VITA

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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, memory, and decision making
Computational models of cognition and perception
Visual and multisensory perception
Perception and action
Cognitive neuroscience of learning, memory, and decision making

WORK EXPERIENCE

Professor
Department of Brain & 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-December 2012)

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 & 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 & 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 & 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-December 2012)
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
Canada CIFAR
Human Frontiers Science Program
Icelandic Research Fund
Israel Science Foundation
Minerva Foundation (Germany)
National Institutes of Health (ad hoc)

National Science Foundation
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 Psychology, 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 Artificial Intelligence Research, Journal of Cognitive Neuroscience, Journal of Machine Learning Research, Journal of Neuroscience, 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, OpenMind, Perception, PLoS Computational Biology, PLoS ONE, Proceedings of the National Academy of Sciences, Psychological Review, Psychological Science, Psychonomic Bulletin and Review, Science, Trends in Cognitive Sciences, Vision Research*

JOURNAL ARTICLES

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

Jacobs, R. A., Jordan, M. I., & 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., & Hinton, G. E. (1991). Adaptive mixtures of local experts. *Neural Computation*, **3**, 79-87.

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

Jacobs, R. A. & 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. & 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. & Jacobs, R. A. (1994). Hierarchical mixtures of experts and the EM algorithm. *Neural Computation*, **6**, 181-214.

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

Kosslyn, S. M., Chabris, C. F., Marsolek, C. J., Jacobs, R. A., & 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., & 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., & 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., & Tanner, M. A. (1997). A Bayesian approach to model selection in hierarchical mixtures-of-experts architectures. *Neural Networks*, **10**, 231-241.

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

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

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

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

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

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

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

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

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

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Battaglia, P. W., Jacobs, R. A., & 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. & Jacobs, R. A. (2003). Developmental constraints aid the acquisition of binocular disparity sensitivities. *Neural Computation*, **15**, 161-182.

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

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

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Wu, M.-H., Kleinschmidt, D., Emberson, L., Doko, D., Edelman, S., Jacobs, R., Raizada, R. (2020). Cortical transformation of stimulus space in order to linearize a linearly inseparable task. *Journal of Cognitive Neuroscience*, **32**, 2342-2355.

BOOK CHAPTERS

Jordan, M. I. & 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., Jordan, M. I., & 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, & 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).]

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

Jordan, M. I. & 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.

Fine, I. & 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. & Jordan, M. I. (1999). Computational consequences of a bias towards short connections. In R. Ellis & 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. & Tanner, M. A. (1999). Mixtures of X. In A. Sharkey (Ed.), *Combining Artificial Neural Nets: Ensemble and Modular Multi-Net Systems*. Berlin: Springer-Verlag.

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

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

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

Jordan, M. I. & 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.]

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

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

Michel, M. M., Brouwer, A.-M., Jacobs, R. A., & Knill, D. C. (2011). Optimality principles apply to a broad range of information integration problems in perception and action. In J. Trommershäuser, K. Körding, & M. S. Landy (Eds.), *Sensory Cue Integration*. New York: Oxford University 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, & T. Sejnowski (Eds.), *Proceedings of the 1988 Connectionist Models Summer School*. San Mateo, CA: Morgan Kaufmann Publishers.

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

Jacobs, R. A. & Jordan, M. I. (1991). A modular connectionist architecture for learning piecewise control strategies. *Proceedings of the 1991 American Control Conference*, Boston, MA. [Winner of a best paper award.]

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

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

Chhabra, M. & 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., & 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., & Jacobs, R.A. (2007). Within category phonetic variability affects perceptual uncertainty. *Proceedings of the International Congress of Phonetic Sciences*, Saarbruken, Germany.

Fine, A. B., Qian, T., Jaeger, T. F., & Jacobs, R. A. (2010). Is there syntactic adaptation in language comprehension? *Proceedings of the Forty-Eighth Annual Meeting of the Association for Computational Linguistics: Workshop on Cognitive Modeling and Computational Linguistics*.

