David Pfau

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Education

Columbia University, New York, NY **2008 - present**

Ph.D. Candidate, Neurobiology and Behavior. Expected graduation date: 2014.

- Advisor: Liam Paninski
- Thesis: *Learning Structure in Time Series for Neuroscience and Beyond*

M.Phil., Neurobiology and Behavior. November 2011.

Stanford University, Stanford, CA **2003 - 2007**

B.S., Physics, Minor in Mathematics. GPA: 3.76, 3.88 in major.

Honors and Awards

National Science Foundation Graduate Research Fellowship, 2009

Stanford Summer Research Fellowship, 2006

National Merit Scholarship, 2003

Journal Publications

F. Doshi-Velez, **D. Pfau**, F. Wood, N. Roy (2014). *Bayesian Nonparametric Methods for Partially-Observable Reinforcement Learning.* IEEE Transactions on Pattern Analysis and Machine Intelligence, to appear.

J. Zylberberg, **D. Pfau**, M. DeWeese (2012). *Dead leaves and the dirty ground: Low-level image statistics in transmissive and occlusive imaging environments.* Physical Review E 86, 066112. http://arxiv.org/abs/1209.3277

Conference Publications

D. Pfau, E. Pnevmatikakis, L. Paninski (2013). *Robust Learning of Low-Dimensional Dynamics from Large Neural Ensembles.* Advances in Neural Information Processing Systems 26, Lake Tahoe, NV.

Y. Wong, D. Putrino, M. Vigeral, **D. Pfau**, J. Merel, L. Paninski, B. Pesaran (2012). *Decoding Arm and Hand Movements Across Layers of the Macaque Frontal Cortices.* Proceedings of the 34th Conference of the IEEE Engineering in Medicine and Biology Society, San Diego, CA.

D. Pfau, N. Bartlett, F. Wood (2010). *Probabilistic Deterministic Infinite Automata.* Advances in Neural Information Processing Systems 23, Vancouver, Canada. **Poster Spotlight Presentation**.

N. Bartlett, **D. Pfau**, F. Wood (2010). *Forgetting Counts: Constant Memory Inference for a Dependent Hierarchical Pitman-Yor Process.* Proceedings of the Twenty-Seventh International Conference on Machine Learning, Haifa, Israel.

Conference Abstracts and Poster Presentations

D. Pfau, J. Freeman, M. Ahrens, L. Paninski (2013). *Scalable Region of Interest Detection for Calcium Imaging.* NIPS Workshop: Acquiring and Analyzing the Activity of Large Neural Ensembles.

D. Pfau, E. Pnevmatikakis, L. Paninski (2013). *Robust Learning of Dynamics for Large Neural Ensembles.* Computational and Systems Neuroscience, Salt Lake City, UT.

K. Emmett, J. Rosenstein, **D. Pfau**, A. Bamberger, K. Shepard, C. Wiggins (2013). *Statistical Inference of DNA Translocation using Parallel Expectation Maximization.* Bulletin of the American Physical Society 58(1), Baltimore, MD.

D. Pfau, N. Bartlett, F. Wood (2010). *Bayesian Infinite Automata.* New York Machine Learning

Symposium, New York, NY.

D. Pfau, X. Pitkow, L. Paninski (2009). *A Bayesian Method to Predict the Optimal Diffusion Coefficient in Random Fixational Eye Movements.* Computational and Systems Neuroscience, Salt Lake City, UT. doi:10.3389/conf.neuro.06.2009.03.049

Teaching Experience

Columbia University, New York, NY

Teaching Assistant, G4360 Theoretical Neuroscience — **Spring 2011**

Teaching Assistant, G8325 Statistical Analysis of Neural Data — **Fall 2012**

Invited Guest Lecture, W3995 Neuroscience and the Law — **Fall 2013**

Educational Program for Gifted Youth, Stanford, CA

Tutor and Counselor, Physics Program — **Summer 2005**

Professional Activities

Volunteer, Neural Information Processing Systems, 2010
Reviewer, Artificial Intelligence and Statistics, 2011
Reviewer, Journal of Machine Learning Research
Reviewer, Neural Information Processing Systems, 2011
Reviewer, IEEE Transactions on Pattern Analysis and Machine Intelligence