Invited talk, September 2011.
79. Champalimaud Center for the Unknown Seminar, Lisbon, Portugal, Invited lecture, February 2012.
80. Technion Medical School Seminar, Haifa, Israel, Invited lecture, December 2012.
81. COSYNE Workshop on "Dendrites", Organizers: DJ Strouse, B. Ujfalussy, T. Branco, & M. Lengyel, Snowbird, Invited talk, March, 2013.
82. COSYNE Workshop on "Map Formation", Organizers: I. Nauhas & K. Nielsen, Snowbird, Invited talk, March, 2013.
83. Woods Hole, MBL, Methods in Computational Neuroscience Course, Organizers: M. Fee & M. Goldman, Invited lecture, August 2013.

84. Telluride Neuromorphic Engineering Workshop, Organizer: Klaus Stiefel, Invited lecture, Telluride, June 2013.
85. Hughes Research Lab Colloquium, Malibu, CA, Invited lecture, November 2013.
86. UCSB Kavli Institute for Theoretical Physics Workshop “Neurophysics of Space, Time and Memory, Santa Barbara, CA, Invited talk, February, 2014.
87. Woods Hole, MBL, Methods in Computational Neuroscience Course, Organizers: M. Fee & M. Goldman, Invited lecture, August 2014.
88. Max Plank Institute, Florida, Invited lecture, Host: David Fitzpatrick, February, 2015.
89. Gordon Conference: Dendrites: Molecules, Structure & Function, Ventura, CA, Invited lecture, March 2015.
90. Woods Hole, MBL, Methods in Computational Neuroscience Course, Organizers: M. Fee & M. Goldman, Invited lecture, August 2015.
91. Intel, Neuromorphic Engineering Group (group head: Mike Davies), Portland, OR, Invited talk, June 2015.
92. Joint Symposium on Neural Computation, Organizers: Mayank Mehta, Tad Blair, & Terry Sejnowski, Invited talk, UCLA, June 2016.
93. Woods Hole, MBL, Methods in Computational Neuroscience Course, Organizers: M. Fee & M. Goldman, Invited lecture, August 2016.
94. Demiurge (startup company in Zug, Switzerland), Invited talk, Host: Bragi Lovetrue, Sept. 2016.
95. Bernstein Workshop on “Active Dendrites”, Organizers: Martin Stemmler and Stefan Häusler, Berlin, September 2016.
96. USC Neuroscience Graduate Program Retreat, Featured speaker, Sept. 2016.
97. Demiurge Technologies AG, CEO Bragi Lovetrue, Invited lecture, Zug, Switzerland, March 2017.
98. Woods Hole, MBL, Methods in Computational Neuroscience Course, Organizers: M. Fee & M. Goldman, Invited lecture, August 2017.
99. Simons Institute, Brain and Computation Boot Camp, Organizer: Bruno Olshausen, Invited lectures (2), UC Berkeley, January 2018.
100. UCLA Neural Microcircuits Symposium, Organizer: Dean Buonomano, Invited lecture, May 2018.
101. Dendrites 2018: Anatomy, Molecules and Function, Organizer: Yiota Poirazi, Keynote lecture, Heraklion, Crete, June 2018.

102. Woods Hole, MBL, Methods in Computational Neuroscience Course, Organizers: XJ Wang & Stephen Baccus, Invited lecture, August 2018.
103. GRC Dendrites: Molecules, Structure and Function, Chairs: Karen Zito and Jackie Schiller, Ventura, CA, March/April, 2019.
104. Woods Hole, MBL, Methods in Computational Neuroscience Course, Organizers: XJ Wang & Stephen Baccus, Invited lecture, July 2019.

PATENTS

1. Title: "Image Enhancement Using Modulation Strength Map and Modulation Kernel"
US Patent 8,867,831 B2, Issued Oct. 21, 2014
2. Title: "Extracting Object Edges from Images"
US Patent 8,971,614 Issued March 3, 2015
3. Title: "Rich Interconnection Networks: A Next-Generation Neuromorphic Architecture That Incorporates a Realistic Model of Dendritic Spatial Computation, and a Multi-Parameter Neuron-to-Neuron Interconnection Scheme".
US Provisional Patent, USC 0163, Filed August, 2019.

