VITA

ROBERT A. JACOBS

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EDUCATION

University of Massachusetts (1984–1990)
Computer and Information Science
Ph.D. (September 1990)
M.S. (June 1987)

University of Pennsylvania (1978–1982)
B.A. Psychology (June 1982)

RESEARCH INTERESTS

Cognitive and perceptual learning
Computational models of cognition and perception
Multisensory integration
Vision and action
Cognitive neuroscience of learning and memory

WORK EXPERIENCE

Professor

Department of Brain and Cognitive Sciences, University of Rochester (July 2003–present); Center for Visual Science (July 2003–present); Department of Computer Science (July 2003–present)

Associate Editor

Topics in Cognitive Science, journal of The Cognitive Science Society (January 2009–present)

Treasurer

Neural Information Processing Systems (NIPS) Foundation (December 2003–December 2007); this foundation organizes the annual NIPS conference and workshops

Senior Editor / **Associate Editor**

Senior Editor (January 1998–December 2000), Associate Editor (January 2001–December 2003) of *Cognitive Science*, journal of The Cognitive Science Society

Associate Professor

Department of Brain and Cognitive Sciences, University of Rochester (July 1997–June 2003); Center for Visual Science (July 1997–June 2003); Department of Computer Science (September 1998–June 2003)

Program Director

Cognitive Science Program, University of Rochester (July 1996–June 1998)

Assistant Professor

Department of Brain and Cognitive Sciences, University of Rochester (July 1995–June 1997); Center for Visual Science (February 1997–June 1997); Department of Psychology (September 1992–June 1995)

Postdoctoral Fellow

Laboratory of Dr. Stephen Kosslyn, Department of Psychology, Harvard University (July 1991–August 1992)

Postdoctoral Fellow

Laboratory of Dr. Michael Jordan, Department of Brain and Cognitive Sciences, Massachusetts Institute of Technology (July 1990–June 1991)

Graduate Research Assistant

Laboratory of Dr. Andrew Barto, Department of Computer and Information Science, University of Massachusetts at Amherst (June 1985–May 1990)

PROFESSIONAL SERVICE

Editorial: *Topics in Cognitive Science*, Associate Editor (January 2009–present)
Cognitive Science, Associate Editor (January 2001–December 2003)
Cognitive Science, Senior Editor (January 1998–December 2000)
Connection Science, guest co-editor of two special issues (December 1996, March 1997)

Grant reviewing: Air Force Office of Scientific Research
Human Frontiers Science Program
National Institutes of Health (ad hoc)
National Science Foundation (ad hoc)
Natural Sciences and Engineering Research Council of Canada
Netherlands Organisation for Scientific Research
The Canada Council for the Arts
The Wellcome Trust
United States–Israel Binational Science Foundation

Journal reviewing: *Behavioral and Brain Sciences, Cognition, Cognitive Neuropsychology, Cognitive Science, Connection Science, Experimental Brain Research, IEEE Transactions on Knowledge and Data Engineering, IEEE Transactions on Neural Networks, IEEE Transactions on Pattern Analysis and Machine Intelligence, IEEE Transactions on Signal Processing, IEEE Transactions on Systems, Man, and Cybernetics, International Journal of Neural Systems, Journal of Cognitive Neuroscience, Journal of Machine Learning Research, Journal of the American Statistical*

Association, Journal of the Optical Society of America A, Journal of Vision, Machine Learning, Nature Neuroscience, Neural Computation, Neural Networks, Perception, Proceedings of the National Academy of Sciences, Psychological Review, Psychonomic Bulletin and Review, Science, Trends in Cognitive Sciences, Vision Research

ARTICLES

Jacobs, R. A. (1988). Increased rates of convergence through learning rate adaptation. *Neural Networks*, 1, 295–307.

Jacobs, R. A., Jordan, M. I., and Barto, A. G. (1991). Task decomposition through competition in a modular connectionist architecture: The what and where vision tasks. *Cognitive Science*, 15, 219–250.

