

# JEREMY FREEMAN

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## Education

- **Center for Neural Science at New York University** *2008–present*  
Candidate for Ph.D in Neural Science, expected graduation in 2012.  
*Advisors:* Eero P. Simoncelli, Tony Movshon, David J. Heeger.  
*Research:* Neural coding, natural image statistics, ventral stream, texture, object recognition.  
*Methods:* Electrophysiology, psychophysics, computational modeling, eye movements, fMRI.  
*Coursework:* Cellular/molecular neuroscience, sensory/motor systems, linear algebra, signal processing, probability, statistics, image processing.
- **Cold Spring Harbor: Computational Vision** *Summer 2010*  
Summer school on computation and vision, including theory, physiology, and psychophysics.  
*Coursework:* Lectures, tutorials, and collaborative projects on many topics in computational vision.  
Organized by Stefan Treue, Geoff Boynton, and Greg Horwitz.
- **CifAR program on Neural Computation and Adaptive Perception** *Summer 2009*  
Summer school on learning and vision in biology and engineering.  
*Coursework:* Lectures, tutorials, and collaborative programming projects on topics in machine learning and vision. Organized by Geoffrey Hinton.
- **Swarthmore College** *2004–2008*  
B.A. in Neuroscience with High Honors, GPA: 3.98  
*Coursework:* mathematics/statistics, neurobiology, and cognitive/perceptual psychology.

## Pre-graduate research experience

- **HHMI Summer Research Fellowship** *Summer 2007*  
Awarded by Swarthmore College, hosted by the Center for Neural Science at New York University.  
*Advisor:* David J. Heeger.  
*Project:* Inter-area correlations in the visual pathway reflect feature integration.
- **NSF Research Experience for Undergraduates in Neural Science** *Summer 2006*  
Awarded and hosted by the Center for Neural Science at New York University.  
*Advisor:* Denis G. Pelli.  
*Project:* Attention can relieve crowding.

## Honors and awards

Cosyne Travel Award	<i>2012</i>
Vision Sciences Society Student Travel Award	<i>2010</i>
NSF Graduate Student Fellowship	<i>2008-2011</i>
Hans Wallach Award (outstanding Swarthmore graduate)	<i>2008</i>
Flack Achievement Award (outstanding Swarthmore student)	<i>2007</i>
Goldwater Fellowship	<i>2007</i>

## Journal articles

- **Freeman, J.** , Chakravarthi, R. , and Pelli, D.G. (2012). Substitution and pooling in crowding. *Attention, Perception, and Psychophysics*. 74(2):379–396.
- Wang, H. , **Freeman, J.** , Merriam, E.P. , Hasson, U. , and Heeger, D.J. (2012). Temporal eye movement strategies during naturalistic vision. *Journal of Vision*. 12(1):1–27.
- **Freeman, J.** , Brouwer, G.J. , Heeger, D.J. , and Merriam, E.P. (2011). Orientation decoding depends on maps, not columns. *Journal of Neuroscience*. 31(13):4792–4804.
- **Freeman, J.** , Donner, T.H. , and Heeger, D.J. (2011). Inter-area correlations in the ventral visual pathway reflect feature integration. *Journal of Vision*. 11(4):1–23.
- **Freeman, J.** and Simoncelli, E.P. (2011). Metamers of the ventral stream. *Nature Neuroscience*. 14(9):1195–1201.
- **Freeman, J.** and Ziemba, C.M. (2011). Unwrapping the ventral stream. *Journal of Neuroscience*. 31(7):2349–2351.
- **Freeman, J.** and Pelli, D.G. (2007). An escape from crowding. *Journal of Vision*. 7(2):1–14.
- Pelli, D.G. , Tillman, K.A. , **Freeman, J.** , Su, M. , Berger, T.D. , and Majaj, N.J. (2007). Crowding and eccentricity determine reading rate. *Journal of Vision*. 7(2):1–36.

## Conference abstracts

- **Freeman, J.** , Ziemba, C.M. , Movshon, T. , and Simoncelli, E.P. (2012). Linking physiology and perception in v2. In *Computational and Systems Neuroscience (CoSyNe) Abstracts*. *Talk*.
- Ziemba, C.M. , **Freeman, J.** , Movshon, T. , and Simoncelli, E.P. (2012). Selectivity and invariance are greater in macaque v2 than v1. In *Computational and Systems Neuroscience (CoSyNe) Abstracts*. *Poster*.
- **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*. *Poster*.
- **Freeman, J.** and Simoncelli, E.P. (2011). Using metamers to test a population model of v2. In *Janelia Farms Conference, Computations in Neocortical Circuits: What Does the Cortex Do?*. *Poster*.
- **Freeman, J.** and Simoncelli, E.P. (2011). Using metameric stimuli to test a model of neural populations in v2. In *Society for Neuroscience Abstracts*. *Poster*.
- Ziemba, C.M. , **Freeman, J.** , Movshon, T. , and Simoncelli, E.P. (2011). Differential encoding of naturalistic texture properties by neurons in macaque v1 and v2. In *Society for Neuroscience Abstracts*. *Poster*.
- **Freeman, J.** , Brouwer, G.J. , Heeger, D.J. , and Merriam, E.P. (2010). Topographic map of orientation in human visual cortex.. In *Society for Neuroscience Abstracts*, page 483.17. *Poster*.
- **Freeman, J.** and Simoncelli, E.P. (2010). Metamers of the ventral stream. In *Computational and Systems Neuroscience (CoSyNe) Abstracts*. *Talk*.
- **Freeman, J.** and Simoncelli, E.P. (2010). Crowding and metamerism in the ventral stream. In *Vision Sciences Society Abstracts*. *Talk*.

