

# Virginia R. de Sa

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Citizenship: Canadian, British

## Education

Ph.D., (Computer Science), University of Rochester, Rochester, NY, Sept 88 - Aug 94  
Dissertation title: Unsupervised Classification Learning from Cross-Modal Environmental Structure  
Thesis advisor: Dana Ballard

M.S., (Computer Science), University of Rochester, Rochester, NY, Sept 88 - May 90

B.Sc.(Eng.) with honours, (Mathematics and Engineering), Queen's University, Kingston, Ont., Sept 84 - Apr 88

## Scholarships and Awards

1. UCSD Chancellor's Collaboratories award (07-08)
2. UCSD Faculty Career Development Program award (03-04)
3. NSF Career Grant (02-07)
4. Sloan Postdoctoral Fellowship (96-98)
5. Natural Sciences and Engineering Research Council of Canada (NSERC) Postdoctoral Fellowship (94-95)
6. Natural Sciences and Engineering Research Council of Canada (NSERC) 1967 Science and Engineering Scholarship (88-92)  
[one of 47 given to graduating science and engineering students across Canada]
7. Governor-General's Medal (88), Queen's University  
[highest standing throughout 4 years of Engineering]
8. Professional Engineer's Gold Medal (88), Queen's University  
[highest standing in final year]
9. Medal in Mathematics and Engineering (88), Queen's University  
[highest (in M&E dept.) standing in 3rd and 4th year courses]
10. Annie Bentley Lillie Prize (88), Queen's University  
[highest standing in math courses of final year]
11. Member of team awarded an "Honorable Mention" rank in "Mathematical Competition in Modeling" (88) — presented solution at "Canadian Applied Mathematics Society (CAMS) Conference on Continuum Mechanics and its Applications" in Burnaby, B.C. (May 1988)
12. Dr. John H. Chapman Memorial Prize in Communications Engineering (87)  
[highest average in a communications field – sponsored by SPAR Aerospace Ltd.]
13. Member of team awarded a "Meritorious" rank in "Mathematical Competition in Modeling" (87)
14. Cyril W. Knight Scholarship (86), Queen's University  
[highest standing in 1st and 2nd year Engineering courses]

15. Nellie and Ralph Jeffery Award in Mathematics, Queen's University (85,86)
16. Queen's University Provincial Scholarship (84-88)  
[entrance scholarship]

## Current Grant Support

- UCSD Chancellor's Collaboratories Award (Apr 07 - May 07)
- NSF Science of Learning Center Grant: The Temporal Dynamics of Learning (senior personnel) Sept 06 - Aug 07
- NSF IGERT: Vision and Learning in Human and Machines (PI) Feb 07-Sept 08 (co-PI) Oct 03- Jan 07
- NSF CAREER grant: Optimal Information Extraction in Intelligent Systems (PI) July 02 - June 07

## Publications

### Papers in preparation

Sullivan, T.J., & de Sa, V.R. Sleeping our way to stable learning: a theoretical study. under revision for *Neural Computation*.

### Refereed Publications

- Saygin, A.P., Driver, J., & de Sa, V.R. (2008). In the footsteps of biological motion and multisensory perception: Judgements of audio-visual temporal relations are enhanced for upright walkers. To appear in *Psychological Science*.
- Hammon, P.S., Makeig, S., Poizner, H., Todorov, E., & de Sa, V.R. (2008) Predicting Reaching Targets from Human EEG. To appear in *IEEE Signal Processing Magazine* (special issue on Brain-Computer Interfaces Jan 2008).
- Robinson, A.E., Hammon, P.S., & de Sa, V.R. (2007). Explaining brightness illusions using spatial filtering and local response normalization. *Vision Research* 47(12): 1631-1644.
- Hammon, P.S. & de Sa, V.R.(2007). Pre-processing and meta-classification for brain-computer interfaces. *IEEE Transactions on Biomedical Engineering* 54(3): 518-525. Digital Object Identifier: 10.1109/TBME.2006.888833
- Trottier, L.G., & de Sa, V.R. (2007). A Multimodal Paradigm for Investigating the Perisaccadic Temporal Inversion Effect in Vision. To appear in the *Proceedings of the 29th Annual Meeting of the Cognitive Science Society*.
- Sullivan, T.J. & de Sa, V.R.(2006). Homeostatic synaptic scaling in self-organizing maps. *Neural Networks* , Volume 19, Issues 6-7, Pages 734-743 (July-August 2006) *Advances in Self Organising Maps - WSOM05* Edited by Marie Cottrell and Michel Verleysen.
- Sullivan, T.J. & de Sa, V.R.(2006). A self-organizing map with homeostatic synaptic scaling. *Neurocomputing* Volume 69, Issues 10-12, June 2006, Pages 1183-1186 .
- Sullivan, T.J. & de Sa, V.R. (2006). A model of surround suppression through cortical feedback. *Neural Networks* Volume 19, Issue 5, June 2006, Pages 564-572 .