Jacobs, R. A., Jordan, M. I., Nowlan, S. J., and Hinton, G. E. (1991). Adaptive mixtures of local experts. *Neural Computation*, 3, 79–87.

Jacobs, R. A. and Jordan, M. I. (1992). Computational consequences of a bias towards short connections. *Journal of Cognitive Neuroscience*, 4, 323–336.

Jordan, M. I. and Jacobs, R. A. (1992). Modularity, unsupervised learning, and supervised learning. In S. Davis (Ed.), *Connectionism: Theory and Practice*. New York: Oxford University Press.

Jacobs, R. A. and Jordan, M. I. (1993). Learning piecewise control strategies in a modular neural network architecture. *IEEE Transactions on Systems, Man, and Cybernetics*, 23, 337–345.

Jacobs, R. A., Jordan, M. I., and Barto, A. G. (1993). Task decomposition through competition in a modular connectionist architecture: The what and where vision tasks. In S. J. Hanson, W. Remmele, and R. L. Rivest (Eds.), *Machine Learning: From Theory to Applications*. Berlin: Springer–Verlag. [This chapter is an abridged version of the article with the same title published in *Cognitive Science*, 15, 219–250 (1991).]

Jacobs, R. A. and Kosslyn, S. M. (1994). Encoding shape and spatial relations: The role of receptive field size in coordinating complementary representations. *Cognitive Science*, 18, 361–386.

Jordan, M. I. and Jacobs, R. A. (1994). Hierarchical mixtures of experts and the EM algorithm. *Neural Computation*, 6, 181–214.

Kosslyn, S. M. and Jacobs, R. A. (1994). Encoding shape and spatial relations: A simple mechanism for coordinating complementary representations. In V. Honavar and L. Uhr (Eds.), *Artificial Intelligence and Neural Networks: Steps Toward Principled Integration*. New York: Academic Press.

Jacobs, R. A. (1995). Methods for combining experts' probability assessments. *Neural Computation*, 7, 867–888.

Jordan, M. I. and Jacobs, R. A. (1995). Modular and hierarchical learning systems. In M. Arbib (Ed.), *The Handbook of Brain Theory and Neural Networks*. Cambridge, MA: MIT Press.

Kosslyn, S. M., Chabris, C. F., Marsolek, C. J., Jacobs, R. A., and Koenig, O. (1995). On computational evidence for different types of spatial relations encoding: Reply to Cook et al. (1995). *Journal of Experimental Psychology: Human Perception and Performance*, 21, 423–431.

Jacobs, R. A., Tanner, M. A., and Peng, F. (1996). Bayesian inference for hierarchical mixtures-of-experts with applications to regression and classification. *Statistical Methods in Medical Research*, 5, 375–390.

Peng, F., Jacobs, R. A., and Tanner, M. A. (1996). Bayesian inference in mixtures-of-experts and hierarchical mixtures-of-experts models with an application to speech recognition. *Journal of the American Statistical Association*, 91, 953–960.

Jacobs, R. A. (1997). Bias/Variance analyses of mixtures-of-experts architectures. *Neural Computation*, 9, 369–383.

Jacobs, R. A. (1997). Nature, nurture, and the development of functional specializations: A computational approach. *Psychonomic Bulletin and Review*, 4, 299–309.

Jacobs, R. A., Peng, F., and Tanner, M. A. (1997). A Bayesian approach to model selection in hierarchical mixtures-of-experts architectures. *Neural Networks*, 10, 231–241.

Fine, I. and Jacobs, R. A. (1999). Modeling the combination of motion, stereo, and vergence angle cues to visual depth. *Neural Computation*, 11, 1297–1330.

Fine, I. and Jacobs, R. A. (1999). A comparison of visual cue combination models. In A. Sharkey (Ed.), *Combining Artificial Neural Nets: Ensemble and Modular Multi-Net Systems*. Berlin: Springer-Verlag.

