

Alp Kucukelbir

alp@cs.columbia.edu
<http://www.cs.columbia.edu/~alp/>

Postdoctoral Research Scientist
Data Science Institute
Department of Computer Science
Columbia University

Cofounder
Fero Labs

Education

Ph.D. Engineering & Applied Science, Yale University 2014
Advisor: Hemant D. Tagare
B.A.Sc. (Hon.) Electrical Engineering, University of Toronto 2009

Employment

Postdoctoral Research Scientist 2014–
Department of Computer Science, Columbia University
Advisor: David M. Blei
Postdoctoral Research Associate 2014
Department of Computer Science, Princeton University
Advisor: David M. Blei

Thesis Award

Henry Prentiss Becton Award (*best thesis in engineering & applied science*) 2014

Awards

NYC Ascent | Top 5 Project within Columbia, Cornell, NYU, and CUNY 2015
Yale University | Prize Teaching Fellowship 2013
Yale University | Teaching Center Fellowship 2011
NSERC | Alexander Graham Bell Scholarship (CGS D3) [Declined]
NSERC | Postgraduate Scholarship (PGS D3) 2011
Yale University | Advanced Graduate Leadership Fellowship 2010
Yale University | Robert E. Apfel Graduate Fellowship 2009
Yale University | George P. O'Leary Fellowship in Engineering 2009
NSERC | Alexander Graham Bell Scholarship (CGS M) [Declined]
Ontario Graduate Scholarship [Declined]

NSERC Postgraduate Scholarship (PGS M)	2009
University of Toronto Best Capstone Project Award	2009
University of Toronto Leaders of Tomorrow Award	2008
University of Toronto Class of 4T3 Engineering James Ham Award	2008
University of Toronto Gordon Cressy Student Leadership Award	2008
International Engineering Consortium William L. Everitt Award	2008
University of Toronto Stewart Wilson Award	2007
Canada Millennium National In-Course Excellence Award	2007

Publications

UNDER REVIEW

1. D. Tran, **A. Kucukelbir**, A.B. Dieng, M. Rudolph, D. Liang and D.M. Blei. Edward: A library for probabilistic modeling, inference, and criticism . *arXiv:1610.09787*
2. Y. Wang, **A. Kucukelbir** and D.M. Blei. Reweighted Data for Robust Probabilistic Models. *arXiv:1606.03860*
3. **A. Kucukelbir** and D.M. Blei. Posterior Dispersion Indices. *arXiv:1605.07604*

REFEREED JOURNAL PAPERS

4. D.M. Blei, **A. Kucukelbir**, and J.D. McAuliffe. Variational Inference: A Review for Statisticians. *Journal of the American Statistical Association*, to appear 2016.
5. **A. Kucukelbir**, D. Tran, R. Ranganath, A. Gelman and D.M. Blei. Automatic Differentiation Variational Inference. *Journal of Machine Learning Research*, to appear 2016.
6. H.D. Tagare, **A. Kucukelbir**, F.J. Sigworth, H. Wang, and M. Rao. Directly Reconstructing Principal Components of Heterogeneous Particles from Cryo-EM Images. *Journal of Structural Biology*, 191(2) 2015.
7. **A. Kucukelbir**, F.J. Sigworth and H.D. Tagare. Quantifying the Local Resolution of Cryo-EM Density Maps. *Nature Methods*, 11(1) 2014.
8. **A. Kucukelbir**, F.J. Sigworth and H.D. Tagare. A Bayesian Adaptive Basis Algorithm for Single Particle Reconstruction. *Journal of Structural Biology*, 179(1) 2012.

REFEREED CONFERENCE PAPERS

9. **A. Kucukelbir**, R. Ranganath, A. Gelman and D.M. Blei. Automatic Variational Inference in Stan. *Neural Information Processing Systems*, 2015.
10. **A. Kucukelbir** and D.M. Blei. Population Empirical Bayes. *Uncertainty in Artificial Intelligence*, 2015.
11. **A. Kucukelbir**, A. Kushki and K.N. Plataniotis. A New Stochastic Estimator for Tremor Frequency Tracking. *IEEE Acoustics, Speech and Signal Processing*, 2009.