- Hammon, P.S., Pineda, J.A., & de Sa, V.R. (2006). Viewing motion animations during motor imagery: effects on motor imagery. In G.R. Mueller-Putz, C. Brunner, R. Leeb, R. Scherer, . Schloegl, S. Wriessneggger, and G. Pfurtscheller, *Proceedings of the 3rd International Brain-Computer Interface Workshop and Training Course 2006*, pages 62-63, 2006.
- de Sa, V.R. (2005). Spectral Clustering with Two Views. ICML (International Conference on Machine Learning) Workshop on Learning with Multiple Views. Bonn, Germany.
- de Sa, V.R. (2004). Sensory Modality Segregation. In S. Thrun, L. Saul, and B. Schoelkopf (Eds.), *Advances in Neural Information Processing Systems 16*. (pp. 913-920) MIT Press.
- Yu, H-H., & de Sa, V.R. (2004). Nonlinear reverse-correlation with synthesized naturalistic noise. *Neurocomputing* 58-60:909–913.
- Sullivan, T.J., & de Sa, V.R. (2004). A Temporal Trace and SOM-based Model of Complex Cell Development. *Neurocomputing* 58-60:827–833.
- Zheng, C.L., de Sa, V.R., Gribskov, M., & Nair, T.M. (2003). On Selecting Features from Splice Junctions: An Analysis Using Information Theoretic and Machine Learning Approaches. In M. Gribskov, M. Kanehisa, S. Miyano, and T. Takagi (Eds.), *Genome Informatics* Vol. 14, Universal Academy Press, Inc.
- Caruana, R., & de Sa, V.R. (2003). Benefitting from the Variables that Variable Selection Discards. *Journal of Machine Learning Research* 3(Mar):1245–1264, 2003.
- de Sa, V.R., & MacKay, D.J.C. (2001). Model fitting as an aid to bridge balancing in neuronal recording. *Neurocomputing* (special issue devoted to Proceedings of the CNS 2000 meeting) 38-40:1651–1656.
- McRae, K., Cree, G.S., Westmacott, R., & de Sa, V.R. (1999) Further Evidence for Feature Correlations in Semantic Memory. *Canadian Journal of Experimental Psychology* Special Issue on Word Recognition. 53(4), 360–373.
- de Sa, V.R., & Ballard, D.H. (1998). Category Learning through Multi-Modality Sensing. *Neural Computation* 10(5), 1097–1117.
- de Sa, V.R., & Hinton, G.E. (1998). Cascaded Redundancy Reduction. *Network: Computation in Neural Systems* 9(1), 73–84.
- Caruana, R., & de Sa, V.R. (1998). Using Feature Selection to Find Inputs that Work Better as Outputs. In the proceedings of the 8th International Conference on Artificial Neural Networks (ICANN 98), Skövde, Sweden. (pp. 299–304). Springer-Verlag London.
- de Sa, V.R., deCharms, R.C., & Merzenich, M.M. (1998) Using Helmholtz Machines to analyze multi-channel neuronal recordings. In M.I. Jordan, M.J. Kearns, and S.A. Solla (Eds.), *Advances in Neural Information Processing Systems 10*. (pp. 131–137). MIT Press.
- McRae, K., de Sa, V.R., & Seidenberg, M.S. (1997). On the Nature and Scope of Featural Representations of Word Meaning. *Journal of Experimental Psychology: General*, 126(2), 99–130.
- Caruana, R., & de Sa, V.R. (1997) Promoting Poor Features to Supervisors: Some Inputs Work Better as Outputs. In M.C. Mozer, M.I. Jordan and T.P. Petsche (Eds.), *Advances in Neural Information Processing Systems 9*. (pp. 389–395). MIT Press.
- de Sa, V.R. (1994). Learning Classification with Unlabeled Data. In J.D. Cowan, G. Tesauero, and J. Alspector (Eds.), *Advances in Neural Information Processing Systems 6* (pp. 112–119). Morgan Kaufmann.
- de Sa, V.R. (1994). Minimizing Disagreement for Self-Supervised Classification. In M.C. Mozer, P. Smolen-

sky, D.S. Touretzky & J.L. Elman (Eds.), *Proceedings of the 1993 Connectionist Models Summer School* (pp. 300—307). Erlbaum Associates.

