

Curriculum Vitae

Vikranth Rao Bejjanki

February 2012

Contact Information

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Education

- March 2010 Ph.D. in Brain and Cognitive Sciences, University of Rochester
Thesis: *Computing in the face of uncertainty: from neurons to behavior*
Advisor: Dr. Alexandre Pouget
- October 2008 M.A. in Brain and Cognitive Sciences, University of Rochester
- July 2007 Graduate Summer School on Probabilistic Models of Cognition: The Mathematics of Mind, UCLA, Los Angeles, CA
- August 2006 C.I.A.R. Summer School on Learning and Vision in Biology and Engineering, Toronto, Canada
- August 2005 E.U. Advanced Course in Computational Neuroscience, Arcachon, France
- June 2005 Summer School on Math and Brain, Jussieu Institute of Mathematics, Paris, France
- June 2004 B.A. *with high distinction* in Cognitive Science, State University of New York at Buffalo
Thesis: *The Role of Predictability and Eye Movements in Linear Representational Momentum*
- June 2004 B.S. *with distinction* in Computer Engineering, State University of New York at Buffalo
Advanced Honors Thesis: *Princess Cassie: An Embodied Cognitive Agent in a Virtual World*
Departmental Honors Project: *Natural Language Processing without Human Assistance*

Professional Experience

- 2011- Post-Doctoral Research Fellow
Department of Brain and Cognitive Sciences
University of Rochester, Rochester, NY
- 2010- 2011 Post-Doctoral Associate
Department of Psychology
University of Minnesota, Minneapolis, MN
- 2003 Software Development Intern
Software Development Division
Computer S.O.S., Cheektowaga, NY
- 2000-2003 Student Computing Consultant
Academic Services, Computing and Information Technology
State University of New York at Buffalo, Buffalo, NY

Awards and Fellowships

- 2010 Nominee, Outstanding Dissertation Award in the Natural Sciences, University of Rochester
- 2007 Travel/Accommodations Fellowship, Graduate Summer School on Probabilistic Models of Cognition, IPAM, University of California, Los Angeles
- 2006 Travel/Accommodations Fellowship, C.I.A.R. Summer School on Learning and Vision in Biology and Engineering, Toronto, Canada
- 2005 Accommodations Fellowship, Summer School on Math and Brain, Jussieu Institute of Mathematics, Paris, France
- 2004-2010 Departmental Fellowship for Graduate Study, Department of Brain and Cognitive Sciences, University of Rochester
- 2004-2009 Presidential Fellowship for Graduate Study, State University of New York at Buffalo (declined in favor of the Departmental Fellowship for Graduate Study at the University of Rochester)
- 2003-2004 Motorola Senior Scholarship, Department of Computer Science and Engineering, State University of New York at Buffalo
- 2001-2004 Advanced Honors Scholar, State University of New York at Buffalo
- 2001-2003 Dean's List, State University of New York at Buffalo
- 2000-2003 School of Engineering Dean's List, State University of New York at Buffalo

Research Experience

- 2011- Post-Doctoral Research Fellow
Brain and Vision Lab of Dr. Daphne Bavelier
Department of Brain and Cognitive Sciences, U. of Rochester
- Exploring probabilistic inference and learning in adults, action video game players and across development using psychophysics, computational modeling and neural network simulation.
- 2010-2011 Post-Doctoral Associate
Computational Vision Lab of Dr. Daniel Kersten
Department of Psychology, U. of Minnesota
- Exploring probabilistic inference and learning in the visual system using psychophysics and computational modeling.
- 2007-2010, Graduate Student/ Post-Doctoral Research Fellow
2011- Rochester Baby Lab of Dr. Richard Aslin
Department of Brain and Cognitive Sciences, U. of Rochester
- Exploring probabilistic inference and learning in adults and across development using psychophysics and computational modeling.
- 2004-2010 Graduate Student
Computational Cognitive Neuroscience Lab of Dr. Alexandre Pouget
Department of Brain and Cognitive Sciences, U. of Rochester
- Exploring theories of population coding, information processing, probabilistic inference and learning in the visual cortex using mathematical analysis and simulated networks of spiking neurons. Exploring the neural basis of perceptual learning, attention and adaptation.
- 2002-2004 Undergraduate Student/ Research Assistant
Visual Perception Lab of Dr. William C. Schmidt
Department of Psychology, SUNY at Buffalo
- Explored the role of eye movements and predictability in linear “Representational Momentum”.
- 2002-2004 Undergraduate Student/ Research Assistant
Artificial Intelligence Lab of Dr. Stuart C. Shapiro
Department of Computer Science and Engineering, SUNY at Buffalo
- Developed artificially intelligent computational agents embodied as actors in a Virtual Drama, as part of the VR/Agents group.
- 2002-2004 Undergraduate Student/ Research Assistant
Contextual Vocabulary Acquisition Group
Department of Computer Science and Engineering, SUNY at Buffalo

Developed a Generalized Augmented Transition Network (GATN) grammar for Natural Language Processing, with Dr. William J. Rapaport.