Jacobs, R. A. (1999). Computational studies of the development of functionally specialized neural modules. *Trends in Cognitive Sciences*, 3, 31–38.

Jacobs, R. A. (1999). Optimal integration of texture and motion cues to depth. *Vision Research*, 39, 3621–3629.

Jacobs, R. A. and Fine, I. (1999). Experience-dependent integration of texture and motion cues to depth. *Vision Research*, 39, 4062–4075.

Jacobs, R. A. and Jordan, M. I. (1999). Computational consequences of a bias towards short connections. In R. Ellis and G. W. Humphreys (Eds.), *Connectionist Psychology*. London: Psychology Press. [This chapter is a reprint of the article with the same title published in *Journal of Cognitive Neuroscience*, 4, 323–336 (1992).]

Jacobs, R. A. and Tanner, M. A. (1999). Mixtures of X. In A. Sharkey (Ed.), *Combining Artificial Neural Nets: Ensemble and Modular Multi-Net Systems*. Berlin: Springer-Verlag.

Fine, I. and Jacobs, R. A. (2000). Perceptual learning for a pattern discrimination task. *Vision Research*, 40, 3209–3230.

Meegan, D. V., Aslin, R. N., and Jacobs, R. A. (2000). Motor timing learned without motor training. *Nature Neuroscience*, 3, 860–862.

Atkins, J. E., Fiser, J., and Jacobs, R. A. (2001). Experience-dependent visual cue integration based on consistencies between visual and haptic percepts. *Vision Research*, 41, 449–461.

Jordan, M. I. and Jacobs, R. A. (2001). Hierarchical mixtures of experts and the EM algorithm. In M. I. Jordan and T. J. Sejnowski (Eds.), *Graphical Models: Foundations of Neural Computation*. Cambridge, MA: MIT Press. [This chapter is a reprint of the article with the same title published in *Neural Computation*, 6, 181–214 (1994).]

Tanner, M. A. and Jacobs, R. A. (2001). Neural networks and related statistical latent variable models. In N. J. Smelser and P. B. Baltes (Eds.), *International Encyclopedia of the Social and Behavioral Sciences*. Oxford, UK: Elsevier Science.

Fine, I. and Jacobs, R. A. (2002). Comparing perceptual learning across tasks: A review. *Journal of Vision*, 2, 190–203.

Jacobs, R. A. (2002). Visual cue integration for depth perception. In R. P. N. Rao, B. A. Olshausen, and M. S. Lewicki (Eds.), *Probabilistic Models of the Brain: Perception and Neural Function*. Cambridge, MA: MIT Press.

Jacobs, R. A. (2002) What determines visual cue reliability? *Trends in Cognitive Sciences*, 6, 345–350.

Jacobs, R. A., Jiang, W., and Tanner, M. A. (2002). Factorial hidden Markov models and the generalized backfitting algorithm. *Neural Computation*, 14, 2415–2437.

Triesch, J., Ballard, D. H., and Jacobs, R. A. (2002). Fast temporal dynamics of visual cue integration. *Perception*, 31, 421–434.

Atkins, J. E., Jacobs, R. A., and Knill, D. C. (2003). Experience-dependent visual cue recalibration based on discrepancies between visual and haptic percepts. *Vision Research*, 43, 2603–2613.

Battaglia, P. W., Jacobs, R. A., and Aslin, R. N. (2003). Bayesian integration of visual and auditory signals for spatial localization. *Journal of the Optical Society of America A*, 20, 1391–1397.

Dominguez, M. and Jacobs, R. A. (2003). Developmental constraints aid the acquisition of binocular disparity sensitivities. *Neural Computation*, 15, 161–182.

Dominguez, M. and Jacobs, R. A. (2003). Does visual development aid visual learning? In P. Quinlan (Ed.), *Connectionist Models of Development*. East Sussex, UK: Psychology Press.