McRae, K., de Sa, V.R., & Seidenberg, M.S. (1993). Modeling Property Intercorrelations in Conceptual Memory. In *Proceedings of the 15th Annual Meeting of the Cognitive Science Society* (pp. 729—734).

de Sa, V.R., & Ballard, D.H. (1993). A Note on Learning Vector Quantization. In C.L. Giles, S.J. Hanson & J.D. Cowan (Eds.), *Advances in Neural Information Processing Systems 5*, (pp. 220—227). Morgan Kaufmann.

de Sa, V.R., & Ballard, D.H. (1993). Self-teaching through Correlated Input. In *Computation and Neural Systems 1992* (Chapter 66, pp. 437—441). Kluwer Academic Publishers.

de Sa, V.R., & Ballard, D.H. (1992). Top-down teaching enables task-relevant classification with competitive learning. In *IJCNN International Joint Conference on Neural Networks* (Vol. 3, pp. III-364—III-371).

Atherton, D.L., Rao, T.S., de Sa, V., & Schönbächler, M. (1988). Thermodynamic Correlation Tests Between Magnetostrictive and Magnetomechanical Effects in 2% Mn Pipeline Steel. *IEEE Transactions on Magnetics*, 24(5), 2177–2180.

### Book Chapters

de Sa, V. (1999). Combining Uni-Modal Classifiers to Improve Learning. In H. Ritter, H. Cruse, & J. Dean (Eds.) *Prerational Intelligence: Adaptive Behavior and Intelligent Systems without Symbols and Logic*, Vol 2. (pp 709-723) Dordrecht, The Netherlands: Kluwer Academic Publishers.

de Sa, V.R., & Ballard, D. (1997). Perceptual Learning from Cross-Modal Feedback. In R. L. Goldstone, P. G. Schyns, & D. L. Medin (Eds.) *Psychology of Learning and Motivation*, Vol 36. (pp 309–351) San Diego, CA: Academic Press.

### Invited Presentations

Investigating per-saccadic temporal distortions in visual perception. Joint Symposium on Neural Computation, Caltech, May 2007.

Category Learning through multi-modal interactions. Perceptual Expertise Network Workshop (PEN XII) Sarasota, FLA, May 2006.

Using Computational Modeling and Machine Learning to Study Invariant Recognition. Department of Mathematics, Queen's University, Kingston, ON, Canada, October 2004.

Support for different functional roles of feedback and horizontal connections. Workshop on Inference and Prediction in Neocortical Circuits, American Institute for Mathematics, Palo Alto, CA, September 2003.

Benefits of sensory modality segregation. Workshop on Multisensory Processing, House Ear Institute, August 2003.

Benefits of constrained cortical connectivity. Sloan-Swartz Meeting, San Diego, July 2003.

Auditory-visual interaction for learning. Joint Symposium on Neural Computation, Caltech, May 2002.

Towards optimal feature interaction in neural networks. Department of Computer Science, University of New Mexico, March 2001.

