

DEEP GANGULI

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Education

- **Center for Neural Science at New York University** 2006–present
Ph.D in Computational Neural Science, expected graduation in September 2012.
Advisor: Eero P. Simoncelli.
Research: Neural coding, Bayesian inference, efficient coding, natural image and sound statistics.
Methods: Computational modeling, data mining, statistical signal processing.
Coursework: Machine learning, computer vision, linear algebra, sensory/motor neuroscience, cellular/molecular neuroscience.
- **Okinawa Computational Neuroscience Course** Summer 2010
Summer school on advanced topics in computational modeling of neural systems.
Course project: Bayesian estimation without priors or supervision in the brain.
Organized by Erik DeSchutter, Kenji Doya, Klaus Stiefel, and Jeff Wickens.
- **University of California, Berkeley** 2002–2006
B.S. in Electrical Engineering and Computer Science, GPA: 3.7
Coursework: signal processing, information theory, communication systems, biomedical imaging/electronics, data structures, machine structures, computer programming.

Research experience

- **Rotation Student** 2006–2007
Advisor: Bijan Pesaran.
Project: Performing awake behaving primate physiology experiments to develop a brain machine interface based on local field potentials.
- **Research Assistant** Summer 2005
Funded by the Helen Wills Neuroscience Institute.
Advisor: Frederic Theunissen.
Project: The influence of temporal and amplitude modulation spectra on speech perception.
- **Electrical Engineering Independent Study** 2004–2005
Advisors: Michael Gastpar and Frederic Theunissen.
Project: Comparison of probabilistic models of auditory coding fitted to neural data.

Skills

Programming: C/C++, Java
Applications: Matlab, Mathematica, LabVIEW, L^AT_EX
Miscellaneous: Strong verbal and written communication skills, excellent troubleshooting and debugging skills, exceptional data visualization skills

Honors and awards

NSF Graduate Student Fellowship, Honorable Mention	2007
MacCracken Graduate Fellowship	2006-present
Factory Mutual Global Scholar	2002-2006
FEEA Scholar	2002

Journal articles

- **Ganguli, D.** and Simoncelli, E.P. (2012). A normative theory of sensation and perception. *In preparation.*
- **Ganguli, D.** and Simoncelli, E.P. (2012). A compact neural calculus for Bayesian inference. *In preparation.*

Conference papers

- **Ganguli, D.** and Simoncelli, E.P. (2012). Neural implementation of Bayesian inference using efficient population codes. In *Computational and Systems Neuroscience (CoSyNe) Abstracts.*
- **Ganguli, D.** and Simoncelli, E.P. (2011). Population coding properties and perceptual discriminability arise from the efficient coding of natural signals. In *Janelia Farms Conference, Computations in Neocortical Circuits: What Does the Cortex Do?.*
- Freeman, J. , **Ganguli, D.** , and Simoncelli, E.P. (2011). Do humans use Occam's razor when learning probability distributions?. In *Computational and Systems Neuroscience (CoSyNe) Abstracts.*
- **Ganguli, D.** and Simoncelli, E.P. (2010). Implicit encoding of prior probabilities in optimal neural populations. In *Adv. Neural Information Processing Systems 23 (NIPS*10)* , vol.23 pp. 658–666, 2010. Presented at NIPS, Dec 2010.
- **Ganguli, D.** and Simoncelli, E.P. (2010). Representation of environmental statistics in optimal neural populations. In *Gordon Research Conference, Sensory Coding and the Natural Environment: Neurobiology and Behavior under Rich Stimulation.*
- **Ganguli, D.** , Freeman, J. , Rajashekar, U. , and Simoncelli, E.P. (2010). Orientation statistics at fixation. In *Vision Sciences Society Abstracts.*
- **Ganguli, D.** and Simoncelli, E.P. (2010). Representation of environmental statistics by neural populations. In *Computational and Systems Neuroscience (CoSyNe) Abstracts.*

Invited Talks

- "Efficient coding and Bayesian estimation in neural populations." Qualcomm Research. Host: Victor Chan. Apr 23, 2012.
- "Efficient coding and Bayesian estimation in neural populations." Carnegie Mellon University. Host: Byron Yu. Mar 19, 2012.
- "Implicit encoding of prior probabilities in optimal neural populations." University of California, Berkeley. Host: Frederic Theunissen. Nov 30, 2010.

- "Representation of environmental statistics in neural populations." RIKEN Brain Science Institute. Host: Justin Gardner. *Jul 5, 2010.*

Teaching experience

Mathematical tools for neuroscience (graduate course), teaching assistant for Eero Simoncelli
Introduction to neural science (undergraduate course), teaching assistant for Tony Movshon

Service

Volunteer, Housing Works Book Store Cafe
Berkeley Student Orientation Counselor

2009-present
2006