Ivanchenko, V. and Jacobs, R. A. (2003). A developmental approach aids motor learning. *Neural Computation*, 15, 2051–2065.

Jacobs, R. A. and Dominguez, M. (2003). Visual development and the acquisition of motion velocity sensitivities. *Neural Computation*, 15, 761–781.

Jordan, M. I. and Jacobs, R. A. (2003). Modular and hierarchical learning systems. In M. Arbib (Ed.), *The Handbook of Brain Theory and Neural Networks (Second Edition)*. Cambridge, MA: MIT Press. [This chapter is a slightly modified version of the chapter with the same title that appeared in the first edition of this handbook.]

Aslin, R. N., Battaglia, P. W., and Jacobs, R. A. (2004). Depth-dependent contrast gain-control. *Vision Research*, 44, 685–693.

Battaglia, P. W., Jacobs, R. A., and Aslin, R. N. (2004). Depth-dependent blur adaptation. *Vision Research*, 44, 113–117.

Chhabra, M. and Jacobs, R. A. (2006). Properties of synergies arising from a theory of optimal motor behavior. *Neural Computation*, 18, 2320–2342.

Chhabra, M. and Jacobs, R. A. (2006). Near-optimal human adaptive control across different noise environments. *The Journal of Neuroscience*, 26, 10883–10887.

Michel, M. M. and Jacobs, R. A. (2006). The costs of ignoring high-order correlations in populations of model neurons. *Neural Computation*, 18, 660–682.

Tanner, M. A. and Jacobs, R. A. (2006). Mixtures of experts. In N. J. Salkind (Ed.), *Encyclopedia of Measurement and Statistics*. Thousand Oaks, CA: Sage Publications.

Chhabra, M., Jacobs, R. A., and Štefankovič, D. (2007). Behavioral shaping for geometric concepts. *Journal of Machine Learning Research*, 8, 1835–1865.

Dominguez, M. and Jacobs, R. A. (2007). Learning the best first: Interactions between visual development and learning. In D. Mareschal, S. Sirois, G. Westermann, and M. H. Johnson (Eds.), *Neuroconstructivism, Volume 2: Perspectives and Prospects*. Oxford, UK: Oxford University Press.

Ivanchenko, V. and Jacobs, R. A. (2007). Visual learning by cue-dependent and cue-invariant mechanisms. *Vision Research*, 47, 145–156.

Michel, M. M. and Jacobs, R. A. (2007). Parameter learning but not structure learning: A Bayesian network model of constraints on early perceptual learning. *Journal of Vision*, 7(1):4, 1–18.

Chhabra, M. and Jacobs, R. A. (2008). Learning to combine motor primitives via greedy additive regression. *Journal of Machine Learning Research*, 9, 1535–1558.

Clayards, M., Tanenhaus, M. K., Aslin, R. N., and Jacobs, R.A. (2008). Perception of speech reflects optimal use of probabilistic speech cues. *Cognition*, 108, 804–809.

Michel, M. M. and Jacobs, R. A. (2008). Learning optimal integration of arbitrary features in a perceptual discrimination task. *Journal of Vision*, 8(2):3, 1–16.

Jacobs, R. A. (2009). Adaptive precision pooling of model neuron activities predicts the efficiency of human visual learning. *Journal of Vision*, 9(4):22, 1–15.

Jacobs, R. A. and Kruschke, J. K. (2010). Bayesian and computational learning theory applied to human cognition. *Wiley Interdisciplinary Reviews: Cognitive Science*, in press.

Jacobs, R. A. and Shams, L. (2010). Visual learning in multisensory environments. *Topics in Cognitive Science*, in press.