Teaching Experience

- Spring 2012 Instructor
Laboratory in Perception and Cognition
Brain and Cognitive Sciences, UR
- Spring 2010 Co-Instructor
Adaptation: Theory, Behavior and Neural Systems (Graduate Level)
Department of Psychology, University of Minnesota
- Spring 2009, 2011 Recitation Instructor
Introduction to Computational Neuroscience (Graduate Level)
Instructor: Dr. Alexandre Pouget, Brain and Cognitive Sciences, UR
- Fall 2006 Laboratory Instructor/ Teaching Assistant
Experimental Design and Analysis
Instructor: Dr. David Knill, Brain and Cognitive Sciences, UR
- Spring 2006 Recitation Instructor/ Teaching Assistant
Foundations of Cognitive Science
Instructor: Dr. Robert Jacobs, Brain and Cognitive Sciences, UR
- Spring 2005 Teaching Assistant
Cognitive Psychology
Instructor: Dr. Daniel Grodner, Brain and Cognitive Sciences, UR
- Spring 2003, 2004 Student Assistant (Undergraduate Teaching Assistant)
Introduction to Microprocessors (Laboratory)
Instructor: Dr. Kris Schindler, Computer Sc. & Engg., SUNY at Buffalo
- 2001-2003 Academic Tutor
Athlete Academic Services
State University of New York at Buffalo, Buffalo, NY

Guest lectures

- Spring 2006 Foundations of Cognitive Science
Brain and Cognitive Sciences, UR
- Spring 2005, 2006 Cognitive Psychology
Brain and Cognitive Sciences, UR

Publications (under author name Bejjanki V.R. and Vikranth Rao)**Research Articles**

- Bejjanki, V.R., Beck, J.M., Lu, Z.L., Pouget, A., Perceptual learning as improved probabilistic inference in early sensory areas. *Nature Neuroscience* **14**, 642-648 (2011).
- Bejjanki, V.R., Clayards, M., Knill, D.C., Aslin, R.N., Cue Integration in Categorical Tasks: Insights from Audio-Visual Speech Perception. *PLoS ONE* **6(5)**, e19812 (2011).
- Beck, J., Bejjanki, V.R., Pouget, A., Insights from a Simple Expression for Linear Fisher Information in a Recurrently Connected Population of Spiking Neurons. *Neural Computation* **23**, 1484-1502 (2011).

Refereed Conference Proceedings

- Josephine Anstey, Dave Pape, Stuart C. Shapiro, and Vikranth Rao, Virtual Drama with Intelligent Agents, *Proceedings of the Ninth International Conference on Virtual Systems and MultiMedia (VSMM)*, Montreal, Quebec, Canada, October 15-17, 2003.

Presentations (under author name Bejjanki V.R. and Vikranth B. Rao)**Conference Presentations**

- Li R., Bejjanki V.R., Lu Z.L., Pouget A., Bavelier D., Playing action video games leads to better perceptual templates [Abstract]. *Journal of Vision* **9**, 860 (2009). Poster presented at the *Vision Sciences Society (VSS)* meeting, Naples, Florida, May 8-13, 2009.
- Bejjanki V.R., Beck J.M., Ma W.J., Pouget A., Neural basis of perceptual learning: improved Bayesian inference during sensory representation. Talk presented at the *Society for Neuroscience (SFN)* meeting, Washington D.C., November 15-19, 2008.
- Bejjanki V.R., Clayards M., Knill D.C., Aslin R.N., Speech perception involves statistically optimal multi-modal integration. Poster presented at the *14th Annual Conference on Architectures and Mechanisms for Language Processing (AMLaP)*, Cambridge, U.K., September 4-6, 2008.
- Bejjanki V.R., Ma W.J., Beck J.M., Pouget A., Perceptual learning as improved Bayesian inference in early sensory areas. Poster and oral spotlight presentation at the *Computational and Systems Neuroscience (CoSyNe)* conference, Salt Lake City, Utah, February 22-25, 2007.
- Beck J.M., Bejjanki V.R., Pouget A., Linear Fisher information in a network of LNP neurons. Poster presented at the *Computational and Systems Neuroscience (CoSyNe)* conference, Salt Lake City, Utah, February 22-25, 2007.
- Vikranth B. Rao, William C. Schmidt, The role of predictability and eye movements in linear Representational Momentum. Poster presented at the *13th Annual Meeting of the Canadian Society for Brain, Behavior and Cognitive Science*, Hamilton, Ontario, June 12-14, 2003.

Invited Presentations

- Center for Cognitive Science, State University of New York at Buffalo. Cognitive Science Colloquium series. October 2011.
- Department of Psychology, University of Minnesota, Twin Cities. Perception Seminar series. February 2010.
- University of Rochester. Neuroscience Retreat. May 2009.
- Department of Brain and Cognitive Sciences, University of Rochester. BCS Lunch series. May 2009; October 2008.
- Center for Cognitive Science, State University of New York at Buffalo. Student Poster session. April 2003.

Professional and Honorary Memberships (past and present)

- Vision Sciences Society
- American Association for the Advancement of Science
- Center for Cognitive Science, University of Minnesota
- Society for Neuroscience
- Center for Visual Science, University of Rochester
- Tau Beta Pi, National Engineering Honors Society
- Golden Key, International Honors Society
- Eta Kappa Nu, Electrical and Computer Engineering Honors Society