

Janelia Farm Conference: Machine Learning, Statistical Inference, and Neuroscience  
May 6-9, 2012

**Sunday, May 6<sup>th</sup>**

3:00 pm Check-in

6:00 pm Reception (*Lobby*)

7:00 pm Dinner

**8:00 pm** **Keynote Talk: Bruno Olshausen**, University of California, Berkeley  
*Learning intermediate-level representations of form and motion from natural movies*

9:00 pm Refreshments available at Bob's Pub

**NOTE:**

All meals are in the **Dining Room**

All talks are in the **Seminar Room**

Posters are in the **Lobby**

**Monday, May 7<sup>th</sup>**

- 7:30 am Breakfast (*service ends at 8:45am*)
- 9:00 am Session 1: Neural representations and sparsity I**  
**Chair: Bruno Olshausen**
- 9:00 am **Yann LeCun**, New York University  
*How do we learn representations of the visual world?*
- 9:30 am **Christopher Rozell**, Georgia Institute of Technology  
*Recursive estimation of dynamic signals with sparsity models via re-weighted L1 minimization*
- 10:00 am **Michael Elad**, The Technion - Israel Institute of Technology  
*The co-sparse analysis model: Signal generation, pursuit, dictionary learning, and applications*
- 10:30 am Break
- 11:00 am Session 2: Neural representations and sparsity II**  
**Chair: Elena Rivas**
- 11:00 am **Sophie Deneve**, Ecole Normale Supérieure  
*Perceptual inference with spikes*
- 11:30 am **Elad Schneidman**, Weizmann Institute of Science  
*Sparse interaction network underlies a learnable population code*
- 12:00 pm **Mitya Chklovskii**, Janelia Farm Research Campus/HHMI  
*Predictive coding in the brain*
- 12:30 pm Lunch
- 2:00 pm Session 3: Neural Representations I**  
**Chair: Brendan Frey**
- 2:00 pm **John P. Cunningham**, University of Cambridge  
*Extracting rotational structure from motor cortical data*
- 2:30 pm **Jakob Macke**, University College London  
*Empirical models of spiking in neural populations*
- 3:00 pm **Eero P. Simoncelli**, HHMI/New York University  
*Acquisition and representation of priors in sensory systems*

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- 3:30 pm      Break
- 4:00 pm      Session 4: Neural Representations II**  
**Chair: Kristin Branson**
- 4:00 pm      **Andrew Saxe**, Stanford University  
*Unsupervised learning models of primary cortical receptive fields and receptive field plasticity*
- 4:30 pm      **Haim Sompolinsky**, The Hebrew University  
*Sparse expansive coding in sensory representations*
- 5:00 pm      Poster Reception
- 7:00 pm      Dinner
- 8:00 pm      Refreshments available at Bob's Pub

**Tuesday, May 8<sup>th</sup>**

- 7:30 am Breakfast (*service ends at 8:45am*)
- 9:00 am Session 5: Language+ I**  
**Chair: Partha Mitra**
- 9:00 am **Fernando Pereira**, Google Research  
*Meaning in the wild*
- 9:30 am **Jun Liu**, Harvard University  
*Dictionary models for item association*
- 10:00 am **Elena Rivas**, Janelia Farm Research Campus/HHMI  
*Stochastic context-free grammars for RNA secondary structure prediction*
- 10:30 am Break
- 11:00 am Session 6: Language+ II**  
**Chair: Eero Simoncelli**
- 11:00 am **W. Philip Kegelmeyer**, Sandia National Laboratories  
*Unsupervised and supervised machine learning combined for multilingual sentiment prediction*
- 11:30 am **Sean R. Eddy**, Janelia Farm Research Campus/HHMI  
*Probability models for biological sequence analysis*
- 12:00 pm **Brendan J. Frey**, University of Toronto  
*Learning by alternative splicing*
- 12:30 pm Lunch
- 1:00 pm Tour (*optional – meet at reception*)
- 2:00 pm Session 7: Learning I**  
**Chair: Sophie Deneve**
- 2:00 pm **Elad Hazan**, Technion - Israel Institute of Technology  
*Sublinear perceptrons*
- 2:30 pm **Satyen Kale**, IBM T. J. Watson Research Center  
*Efficient optimal learning for contextual bandits*

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- 3:00 pm     **Stuart Geman**, Brown University  
*The mind's eye*
- 3:30 pm     Break
- 4:00 pm     Session 8: Brain Mapping and Network Structure**  
**Chair: Mitya Chklovskii**
- 4:00 pm     **Viren Jain**, Janelia Farm Research Campus/HHMI  
*Machine learning strategies for reconstructing neural wiring diagrams from large-scale electron microscopy*
- 4:30 pm     **Srinivas C. Turaga**, Massachusetts Institute of Technology  
*Ultrametric learning with applications to image segmentation, supervised hierarchical clustering and multi-class classification*
- 5:00 pm     **Lou Scheffer**, Janelia Farm Research Campus/HHMI  
*Fly connectomics*
- 5:30 pm     Poster Reception
- 7:00 pm     Dinner
- 8:00 pm     Refreshments available in Bob's Pub

**Wednesday, May 9<sup>th</sup>**

- 7:30 am Breakfast (*service ends at 8:45am*)
- 9:00 am Session 9: Network Mapping and Structure Analysis**  
**Chair: Viren Jain**
- 9:00 am **Pengyu Hong**, Brandeis University  
*Learning via hypothesis margin maximization under max-mini entropy*
- 9:30 am **Aaron Clauset**, University of Colorado Boulder  
*Inferring hierarchical structure from complex networks*
- 10:00 am **Rebecca Goldin**, George Mason University  
*Neuronal classification from network connectivity*
- 10:30 am Break
- 11:00 am Session 10: Learning II**  
**Chair: Sean Eddy**
- 11:00 am **Kristin M. Branson**, Janelia Farm Research Campus/HHMI  
*Interactive machine learning tools for automatic animal behavior detection*
- 11:30 am **Partha P. Mitra**, Cold Spring Harbor Laboratory  
*Computational neuroanatomy for whole mouse brains*
- 12:00 pm **Hanchuan Peng**, Janelia Farm Research Campus/HHMI  
*Simultaneous recognition and segmentation of cells: Application in C.elegans*
- 12:30 pm Lunch and Departure (*To-go boxes available in serverly for those on first shuttle*)
- 1:00 pm First shuttle to Dulles  
1:45 pm Second shuttle to Dulles  
2:30 pm Last shuttle to Dulles