CONFERENCE PAPERS (REFEREED)

Jacobs, R. A. (1989). Initial experiments on constructing domains of expertise and hierarchies in connectionist systems. In D. Touretzky, G. Hinton, and T. Sejnowski (Eds.), *Proceedings of the 1988 Connectionist Models Summer School*. San Mateo, CA: Morgan Kaufmann Publishers.

Jordan, M. I. and Jacobs, R. A. (1990). Learning to control an unstable system with forward modeling. In D.S. Touretzky (Ed.), *Advances in Neural Information Processing Systems 2*. San Mateo, CA: Morgan Kaufmann Publishers.

Jacobs, R. A. and Jordan, M. I. (1991). A competitive modular connectionist architecture. In R. P. Lippmann, J. E. Moody, and D. S. Touretzky (Eds.), *Advances in Neural Information Processing Systems 3*. San Mateo, CA: Morgan Kaufmann Publishers.

Jacobs, R. A. and Jordan, M. I. (1991). A modular connectionist architecture for learning piecewise control strategies. *Proceedings of the 1991 American Control Conference*, Boston, MA.

Jordan, M. I. and Jacobs, R. A. (1992). Hierarchies of adaptive experts. In J. E. Moody, S. J. Hanson, and R. P. Lippmann (Eds.), *Advances in Neural Information Processing Systems 4*. San Mateo, CA: Morgan Kaufmann Publishers.

Jordan, M. I. and Jacobs, R. A. (1993). Supervised learning and divide-and-conquer: A statistical approach. *Proceedings of the Tenth International Conference on Machine Learning*, Amherst, MA.

Fine, I. and Jacobs, R. A. (1997). Combining visual cues to depth and shape: A comparison of three models. *Proceedings of the Nineteenth Annual Conference of the Cognitive Science Society.* Hillsdale, NJ: Lawrence Erlbaum.

Jacobs, R. A., Peng, F., and Tanner, M. A. (1998). Bayesian inference for hierarchical mixtures-of-experts. *Proceedings of the Thirteenth International Workshop on Statistical Modeling.* Berlin: Springer-Verlag.

Fine, I. and Jacobs, R. A. (2000). Visual learning for a mid-level pattern discrimination task. *Proceedings of the Twenty-Second Annual Conference of the Cognitive Science Society.* Hillsdale, NJ: Lawrence Erlbaum.

Dominguez, M. and Jacobs, R. A. (2001). Visual development and the acquisition of binocular disparity sensitivities. *Proceedings of the Eighteenth International Conference on Machine Learning.* San Francisco: Morgan Kaufmann.

Dominguez, M. and Jacobs, R. A. (2002). Interactions between development and learning during the acquisition of binocular disparity sensitivities. *Proceedings of the Second International Conference on Development and Learning*, Cambridge, MA.

Jacobs, R. A. and Dominguez, M. (2003). Visual development aids the acquisition of motion velocity sensitivities. In S. Becker, S. Thrun, and K. Obermayer (Eds.), *Advances in Neural Information Processing Systems 15*. Cambridge, MA: MIT Press.

Chhabra, M. and Jacobs, R. A. (2006). Properties of synergies arising from a theory of optimal motor behavior. *Proceedings of the Twenty-Eighth Annual Conference of the Cognitive Science Society.* [Winner of the best paper award in the area of computational models of perception and action ($1000 prize!)]

Chhabra, M., Stefankovic, D., and Jacobs, R. A. (2007). A theoretical model of behavioral shaping. *Proceedings of the Twenty-Ninth Annual Conference of the Cognitive Science Society.*

Clayards, M., Aslin, R. N., Tanenhaus, M. K., and Jacobs, R.A. (2007). Within category phonetic variability affects perceptual uncertainty. *Proceedings of the International Congress of Phonetic Sciences*, Saarbruken, Germany.

CONFERENCE ABSTRACTS

Jacobs, R. A. (1993). Discovering structure-function relationships in a competitive modular connectionist architecture. *Proceedings of the Fifteenth Annual Conference of the Cognitive Science Society*. Hillsdale, NJ: Lawrence Erlbaum.