- Ganguli, D. , **Freeman, J.** , Rajashaker, U. , and Simoncelli, E.P. (2010). Orientation statistics at fixation. In *Vision Sciences Society Abstracts*. *Poster*.
- Pelli, D.G. , **Freeman, J.** , and Chakravarthi, R. (2010). Crowding combines. In *Vision Sciences Society Abstracts*. *Poster*.
- Wang, H. , **Freeman, J.** , Merriam, E.P. , Hasson, U. , and Heeger, D.J. (2010). Temporal scramble disrupts eye movements to naturalistic videos. In *Vision Sciences Society Abstracts*. *Poster*.
- **Freeman, J.** , Hallum, L.E. , Landy, M.S. , and Heeger, D.J. (2009). Hierarchical representation of naturalistic texture in cortex. In *Society for Neuroscience Abstracts*, page 756.6. *Poster*.
- **Freeman, J.** , Donner, T.H. , and Heeger, D.J. (2008). Inter-area correlations in the human ventral visual pathway reflect feature integration. In *Vision Sciences Society Abstracts*, volume 8(6), pages 42a. *Poster*.
- **Freeman, J.** , Donner, T.H. , and Heeger, D.J. (2008). Interactions between human inferotemporal and early visual areas reflect feature integration. In *Society for Neuroscience Abstracts*, page 316.8. *Talk*.
- **Freeman, J.** and Pelli, D.G. (2007). Attention can relieve crowding. In *Vision Sciences Society Abstracts*, volume 7(9), pages 330a. *Talk*.
- Huk, A. , **Freeman, J.** , and Durgin, F. (2007). Motion capture is motion integration. In *Vision Sciences Society Abstracts*, volume 7(9), pages 397a. *Poster*.
- Durgin, F.H. , **Freeman, J.** , and Huk, A. (2006). Reciprocal interaction between high and low frequencies in the perception of motion. In *Vision Sciences Society Abstracts*, volume 6(6), pages 574a. *Poster*.

## Invited Talks

- "Probing fine structure with a blunt tool." Princeton University, Neuroimaging Analysis Methods (NIAM) meeting. Host: Michael Todd. *March 16, 2012*.
- "Characterizing the combination rule of a V2 neuron." Cosyne Workshop Talk. Organizers: Najib Majaj, Elias Issa, and James DiCarlo. *February 28, 2012*.
- "Linking theory, perception, and physiology in V2." Johns Hopkins University. Host: Jonathan Flombaum. *December 2, 2011*.
- "Linking theory, perception, and physiology in V2." Cold Spring Harbor Laboratory. Host: Anne Churchland. *November 2, 2011*.
- "Building and testing hierarchical models of the ventral stream." Human Brain Mapping, Advanced fMRI Course, Special topic: Computational Modeling. Organizers: Nikolaus Kriegeskorte and Tor Wager. *April 6, 2011*.
- "fMRI decoding: what does it reflect, what can we learn." Princeton University, Neuroimaging Analysis Methods (NIAM) meeting. Host: Christopher Honey. *May 19, 2011*.
- "Probing fine structure with a blunt instrument: functional imaging of human visual cortex." Swarthmore College. Host: Kathleen Siwicki. *April 13, 2011*.
- "Metamers in vision and cognition." University of Pennsylvania. Host: Alan A. Stocker. *January 6, 2011*.

- "Linking statistical texture models to population coding in the ventral stream." Vision Sciences Society Symposium: Representation in the Visual System by Summary Statistics. Organizer: Ruth Rosenholtz. *May 7, 2010.*
- "Linking statistical texture models to population coding in the ventral stream." Weill Cornell Medical College. Host: Jonathan D. Victor. *January 11, 2010.*

### Teaching experience

Mathematical tools for neuroscience (graduate course), teaching assistant for Laurence Maloney Brain and Behavior (undergraduate course), lab instructor for Wendy Suzuki

### Professional activities

Reviewer for *Journal of Vision*, *PLoS One*, *NIPS*, *Journal of Neuroscience*, *Neuropsychologia*, *Attention Perception and Psychophysics*, *Cerebral Cortex*, *Frontier in Neuroscience*

Member of Vision Sciences Society

Member of Society for Neuroscience

Member of Phi Beta Kappa

Member of Sigma Xi

### Other activities

Outside of lab, I enjoy film, rock n' roll, and regular exercise.

I also love food – see <http://www.jeremyfreeman.net/about> for a list of my favorite restaurants.