PROFESSIONAL ACTIVITIES

Conferences and Workshops

1. Program Committee, Neural Information Processing Systems (NIPS) Conference, Denver, December 1992.
2. Organizing Committee, Neural Information Processing Systems (NIPS) Conference, Denver, December 1993.
3. Organizing Committee, Computation and Neural Systems (CNS) Conference, Washington, D.C., 1993.
4. Organizing Committee, Neural Information Processing Systems (NIPS) Conference, Denver, December 1994.
5. Treasurer, Neural Information Processing Systems (NIPS) Conference, 1996-2003.
6. Meeting Chair, Joint Symposium on Neural Computation (Jointly with UCSD, Caltech, UCLA, UCI, UCR), held at USC, May 2000.
7. Workshop Organizer, Neural Information Processing Systems (NIPS) Conference, Keystone, December 2004.
8. Session Chair, Computational and Systems Neuroscience (COSYNE) Meeting, Salt Lake City, Utah, March 2005.

9. Session Chair, Computational and Systems Neuroscience (COSYNE) Meeting, Salt Lake City, Utah, March 2006.
10. Session Organizer, Winter Conference on Neural Plasticity (WCNP), Moorea, French Polynesia, February 2007.
11. Session Organizer, BMES Conference, Los Angeles, September 2007.
12. Meeting Chair, Joint Symposium on Neural Computation (Jointly with UCSD, Caltech, UCLA, UCI, UCR), held at USC, May 2009.
13. Program Co-Chair, Computational and Systems Neuroscience (COSYNE) Meeting, Salt Lake City, Utah, March 2010.
14. General Co-Chair, Computational and Systems Neuroscience (COSYNE) Meeting, Salt Lake City, Utah, March 2011.
15. Chair, Joint Symposium on Neural Computation (Jointly with UCSD, Caltech, UCLA, UCI, UCR), held at USC, May 2015.
16. Session Chair, GRC Gordon Conference on Dendrites, Tuscany, March 2017
17. Chair, Organizing committee, Simons Institute Workshop on “Representation, Coding and Computation in Neural Circuits”, U.C. Berkeley, February 2018.

Editorial and Advisory Boards

1. Neural Information Processing Systems Foundation, Advisory Board, 2003 – present
2. COSYNE Conference, Advisory board, 2011 – present
3. Neural Computation (Journal), Editorial Board, 2011 – present
4. Frontiers in Computational Neuroscience, Associate Editor, 2015 - present

Grant Review Panels

1. NSF Career Grant Review Panel, Washington D.C., September 2009.
2. NSF CRCNS Program Review Panel, Washington D.C., 2009.
3. NSF CRCNS Program Review Panel, Washington D.C., 2011.
4. NIH BPNS Study Section, Washington, D.C., June 2012.
5. Review Panel for “Bernstein Award for Computational Neuroscience”, sponsored by the German Federal Ministry of Education and Research, 2013.

6. NSF CRCNS Program Review Panel, Washington D.C., 2013.
7. NSF CRCNS Program Review Panel, Washington D.C., 2015.
8. Grant Review for Israeli Science Foundation (ISF), 2016.
9. Grant Review for Netherlands Organization for Scientific Research (NWO), 2016.
10. NSF CRCNS Program Review Panel, Washington D.C., 2016.
11. Simons Institute, U.C. Berkeley, Fellowship Reviews, 2017.
12. NIH Brain Initiative Study Section, Bethesda, MD, March 2019.

Journal Reviewing in past several years

Science, Nature, PNAS, PLoS, PLoS CB, eLife, Neuron, Nature Neuroscience, Nature Neuroscience Reviews, TINS, Journal of Neuroscience, Cerebral Cortex, Neural Computation, Journal of Neurophysiology, Hippocampus, Progress in Neurobiology, Brain Research, Journal of Computational Neuroscience, Neural Networks, Neuroscience Letters, Frontiers in Computational Neuroscience, Journal of Vision, Vision Research

Society Memberships

- Helmholtz Club, Member 1996 – 2006
- Society for Neuroscience, Member 1992 – present

Companies Founded

- Deep Contrast, Inc., co-Founded with John Sweet (CEO), Vardan Akopian (CTO), Feb. 2016.

TEACHING

Undergraduate teaching

1. *Biomedical Computer Simulation Methods* (BME 210b), 1995 – 1998.
2. *Senior Projects, Software Systems* (BME 406L), New course developed for Fall 2000.

3. *Control and Communication in the Nervous System* (BME 402), 1995 – present.