Fine, I. and Jacobs, R. A. (1996). Modeling the combination of motion, stereo, and vergence cues for depth. *Investigative Ophthalmology and Visual Science*, 37, S685.

Jacobs, R. A. (1996). Modularity and plasticity are compatible. *Proceedings of the Eighteenth Annual Conference of the Cognitive Science Society*. Hillsdale, NJ: Lawrence Erlbaum.

Fine, I. and Jacobs, R. A. (1998). Observers show differential sensitivity to changes in spatial scale and relative frequency in a complex grating discrimination task. *Investigative Ophthalmology and Visual Science*, 39, S405.

Jacobs, R. A. (1998). Nature, nurture, and the development of functional specializations: A computational approach. *Cognitive Neuroscience Society 1998 Annual Meeting Abstract Program*. Cambridge, MA: MIT Press.

Jacobs, R. A. and Fine, I. (1998). Integration of texture and motion cues to depth is adaptable. *Investigative Ophthalmology and Visual Science*, 39, S670.

Fine, I. and Jacobs, R. A. (1999). Perceptual learning for discriminating complex gratings. *Investigative Ophthalmology and Visual Science*, 40, S586.

Fiser, J. and Jacobs, R. A. (1999). The effect of orientation-spatial frequency incoherence on object recognition. *Investigative Ophthalmology and Visual Science*, 40, S389.

Jacobs, R. A. (1999). Optimal integration of texture and motion cues to depth. *Investigative Ophthalmology and Visual Science*, 40, S802.

Jacobs, R. A. (1999). Hierarchical mixtures of generalized linear models. *Proceedings of the 1999 Joint Statistical Meetings*, Baltimore, MD.

Triesch, J., Ballard, D. H., and Jacobs, R. A. (2001). Fast temporal dynamics of visual cue integration. *First Annual Meeting of the Vision Sciences Society*, Sarasota, FL.

Atkins, J. E., Jacobs, R. A., and Knill, D. C. (2002). Experience-dependent visual cue recalibration based on discrepancies between visual and haptic percepts. *Sixth International Conference on Cognitive and Neural Systems*, Boston, MA.

Fine, I. and Jacobs, R. A. (2002). Perceptual learning and task complexity. *Second Annual Meeting of the Vision Sciences Society*, Sarasota, FL.

Girshick, A. R., Banks, M. S., Ernst, M. O., Cooper, R., and Jacobs, R. A. (2002). Variance predicts visual-haptic adaptation in shape perception. *Second Annual Meeting of the Vision Sciences Society*, Sarasota, FL.

Aslin, R. N., Jacobs, R. A., and Battaglia, P. W. (2003). Depth-dependent contrast gain-control. *Third Annual Meeting of the Vision Sciences Society*, Sarasota, FL.

Ivanchenko, V. and Jacobs, R. A. (2004). Cue-invariant learning for visual slant discrimination. *Fourth Annual Meeting of the Vision Sciences Society*, Sarasota, FL.

Michel, M. M. and Jacobs, R. A. (2005). The costs of ignoring high-order correlations in populations of model neurons. *Fifth Annual Meeting of the Vision Sciences Society*, Sarasota, FL.

Ivanchenko, V. and Jacobs, R. A. (2006). Nonlinear integration of texture and shading cues on a slant discrimination task. *Sixth Annual Meeting of the Vision Sciences Society*, Sarasota, FL.

Michel, M. M. and Jacobs, R. A. (2006). Cue acquisition based on visual-auditory but not visual-visual correlations. *Sixth Annual Meeting of the Vision Sciences Society*, Sarasota, FL.

Michel, M. M. and Jacobs, R. A. (2007). Optimal feature integration in image-based discrimination tasks. *Seventh Annual Meeting of the Vision Sciences Society*, Sarasota, FL.