- How the brain teaches itself: A role for cortical feedback projections in learning. Division of Life Sciences, University of Texas at San Antonio, March 2001.
- How the brain teaches itself: A role for cortical feedback projections in learning. Department of Computer Science, University of Vermont, March 2001.
- How the brain teaches itself: A role for cortical feedback projections in learning. Department of Cognitive Science, University of California at San Diego, February 2001.
- Sensory interaction for learning. Workshop on the Role of Internal Representation in Complex Animal Behavior, Zentrum für interdisziplinäre Forschung, Universität Bielefeld, Bielefeld, Germany, December 2000.
- How the brain teaches itself: A role for cortical feedback projections in learning. Computation and Neural Systems program, Caltech, November 2000.
- Top-Down Influences on Learning. EU Advanced Course in Computational Neuroscience, International Centre for Theoretical Physics (ICTP), Trieste, Italy, September 2000.
- Investigating the Role of Cortical Feedback in Plasticity. NICE2000:Neural Plasticity and Learning, Grindelwald, Switzerland, March 2000.
- Exploring the Role of Cortical Feedback in Learning. Department of Psychology, University of Western Ontario, February 2000.
- Top-Down Influences on Learning. EU Advanced Course in Computational Neuroscience, International Centre for Theoretical Physics (ICTP), Trieste, Italy, September 1999.
- Using Generative Models to Study Neural Coding. Institute for Mathematical Behavioral Sciences, University of California at Irvine, May 1999.
- Category Learning through Multi-Modality Sensing. Department of Biological Sciences, Ohio University, April 1999.
- Category Learning through Multi-Modality Sensing. Department of Psychology, University of Western Ontario, March 1999.
- Category Learning through Multi-Modality Sensing. Department of Cognitive Sciences, University of California at Irvine, March 1999.
- Category Learning through Multi-Modality Sensing. Science of Learning Research Seminar, Center for the Science of Learning, Carnegie Mellon University, February 1999.
- Category Learning through Multi-Modality Sensing. Seminar on Computational Learning and Adaptation, Stanford University, February 1999.
- Category Learning through Multi-Modality Sensing. Department of Psychology, McMaster University, Hamilton, Ontario, Canada, November 1998.
- A Method for Analyzing Multi-channel Spike Data. Sloan Centers for Theoretical Neurobiology Annual Meeting, California Institute of Technology, Pasadena, California, July 1998.
- Category Learning through Multi-Modality Sensing. International School of Advanced Studies (SISSA), Trieste, Italy, June 1998.
- Category Learning through Multi-Modality Sensing. International Computer Science Institute (ICSI), Berkeley, California, April 1998.
- A method for analyzing multi-channel spike data. Neural Information and Coding Workshop, Snowbird, Utah, March 1997.

- What Makes a Modality? – The importance of appropriate input segregation. Machines that Learn Workshop, Snowbird, Utah, April 1997.
- Getting the Best of Both Worlds: Using Some Features as Both Inputs and as Extra Outputs. Machines that Learn Workshop, Snowbird, Utah, April 1997.
- Sensor-Fusion for Learning: The importance of appropriate sensor segregation. Workshop on Sensorfusion in Neural Networks, Schloss Reisensburg, Günzburg, Germany, July 1996.
- Cascaded Redundancy Reduction. NIPS(Neural Information Processing Systems)\*95 Post-Meeting Workshop on Neural Information and Coding: Techniques and Algorithms, Vail, Colorado, December 1995.
- On Segregating Input Dimensions. NIPS(Neural Information Processing Systems)\*95 Post-Meeting Workshop on Learning to Learn: Knowledge Consolidation and Transfer in Inductive Systems, Vail, Colorado, December 1995.
- Cooperative Unsupervised Learning — a model for cortical multi-sensory interaction. Sloan Theoretical Neurobiology Workshop, Santa Fe Institute, Santa Fe, New Mexico, August 1995.
- Learning to Classify without a Teacher: A Model of Multi-Sensory Interaction. Department of Psychology, University of Western Ontario, London, Canada, March 1995.
- Combining Uni-Modal Classifiers to Improve Learning: Taking Advantage of Cross-Modal Environmental Structure. Conference on Integration of Elementary Functions into Complex Behavior, Zentrum für interdisziplinäre Forschung, Universität Bielefeld, Bielefeld, Germany, June 1994.
- Learning to Classify from Cross-Modality Structure in the Environment. Department of Computer Science, University of Toronto, Toronto, Canada, May 1994.
- Learning to Classify without a Teacher. Baylor College of Medicine, Houston, TX, March 1994.
- A possible role for feedback in learning. Presentation at the Cosyne 2005 workshop on Invariant representations in Vision.