Yakushijin, R. & Jacobs, R. A. (2010). Are people successful at learning sequential decisions on a perceptual matching task? *Proceedings of the Thirty-Second Annual Conference of the Cognitive Science Society.*

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Orhan, A. E. & Jacobs, R. A. (2011). A nonparametric Bayesian model of visual short-term memory. *Proceedings of the Thirty-Third Annual Conference of the Cognitive Science Society.*

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Michel, M. M. & 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. & 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

Cottrell, R. D., Evans, K. M., Jacobs, R. A., May, B. B., Pelz, J. B., Rosen, M. R., Tarduno, J. A., & Voronov, J. (2010). Eye-tracking novice and expert geologist groups in the field and laboratory. *Fall Meeting of the American Geophysical Union*.

Jacobs, R. A., Orhan, A. E., & Michel, M. M. (2010). Visual learning with reliable and unreliable features. *Tenth Annual Meeting of the Vision Sciences Society*, Naples, FL.

Voronov, J. Tarduno, J. A., Jacobs, R. A., Pelz, J. B., & Rosen, M. R. (2010). An active vision approach to understanding and improving visual training in the geosciences. *Annual Meeting of the Geological Society of America*.

Sims, C. R., Jacobs, R. A., & Knill, D. C. (2011). An ideal observer analysis of visual short-term memory: Evidence for flexible resource allocation. *Eleventh Annual Meeting of the Vision Sciences Society*, Naples, FL.

Tarduno, J. A., Hu, B., May, B. B., Evans, K. M., Jacobs, R. A., Pelz, J. B., Cottrell, R. D., & Bono, R. K. (2012). An active vision approach to understanding and improving visual training in the geosciences. *Annual Meeting of the Geological Society of America*.

Erdogan, G., Yildirim, I., & Jacobs, R. A. (2015). An analysis-by-synthesis approach to multisensory object shape perception. Presented at the *Multimodal Machine Learning* workshop at the *Neural Information Processing Systems (NIPS) conference*, Montreal, CA.

German, J. S. & Jacobs, R. A. (2019). Human visual object similarity judgments are viewpoint-invariant and part-based as revealed via metric learning. *Annual Meeting of the Cognitive Science Society*, Montreal, CA.

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

Department of Psychology, Neuroscience, and Behaviour, McMaster University, Hamilton, Ontario, Canada, 2010

Symposium on “Prediction in Visual Processing", Conference of the Vision Sciences Society, Naples, FL, 2011

Workshop on “Coding and Computation in Visual Short-Term Memory”, Conference on Computational and Systems Neuroscience (COSYNE), Snowbird, UT, 2012

Workshop on “Natural Environments, Tasks, and Intelligence”, University of Texas at Austin, Austin, TX, 2012

Workshop on “Reinforcement Learning: Celebratory Workshop for Andrew Barto”, University of Massachusetts, Amherst, MA, 2012

Perceptual Science colloquium series, Rutgers University, New Brunswick, NJ, 2012

AFOSR Workshop on “Mathematical and Computational Cognition”, Washington, D.C., 2013

Symposium on “The Structure of Visual Working Memory”, Conference of the Vision Sciences Society, Naples, FL, 2013

Department of Psychological and Brain Sciences, Johns Hopkins University, Baltimore, MD, 2013

Institute of Cognitive and Brain Sciences, University of California, Berkeley, Berkeley, CA, 2013

AFOSR Workshop on “Mathematical and Computational Cognition”, Arlington, VA, 2013

Workshop on “Multisensory Computations in the Cortex”, Conference on Computational and Systems Neuroscience (COSYNE), Snowbird, UT, 2014

Department of Psychology, Syracuse University, Syracuse, NY, 2014

Department of Computer Science, Johns Hopkins University, Baltimore, MD, 2014

AFOSR Workshop on “Mathematical and Computational Cognition”, Arlington, VA, 2014

Department of Computer Science, University of Rochester, Rochester, NY, 2014

Center for Visual Science, University of Rochester, Rochester, NY, 2015

Department of Psychological and Brain Sciences, Johns Hopkins University, Baltimore, MD, 2015

David Knill Memorial Symposium, Conference of the Vision Sciences Society, St. Pete Beach, FL, 2015

Workshop on “Combining Information from Multiple Modalities Across the Animal Kingdom”, Janelia Farm Research Campus, Ashburn, VA, 2015