Jacobs, R. A. (2009). Adaptive precision pooling of model neuron activities predicts efficiency of human visual learning. *Frontiers in Systems Neuroscience. Conference Abstract: Computational and systems neuroscience.* doi: 10.3389/conf.neuro.06.2009.03.242

INVITED TALKS

MIT-Siemens Conference on Computational Learning Theory, Princeton, NJ, 1989

Department of Computer Science, University of Toronto, Toronto, Ontario, 1990

MIT-Siemens Conference on Computational Learning Theory, Princeton, NJ, 1990

Computational Learning Theory Colloquium Series, The Rowland Institute of Science, Cambridge, MA, 1992

Conference of the Center for Visual Science, University of Rochester, Rochester, NY, 1992

Department of Psychology, University of Rochester, Rochester, NY, 1992

ONR Workshop on Image Representation in Biological and Machine Vision, Laguna Beach, CA, 1992

Conference of the Cognitive Science Society, University of Colorado, Boulder, CO, 1993

Center for Cognitive Science, SUNY Buffalo, Buffalo, NY, 1994

Cognitive Science Summer School, SUNY Buffalo, Buffalo, NY, 1994

IEEE Workshop on Intelligent Control, Columbus, OH, 1994

Center for Neural Engineering, University of Southern California, Los Angeles, CA, 1995

Cognitive Science Program, University of Arizona, Tucson, AZ, 1995

Department of Psychology, Stanford University, Stanford, CA, 1995

Department of Psychology, University of California, Los Angeles, CA, 1995

Conference of the Cognitive Science Society, University of California, San Diego, CA, 1996

Department of Mathematics, University of Rochester, Rochester, NY, 1997

Conference of the Cognitive Neuroscience Society, San Francisco, CA, 1998

Department of Psychology, University of Wisconsin, Madison, WI, 1998

Joint Statistical Meetings, Baltimore, MD, 1999

Lake Ontario Vision Conference (aka LOVE Conference), Niagara Falls, ON, 2000

Center for Cognitive Science, SUNY Buffalo, Buffalo, NY, 2000

Cognitive Science Program, Swarthmore College, Swarthmore, PA, 2001

Department of Cognitive Science, UC San Diego, La Jolla, CA 2001

Vision and Color Meeting, Optical Society of America, Irvine, CA, 2001

Department of Psychology, UC Berkeley, Berkeley, CA, 2001

Human and Computer Vision Seminar, Rutgers University, New Brunswick, NJ 2001

Cognitive Science Program, Rutgers University, New Brunswick, NJ 2001

Workshop on Multi-Sensory Perception and Learning, Conference on Neural Information Processing Systems, Whistler, BC, Canada, 2001

Cognitive Science Program, University of Massachusetts, Amherst, MA, 2002

Department of Computer Science, University of Massachusetts, Amherst, MA, 2002

Institute for Research in Cognitive Science, University of Pennsylvania, Philadelphia, PA, 2003

Workshop on Statistical Models of Vision and Action, New York University, 2003

Gatsby Computational Neuroscience Unit, University College London, 2003

Neuroscience Colloquium Series, University College London, 2003

Conference of the Cognitive Science Society, Boston, MA, 2003

Workshop on Neural Representations of Uncertainty, Conference on Neural Information Processing Systems, Whistler, BC, Canada, 2003

Department of Cognitive and Linguistic Sciences, Brown University, Providence, RI, 2004

Department of Brain and Cognitive Sciences, Massachusetts Institute of Technology, Cambridge, MA, 2004

ONR Workshop on Visual Learning and Brain Plasticity, University of Minnesota, Minneapolis, MN, 2005

Cognitive Science Program, Indiana University, Bloomington, IN, 2005

Neuroscience and Cognitive Science Program, University of Maryland, College Park, MD, 2005

Department of Cognitive Science, Rensselaer Polytechnic Institute, Troy, NY, 2006