### Abstracts and Unrefereed Publications

- Robinson, A. E. , Hammon, P. S., & de Sa, V. R. (2007). A filtering model of brightness perception using Frequency-specific Locally-normalized Oriented Difference-of-Gaussians (FLODOG) [Abstract]. *Journal of Vision*, 7(9):237, 237a, <http://journalofvision.org/7/9/237/>, doi:10.1167/7.9.237. ABS
- Trottier, L.G. , & de Sa, V.R. (2007) Timing perisaccadic visual processing using multi-modal temporal order judgments. Abstract presented at Computational and Systems Neuroscience (CoSyNe 07)
- Sullivan, T.J. , & de Sa, V.R. (2005) Surround Suppression Through Cortical Feedback. Abstract presented at Computational and Systems Neuroscience (CoSyNe 07)
- Yu, H. , de Sa, V.R., & Sereno, M.I. (2005). The organization of classical and nonclassical receptive fields in V1 of the California ground squirrel. Abstract presented at the Society for Neuroscience Annual Meeting. ABS
- Saygin, A.P. , Wilson, S.M, & de Sa, V.R. (2004). Visual form facilitates audiovisual synchrony detection [Abstract]. *Journal of Vision*, 4(8), 700a, <http://journalofvision.org/4/8/700/>, doi:10.1167/4.8.700 ABS
- de Sa, V.R. , & Stryker, M.P. (2001). Cortical feedback projections and plasticity in a V1/V2 mouse slice. Abstract presented at the Society for Neuroscience 31st Annual Meeting, San Diego, Ca. ABS
- Almeida, R. , de Sa, V.R., & Stetter, M. (2001). Relating functional imaging and neuronal population spiking activity. Abstract at the Society for Neuroscience 31st Annual Meeting, San Diego, Ca. ABS

- de Sa, V.R. (1994). *Unsupervised Classification Learning from Cross-Modal Environmental Structure*. Doctoral dissertation, Department of Computer Science, University of Rochester.
- Spivey-Knowlton, M.J., & de Sa, V.R. (1994). Voluntary Spatial Attention Modulates the Direct Tilt Aftereffect. Abstract in the conference of the Association for Research in Vision and Opthamology (ARVO).
- McRae, K., de Sa, V.R., & Seidenberg, M.S. (1993, June). A constrained theory of semantic priming. In L.K. Tyler (Chair), *Semantic Priming and the Structure of Semantic Memory*, Symposium conducted at the Conference of the International Neuropsychological Society, Mediera, Portugal. (abstract in *Journal of Clinical and Experimental Neuropsychology*, 15(3), 385–386.
- de Sa, V.R., & Ballard, D.H. (1991). *Top-down Teaching Enables Non-trivial Clustering via Competitive Learning* (Technical Report 402). Department of Computer Science, University of Rochester.
- de Sa, V.R. (1988). *A Study of Character Maps and the Codes they Induce*. Undergraduate Thesis, Queen's University, Kingston, Ont.

## Research Experience

- 9/01-present    Assistant Professor, **Cognitive Science, University of California at San Diego**
- 1/96-8/01      Postdoctoral Fellow, **Physiology, University of California at San Francisco**  
                     Supervisor: Michael Stryker  
                     Studied cortical feedback and its role in learning in a V1-V2 slice preparation.  
                     Supervisor: Michael Merzenich  
                     Assisted in surgery on, training of, and recording from, New World monkeys with implanted electrode arrays. Developed algorithm to analyze neural recordings for spatio-temporal patterns.
- 9/94-12/95    Postdoctoral Fellow, **Computer Science, University of Toronto**  
                     Supervisor: Geoff Hinton  
                     In collaboration with Geoff Hinton, developed an algorithm for quick data compression (with a hierarchical generative model) of an ensemble of binary data vectors (presented in the manuscript “Cascaded Redundancy Reduction”).  
                     Developed psychophysical experiments to be run in Allison Sekuler and Pat Bennett’s lab.  
                     Collaborated with Stuart Anstis towards the manuscript “Motion, on the other hand”.
- 1/91-7/94      Research Assistant, **Computer Science, University of Rochester**  
                     Supervisor: Dana Ballard  
                     Performed research towards my dissertation “Unsupervised Classification Learning from Cross-Modal Environmental Structure” (see **Dissertation Abstract**)  
                     Participated in the “Connectionist Models Summer School”, Boulder, CO  
                     Participated in “Methods in Computational Neuroscience” course, Marine Biological Laboratory, Woods Hole, MA