Rumelhart Symposium: Symposium in honor of Michael Jordan, Conference of the Cognitive Science Society, Pasadena, CA, 2015

AFOSR Workshop on “Mathematical and Computational Cognition”, Arlington, VA, 2015

Laboratoire des Systèmes Perceptifs, Ecole Normale Supérieure, Paris, France, 2016

Laboratory of Cognitive Computational Neuroscience, Universitè de Genéve, Geneva, Switzerland, 2016

Gatsby Computational Neuroscience Unit, University College London, London, UK, 2016

Computational and Biological Learning, Department of Engineering, University of Cambridge, Cambridge, UK, 2016

Google DeepMind, London, UK, 2016

Symposium on “Integrating Prior Knowledge with Memory”, Conference of the Mathematical Psychology Society, New Brunswick, NJ, 2016

Cognitive Science Program, Indiana University, Bloomington, IN, 2016

Centre for Theoretical Neuroscience, University of Waterloo, Waterloo, Ontario, Canada, 2016

Department of Psychology, University of California, San Diego, CA, 2017

Workshop on “Cognitively Informed Artificial Intelligence”, Conference of the Neural Information Processing Systems (NIPS) Foundation, Long Beach, CA, 2017

Center for Imaging Science, Rochester Institute of Technology, Rochester, NY, 2018

Department of Psychology, Rutgers University, New Brunswick, NJ, 2018

Department of Psychology, University of Pennsylvania, Philadelphia, PA, 2018

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 (PI) 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 (PI) 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 (PI), “Learning in modular systems: A computational approach," 1995-2001.

National Science Foundation, research grant to R. N. Aslin (PI), 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 (PI), “Experience-dependent perception of visual depth," 2000-2006.

Office of Naval Research, equipment grant to D. Bavelier (PI), 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 (PI), 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 (PI) 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 (PI), 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 (PI), 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 (PI), 2007-2008.

National Science Foundation, research grant to R. A. Jacobs (PI), “A Machine Learning Approach to Human Visual Learning," 2008-2013.

National Science Foundation, research grant to R. A. Jacobs (PI), J. B. Pelz, M. R. Rosen, and J. A. Tarduno, “An Active Vision Approach to Understanding and Improving Visual Training in the Geosciences," 2009-2015.

Air Force Office of Scientific Research, research grant to R. A. Jacobs (PI), “Learning Multisensory Representations”, 2012-2015.

Univesity of Rochester Center for Brain Imaging, research grant to R. A. Jacobs (PI) and B. Z. Mahon, “Visual, Haptic, and Visual-Haptic Perception of Object Shape: A Behavioral and Brain Imaging Approach,” 2014-2015.

University of Rochester PumpPrimer II Award to R. A. Jacobs (PI) and B. Z. Mahon, “Visual, Haptic, and Visual-Haptic Perception of Object Shape: A Behavioral and Brain Imaging Approach,” 2014-2015.

University of Rochester Schmitt Program on Integrative Brain Research, research grant to R. A. Jacobs (PI) and B. Z. Mahon, “Visual, Haptic, and Visual-Haptic Perception of Object Shape: A Behavioral and Brain Imaging Approach,” 2014-2015.

National Science Foundation, research grant to R. A. Jacobs (PI), “A Grammar-Based Approach to Visual-Haptic Object Perception,” 2014-2019.

National Science Foundation, training grant to H. Kautz (PI), G. C. DeAngelis, M. E. Hoque, and R. A. Jacobs, “NRT-DESE: Graduate Training in Data-Enabled Research into Human Behavior and its Cognitive and Neural Mechanisms”, 2015-2020.

University of Rochester Researcher Mobility Travel Grant, research grant to R. A. Jacobs (PI), 2016

National Science Foundation, research grant to R. A. Jacobs (PI) and J. A. Tarduno, “Collaborative Research: Visual Training in the Geosciences by Training Visual Working Memory”, 2016-2021.

National Science Foundation, research grant to R. A. Jacobs (PI), “CompCog: A Machine Learning Approach to Human Perceptual Similarity”, 2018-2021.