REFEREED WORKSHOP PAPERS

12. **A. Kucukelbir** and D.M. Blei. Bumping Variational Inference. *Advances in Variational Inference*, NIPS 2014.
13. **A. Kucukelbir**, R. Ranganath, A. Gelman and D.M. Blei. Fully Automatic Variational Inference of Differentiable Probability Models. *Probabilistic Programming*, NIPS 2014.

Professional Service

SENIOR PROGRAM COMMITTEE

International Conference on Machine Learning, *Workflow Chair* 2015

JOURNAL REVIEWING

Journal of Machine Learning Research since 2016

Journal of Structural Biology since 2012

IEEE Transactions on Image Processing since 2011

IEEE Transactions on Signal Processing since 2011

IEEE Sensors Journal since 2010

CONFERENCE REVIEWING

International Conference on Machine Learning since 2016

Artificial Intelligence and Statistics since 2015

Neural Information Processing Systems since 2014

Association for the Advancement of Artificial Intelligence 2015

IEEE Acoustics, Speech, and Signal Processing 2010

WORKSHOP ORGANIZATION

Advances in Approximate Bayesian Inference at NIPS 2015

PROFESSIONAL MEMBERSHIPS

American Statistical Association

International Society for Bayesian Analysis

Institute of Electrical and Electronics Engineers

Society for Industrial and Applied Mathematics

Teaching Experience

TRAINING

Yale Certificate of College Teaching Preparation 2013

GUEST LECTURES

“Validating Variational Inference” 2016

“Probabilistic Modeling in Stan” 2015

“Computer Vision and Image Processing” (×3) 2011–2013

“Signal Processing using MATLAB” (×2) 2011–2012

“Image Processing and Machine Learning” 2010

WORKSHOPS (DESIGNED & DELIVERED)

“Teaching Quantitative Reasoning” 2012

“Problem Based Learning” 2012

“Summer Teaching at Yale Day” 2012

“Compressed Course Syllabus Design” 2012

“Mentoring the Next Generation of Scientists” 2012

“Teaching with Technology” 2012

“Using Media and Visual Sources in the Classroom” 2012

“Fundamentals of Teaching Engineering” 2011–2013

CONSULTATIONS (DELIVERED)

Political Science graduate student leading undergraduate discussion section 2013

Epidemiology graduate student delivering graduate guest lecture 2013

Biology graduate student delivering undergraduate lecture and discussion 2013

Sociology graduate student delivering undergraduate guest lecture 2012

Psychology graduate student leading undergraduate discussion section 2011

Invited Talks

1. Harvard/MIT (Broad Institute) – CAMBRIDGE, MA 2016
2. ASA Joint Statistical Meetings – CHICAGO, IL 2016
3. DARPA PPAML Meeting – NEW YORK CITY, NY 2016
4. NYC Meetup (Big Data) – NEW YORK CITY, NY 2016
5. RStats Conference – NEW YORK CITY, NY 2016
6. University of Toronto – TORONTO, CA 2016
7. Princeton University – PRINCETON, NJ 2016
8. University of Chicago – CHICAGO, IL 2016
9. Information Theory and Applications Workshop – LA JOLLA, CA 2016
10. IMS-ISBA Bayes Comp Meeting – LENZERHEIDE, CH 2016
11. NIPS (Spotlight) – MONTREAL, QC 2015
12. Blackbox Learning and Inference at NIPS – MONTREAL, QC 2015
13. Google Research – NEW YORK CITY, NY 2015
14. UAI (Oral) – AMSTERDAM, NL 2015
15. Palantir – NEW YORK CITY, NY 2015
16. Yale University – NEW HAVEN, CT 2015
17. University of Toronto – TORONTO, CA 2015
18. Fields Institute – TORONTO, CA 2015
19. Advances in Variational Inference at NIPS – MONTREAL, QC 2014
20. Bogazici University – ISTANBUL, TR 2014
21. University of Cambridge – CAMBRIDGE, UK 2014
22. University of Colorado – BOULDER, CO 2014
23. Harvard University – CAMBRIDGE, MA 2013
24. Los Alamos National Laboratories – LOS ALAMOS, NM 2013
25. 3DEM Gordon Research Conference (Spotlight) – NEW LONDON, NH 2013
26. SIAM Imaging Science – PHILADELPHIA, PA 2013