- 6/90-12/90    Research Assistant, **Computer Science, University of Rochester**  
 Supervisors: Dana Ballard, Rodolfo Llinas, John Maunsell  
 Performed magnetoencephalography (MEG) experiments to look for evidence of attention dependent 40 Hz oscillations, in collaboration with the Department of Physiology and Biophysics, New York University Medical Center  
 Analyzed single and multi-cell recordings from macaque V1 and V4 looking for evidence of oscillatory firing, in collaboration with the Department of Physiology, University of Rochester  
 Assisted in single and multi-cell recordings from macaque V1, in collaboration with the Department of Physiology, University of Rochester
- 6/89-8/89    Research Assistant, **Computer Science, University of Rochester**  
 Supervisor: Paul Dietz  
 Studied and implemented parallel algorithms on the BBN Butterfly Multiprocessor
- 5/88-8/88    NSERC Summer RA, **Computer Science, Queen's University**  
 Supervisor: Janice Glasgow  
 Worked with chemical engineers and computer scientists to produce a report on requirements for expert system shells for Process Engineering applications
- 5/87-8/87    NSERC Summer RA, **Physics, Queen's University**  
 Supervisor: David Atherton  
 Studied and modified the Jiles-Atherton model of ferromagnetic hysteresis
- 5/86-8/86    NSERC Summer RA, **Electrical Engineering, Queen's University**  
 Supervisor: Stafford Tavares  
 Wrote a user-friendly cryptography package with context dependent help
- 5/85-8/85    Programmer, **Geological Sciences, Queen's University**  
 Supervisor: John Hanes  
 Designed educational software utilizing three-dimensional graphics and text

## Teaching Appointments

Spring 2007: Assistant Professor, taught an undergraduate course in **Natural Computation II**

Winter 2006: Assistant Professor, organized a graduate seminar course on **System Identification Methods in Cognitive Science** and an undergraduate course on **Introduction to Cognitive Science**

Fall 2005: Assistant Professor, taught an undergraduate course in **Modeling and Data Analysis**

Spring 2005: Assistant Professor, taught a graduate course in **Statistical Inference and Data Analysis**

Fall 2004: Assistant Professor, taught an undergraduate course in **Sensation and Perception**

Spring 2004: Assistant Professor, co-taught an undergraduate course in **Advanced Programming Methods for Cognitive Science** and a graduate course in **Statistical Inference and Data Analysis**

Spring 2003: Assistant Professor, taught a Freshman seminar on **Visual Illusions** and co-taught an undergraduate course in **Advanced Programming Methods for Cognitive Science**



Winter 2003: Assistant Professor, taught a graduate seminar in **Pattern Recognition**

Fall 2003: Assistant Professor, taught an undergraduate course in **Learning about the brain through visual illusions and aftereffects**

Spring 2002: Assistant Professor, co-taught an undergraduate course in **Advanced Programming Methods for Cognitive Science**

Winter 2002: Assistant Professor, taught a graduate course in **Pattern Recognition**

September 2000: Advanced Tutor, **EU Advanced Course in Computational Neuroscience, Trieste, Italy**

Supervised 6 students and lectured on top-down influences on learning

August-September 1999: Advanced Tutor, **EU Advanced Course in Computational Neuroscience, Trieste, Italy**

Supervised 4 students and gave two “tutorial-style” lectures

Spring 1995: Reading Course Instructor, **Psychology, University of Toronto**

Developed and taught a graduate reading course on connectionist models of object recognition

Fall 1993: Seminar Leader, **Computer Science, University of Rochester**

Organized and ran a seminar on mathematical methods in learning

## Professional Activities

IGERT PI: Vision and Learning in Humans and Machines 2007-2008

Program Committee member for Neural Information Processing Systems (NIPS) 2007

Panel Reviewer for NSF Machine Learning Fall 2003

Panel Reviewer for NSF Knowledge and Cognitive Systems June 3/4 2002

Moderator at the Joint Symposium on Neural Computation (JSNC 2001)

Moderator at the Society for Neuroscience annual meeting (SFN'01)

Co-chair NIPS 2001 workshops (December 2000, December 2001)

Program Committee member for International Conference on Machine Learning (2000)

Co-organizer for Neural Information Processing Systems workshop entitled “Multi-sensory perception and learning” (see <http://www.ai.mit.edu/people/fisher/nips02/perceptwshop/description/>) (2001)

Co-organizer for Neural Information Processing Systems workshop entitled “Integrating supervised and unsupervised learning” (1998)

Have reviewed for: Cognitive Science, IEEE Transactions on Neural Networks, Journal of Machine Learning Research, Journal of Visual Communication and Image Representation, Machine Learning, Nature Neuroscience, Neural Computation, Neural Networks, Network, Royal Society Proceedings A, Visual Neuroscience, International Joint Conference on Artificial Intelligence (IJCAI), International Conference on Computer Vision (ICCV), IEEE Conference on Computer Vision and Pattern Recognition (CVPR), Neural Information Processing Systems (NIPS) Conference, International Conference on Machine Learning (ICML) MIT Press (proposed book), Addison-Wesley (book)