Graduate teaching

1. *Visual Recognition Lunch*, weekly informal seminar series (with Prof. I. Biederman), 1996-7.
2. *Engineering Science and Systems: From Humans to Robots (ENGR 150)*, 2 lectures, Fall 2007-8.
3. *Introduction to Biomedical Research* (BME 686), 6 guest lectures, Fall 1998.
4. *Topics in Computational Neuroscience* (BME 599), Developed and taught Fall 1999.
5. *Models in Systems Neuroscience* (BME 599), Developed and taught Fall 2003.
6. *Neurolunch* (Neur 539), Course coordinator, Fall 2004.
7. *Early Visual Processing* (BME 670), Coordinated course and co-taught, Fall 2004, contributed 3 lectures in Fall 2005, 2007, 2009, 2011.
8. *Late Visual Processing* (BME 671), Coordinated course and co-taught, Spring 2006, contributed 3 lectures: Spring 2006, 2008, 2010, 1 lecture in 2012.
9. *Advanced Studies of the Nervous System* (BME 502, taught Fall 2013), Developed and taught 1999, 2002, 2004–present.
10. *Laboratory Projects in Biomedical Engineering* (BME 505aL, coordinated Fall 2013), Fall/Spring 2006 – 2010.
11. *Computational Neuroengineering* (BME 575), Created new syllabus, Spring 2015.
12. *Advanced Overview of Neuroscience* (NCSI 524), taught five 2-hour sessions in Fall, 2011 to present.
13. *Advanced Overview of Neuroscience* (Neur 525, taught one 2-hour session in Spring), 2011 to present.

ADVISING

Current Ph.D. students

1. Amanda Rios (co-advisor with Laurent Itti, Neuroscience Ph.D. student)

Graduated Ph.D students:

1. Panayiota Poirazi (2001)
2. Kevin Archie (2004)
3. Eric Ortega (2005)
4. Chunhong Zhou (2005)
5. Monika Jadi (2010)
6. Bardia Behabadi (2011)
7. Yichun Wei (2011)
8. Xundong Wu (2011)
9. Chait Ramachandra (2012)
10. Rishabh Jain (2015)
11. Lei Jin (graduated 2018)

Ph.D. rotation students

1. Arthi Srinivasan (Spring 2007)
2. Sushmita Chatterji (Spring 2009)
3. Roham Miri (Fall 2009, Spring 2010)
4. Ruchi Deshpande (Fall 2010)
5. John Kochalka (Fall 2012)
6. Rorry Brenner (Fall 2013)
7. David Brown (Fall 2013, Spring 2014)
8. Clayton Bingham (Fall 2015)
9. Andres Camarena (Fall 2016)
10. Pallavi Gulanan (Spring 2018)
11. Zach Murdock (Spring 2018)

Former postdoctoral students

1. Kazunori Morikawa, 1995 – 1997
2. Gary Holt, 1997 – 2000
3. Daniel L. Ruderman, 1998
4. Panayiota Poirazi, 2002 – 2003

Current Ph.D. guidance committees

1. Andrey Andreev (Prof. Scott Fraser)
2. Jonathan Cheung (Prof. Andrew Hires)
3. Ulas Ciftcioglu, (Prof. Judith Hirsch)
4. Ruchi Deshpande (Prof. Brent Liu)
5. Alexis Gorin (Prof. Judith Hirsch)
6. Rebecca Lee (Prof. Alice Parker)
7. Alex Markowitz (Prof. Radha Kalluri)
8. Helga Mazyar (Prof. Bosco Tjan)
9. Dan Parks (Prof. Laurent Itti)
10. Brian Robinson (Prof. Ted Berger)
11. Christopher Ventura (Prof. Radha Kalluri)
12. Gene Yu (Prof. Ted Berger)
13. Chen Zhang (Prof. Itti)
14. Madison Zitting (Prof. Robert Chow)

Former Ph.D. guidance committees (year graduated for recent students):

- | | | |
|--------------------|-------------------------------|----------------------------|
| 1. Justin Aronoff | 21. Wallid Soussou | 41. Junkwan Lee (2012) |
| 2. Moshe Bar | 22. Suresh Subrahmanian | 42. Benjamin Raskob (2012) |
| 3. Javier Bautista | 23. Ed Vessel | 43. Jenny McGrady (2013) |
| 4. Deniz Baskent | 24. Yiaomin Yue | 44. Jason Toyaker (2013) |
| 5. Ran Carmi | 25. Zhuo Wang | 45. Xiaokun Xu (2013) |
| 6. Gilbert Case | 26. Susmita Chatterjee (2008) | 46. Chih-Chieh Hsu (2014) |