AFOSR Workshop titled “Robust Decision Making", Arlington, VA, 2007

Center for Perceptual Systems, University of Texas, Austin, TX, 2007

Graduate Summer School: Probabilistic Models of Cognition: The Mathematics of Mind, Institute for Pure and Applied Mathematics, UCLA, Los Angeles, CA, 2007

AFOSR Workshop on Cognition and Decision, Arlington, VA, 2008

Graduate course on “Normative Theories of Brain Function", Champalimaud Neuroscience Education, CF Neuroscience Programme at the Instituto Gulbenkian de Ciência, Lisbon, Portugal, 2008

Center for Cognitive Science, SUNY Buffalo, Buffalo, NY, 2008

Workshop on “Cue Combination: Unifying Perceptual Theory", Rauischholzhausen, Germany, 2008

Frankfurt Institute for Advanced Studies, Frankfurt, Germany, 2008

Center for Visual Cognition, University of Southamption, Southamption, UK, 2009

Computational and Biological Learning, Department of Engineering, University of Cambridge, Cambridge, UK, 2009

Gatsby Computational Neuroscience Unit, University College London, London, UK, 2009

Institute for Adaptive and Neural Computation, School of Informatics, University of Edinburgh, Edinburgh, UK, 2009

FELLOWSHIPS AND GRANTS

McDonnell–Pew Program in Cognitive Neuroscience, Postdoctoral fellowship to R. A. Jacobs, “Principles underlying the development of modularity," 1990–1991.

McDonnell–Pew Program in Cognitive Neuroscience, Postdoctoral fellowship to R. A. Jacobs, “Neural network models of high–level vision," 1991–1992.

National Science Foundation, research grant to M. I. Jordan and R. A. Jacobs, “A modular connectionist architecture for control," 1990–1993.

McDonnell–Pew Program in Cognitive Neuroscience, Postdoctoral training grant to R. A. Jacobs and J. Fiser, “Learning visual features: An integrated developmental, computational, and psychophysical approach to visual object recognition," 1996–1999.

National Institute of Mental Health, FIRST Award to R. A. Jacobs, “Learning in modular systems: A computational approach," 1995–2001.

National Science Foundation, research grant to R. N. Aslin, M. D. Hauser, R. A. Jacobs, and E. L. Newport, “Statistical learning and its constraints," 1998–2002.

National Eye Institute, research grant to R. A. Jacobs, “Experience-dependent perception of visual depth," 2000–2006.

Office of Naval Research, equipment grant to D. Bavelier, M. Hayhoe, R. A. Jacobs, D. C. Knill, and A. Pouget, “Virtual reality learning," 2005–2006.

University of Rochester Schmitt Program on Integrative Brain Research, research grant to R. A. Jacobs, D. Bavelier, and K. R. Huxlin, “Visual learning in naturalistic environments," 2006-2007.

Air Force Office of Scientific Research, research grant to R. A. Jacobs and D. C. Knill, “Acquisition and use of internal models for human motor learning," 2006–2009.

National Institute of Mental Health, training grant to E. L. Newport, R. A. Jacobs, and K. W. Nordeen, “Research training in learning, development, and biology," 1997–2002, 2002–2007, 2007–2012.

National Institute on Deafness and Other Communication Disorders, research grant to M. K. Tanenhaus, R. N. Aslin, and R. A. Jacobs, “Time course of spoken word recognition," 2007–2012.

Air Force Office of Scientific Research, research contract to Scientific Systems Company, Inc. (Woburn, MA), subcontract to R. A. Jacobs, 2007-2008.

National Science Foundation, research grant to R. A. Jacobs, “A Machine Learning Approach to Human Visual Learning," 2008-2011.

National Science Foundation, research grant to R. A. Jacobs, J. B. Pelz, M. R. Rosen, and J. A. Tarduno, “An Active Vision Approach to Understanding and Improving Visual Training in the Geosciences," 2009-2014.