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|----------------------------|------------------------------|----------------------------|
| 7. Jozsef Fiser | 27. Hilton Kaplan (2008) | 47. Bryce Wilkins (2014) |
| 8. Taraneh Ghaffari-Farazi | 28. Albert Lai (2008) | 48. Rachel Millen (2015) |
| 9. Chao Huang | 29. Tianhao Li (2008) | 49. Sachin Chachada (2016) |
| 10. Jin-Gyeon Kim | 30. Jeffrey Begley (2009) | 50. Jiaping Zhao (2016) |
| 11. Gary Lin | 31. Xiwu Cao (2009) | 51. Amar Bains (2016) |
| 12. Bing Lu | 32. Kenneth Hayworth (2009) | 52. Shane Grant (2018) |
| 13. Mike Mangini | 33. Ozlem Kalinli (2009) | 53. Rorry Brenner (2018) |
| 14. Michael McHenry | 34. Larry Kite (2009) | |
| 15. Christian Perron | 35. Xin Wang (2009) | |
| 16. Terrell Mundhenk | 36. Markus Hauschild (2010) | |
| 17. Monica Padilla | 37. Marc Lescroat (2010) | |
| 18. John Shen | 38. Raphael Rosen (2011) | |
| 19. John Shin | 39. Vishal Vaingankar (2011) | |
| 20. Jacob Spoelstra | 40. Sushmita Allam (2012) | |

Recent undergraduate research advisees

1. DJ Strouse (2010 – 2011)
2. Andrew Schreiber (2012 – 2014)
3. Lauren Hass (2014 – 2015)
4. Sneha Raola (2014 – 2015)
5. Ankur Rastogi (2016 – 2017)
6. Tejas Ramdas (2018 – present)

Pre 2010

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|------------------|--------------------|------------------|
| 1. Justin Ales | 7. Mark Haney | 13. Andrew Owens |
| 2. John Austria | 8. Isaac Henry | 14. Biren Shaw |
| 3. Alonzo Baker | 9. David Huber | |
| 4. Arjun Bansal | 10. Emil Istoc | |
| 5. Ralph Beltran | 11. Tarik Hussain | |
| 6. Scott Gibson | 12. Daniel Nichita | |

UNIVERSITY SERVICE

Biomedical Engineering Department

- Instructional Lab Committee, 1995

- Web Page Development, Chair 1998 – 2001
- Grodins Award Review Committee, 1995 – 2002
- Neuroengineering prospectus task force, 2004
- BME Representative for all-Engineering Robotics Course, 2006
- Graduate Affairs Committee, 1996, Chair 1997 – 2006
- Ph.D. Program Redesign Committee, Chair, 2005 – 2006
- Neuroengineering Faculty Search Committee, Chair, 2007 – 2008
- Grodins Symposium Judge, 2006 – 2010, 2012, 2016, 2017
- Graduate Advisement/Screening Committee, Chair, 2006 – present
- Graduate Admissions Committee, 1996, Chair 1997 – 2006, member 2009 – 2010
- BME Chair Evaluation Committee, 2013
- Curriculum Committee, 2014 – present
- Research Space Committee, 2015, 2017
- Neuroengineering Faculty Search Committee (2016, 2018, 2019)

Neuroscience Graduate Program

1. Publicity Committee, 1997, 1999 – 2000
2. Web Page Development, Chair, 2000
3. Admissions Reviewer, 1997 – 2002
4. Advisement Committee, 1996 – 2011|
5. Recruitment Interviews, 2004 – present
6. Recruitment and Web Design Committee, 2005 – 2009
7. Graduate Symposium Judge, 2010, 2014 - 2018
8. Physiology and Biophysics Content Committee, 2012 – 2014
9. Curriculum Committee, co-Chair, 2010 - 2015

Department of Biological Sciences

- Faculty Search Committee for Section of Neurobiology, 2006 – 2007

Viterbi School of Engineering

- Explore Engineering Day Lab Tours, 1996, 2014, 2015
- Merit Scholar Interviews, 1996
- Masters of Engineering Program Task Force, 1995 – 1997
- Multi-Media in Education Task Force, 1996 – 1998
- Computer Committee, 1998 – 2000
- Curriculum Committee, 1998 – 2002
- Appointments, Promotions, and Tenure (APT) Committee, 2004 – 2008
- Explore USC Recruitment Presentations and Dinners, 1995 – 2002, 2004 – 2019

USC College

- Consultative Committee for review of Neuroscience (NIBS) Director, 2004

USC

- Co-founder of the USC Center for Vision Science and Technology, 2002
- Commencement Marshall, 1995 – 1997, 2001, 2007, 2012, 2014
- Trustee Scholar Interviews, 1997, 1998, 2008 – 2014, 2017 to present

OUTREACH

- Crenshaw to College Day, presentation to 9th grade students about attending college, 2010
- Obtained grants in 2011 (\$30K) & 2014 (\$48K) from NSF to support participation of under-represented groups at the COSYNE meeting
- Robinson Elementary School, “I Am A Scientist Day” annual presentations, 2009 - 2013

- Manhattan Beach Middle School Science Night, presenter, June 2012, 2013
- STEM: Spotlight on BME, Presentations to visiting school children, USC, October, 2016
- Brain Bee, UCLA, January, 2019