Dustin Tran

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Columbia University
Department of Computer Science
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Education

Ph.D. Computer Science, Columbia University — 2016–
Advisors: David M. Blei, Andrew Gelman

M.S. Computational Science & Engineering, Harvard University — 2014–2015
Advisor: Edoardo M. Airoldi

B.A. (Hon.) Mathematics, Statistics, University of California, Berkeley — 2010–2014

Employment

Visiting Researcher — 2016
Graduate School of Business, Stanford University
Collaborators: Susan Athey, Matt Hoffman, Kevin Murphy

Visiting Researcher — 2015
Department of Statistics and Computer Science, Columbia University
Supervisors: David M. Blei, Andrew Gelman

Awards

Google Ph.D. Fellowship in Machine Learning ($34,000 + tuition/fees) — 2017–

Columbia SEAS Fellowship (Full funding) — 2016–

Adobe Research Fellowship ($10,000) — 2016

LinkedIn Economic Graph Challenge — 2015

Harvard GSAS Fellowship (Full funding) — 2015

Dorothea Klumpke Roberts Prize in Mathematics — 2014

Regents' and Chancellor's Scholarship (Full funding) — 2010–2014

Rose Hills Foundation Science & Engineering Grant ($5,000) — 2013

Cal Alumni Leadership Scholarship ($2,500) — 2010

Publications

PREPRINTS

1. A. Gelman, A. Vehtari, P. Jylänki, T. Sivula, **D. Tran**, S. Sahai, P. Blomstedt, J.P. Cunningham, D. Schiminovich, and C. Robert. Expectation propagation as a way of life: A framework for Bayesian inference on partitioned data.
2. **D. Tran**, R. Ranganath, D.M. Blei. Deep and hierarchical implicit models.
3. **D. Tran**, A. Kucukelbir, A.B. Dieng, D. Liang, M. Rudolph, and D.M. Blei. Edward: A library for probabilistic modeling, inference, and criticism.
4. **D. Tran**, F.J.R. Ruiz, S. Athey, and D.M. Blei. Model criticism for Bayesian causal inference.
5. A.B. Dieng, **D. Tran**, R. Ranganath, J. Paisley, and D.M. Blei. The χ divergence for approximate inference.
6. **D. Tran**, A. Kucukelbir, A. Gelman, B. Carpenter, and D.M. Blei. Stan: Generalizing and automating variational inference.

JOURNAL ARTICLES

7. **D. Tran**, P. Toulis, and E.M. Airoldi. Stochastic gradient descent methods for estimation with large data sets. *Journal of Statistical Software*, To appear.
8. **D. Tran** and D.M. Blei. Comment, "Fast Approximate Inference for Arbitrarily Large Semiparametric Regression Models via Message Passing". *Journal of the American Statistical Association*, 112(517):156–158, 2017.
9. A. Kucukelbir, **D. Tran**, R. Ranganath, A. Gelman, and D.M. Blei. Automatic differentiation variational inference. *Journal of Machine Learning Research*, 18(14):1–45, 2017.

CONFERENCE ARTICLES

10. **D. Tran**, M.D. Hoffman, R.A. Saurous, E. Brevdo, K. Murphy, and D.M. Blei. Deep probabilistic programming. In *International Conference on Learning Representations*, 2017.
11. R. Ranganath, J. Altosaar, **D. Tran**, and D.M. Blei. Operator variational inference. In *Neural Information Processing Systems*, 2016.
12. R. Ranganath, **D. Tran**, and D.M. Blei. Hierarchical variational models. In *International Conference on Machine Learning*, 2016.
13. **D. Tran**, M. Kim, and F. Doshi-Velez. Spectral M-estimation with application to hidden Markov models. In *Artificial Intelligence and Statistics*, 2016.
14. P. Toulis, **D. Tran**, and E.M. Airoldi. Towards stability and optimality in stochastic gradient descent. In *Artificial Intelligence and Statistics*, 2016.
15. **D. Tran**, R. Ranganath, and D.M. Blei. The variational Gaussian process. In *International Conference on Learning Representations*, 2016.
16. **D. Tran**, D.M. Blei, and E.M. Airoldi. Copula variational inference. In *Neural Information Processing Systems*, 2015.

Software

1. Edward: A library for probabilistic modeling, inference, and criticism 2016–
   D. Tran, A. Kucukelbir, A.B. Dieng, D. Liang, M. Rudolph, and D.M. Blei.
2. Stan: A probabilistic programming language 2012–
   A. Gelman, B. Carpenter, M. Hoffman, D. Lee, B. Goodrich, M. Betancourt, M. Brubaker, J. Guo, P. Li, A. Riddell, M. Inacio, J. Arnold, M. Morris, R. Trangucci, R. Goedman, B. Lau, J. Gabry, A. Kucukelbir, R. Grant, **D. Tran**, K. Sakrejda, A. Vehtari, R. Lei, and S. Weber.
3. sgd: An R package for large-scale estimation 2015–
   D. Tran, P. Toulis, and E.M. Airoldi.

Teaching

1. Teaching Assistant | Columbia University 2016
   STAT/CS 6509: Foundations of Graphical Models
2. Teaching Fellow | Harvard University 2015
   AM 205: Advanced Scientific Computing–Numerical Methods
3. Teaching Assistant | University of California, Berkeley 2013
   MATH 10B: Methods in Calculus, Statistics, Combinatorics
4. Teaching Assistant | University of California, Berkeley 2011
   MATH 128A: Numerical Analysis

Professional Service

JOURNAL REVIEWING

Foundations and Trends in Machine Learning	2016–
Information Sciences	2016–
Journal of Machine Learning Research	2016–
Statistics and Computing	2016–
Transactions on Pattern Analysis and Machine Intelligence	2016–

CONFERENCE REVIEWING

Artificial Intelligence and Statistics	2017
International Conference on Learning Representations	2016, 2017
International Conference on Machine Learning	2016, 2017
Knowledge Discovery and Data Mining	2016
Neural Information Processing Systems	2016, 2017
Uncertainty in Artificial Intelligence	2016, 2017

WORKSHOP ORGANIZATION

ICML Workshop: Implicit Generative Models 2017

NIPS Workshop: Advances in Approximate Bayesian Inference 2016

NIPS Workshop: Advances in Approximate Bayesian Inference 2015

PROFESSIONAL MEMBERSHIPS

American Statistical Association

Association of Computing Machinery

Bernoulli Society

Institute of Electrical and Electronics Engineers

Institute for Mathematical Statistics

International Society for Bayesian Analysis

Royal Statistical Society

MENTORING

Akshay Khatri (M.S. Columbia University, 2017)

Invited Talks and Panels

1. 2nd S2I2 HEP/CS Workshop – PRINCETON, NJ 2017
2. Pfizer – BOSTON, MA 2017
3. The New York Academy of Sciences – NEW YORK, NY 2017
4. Etsy – BROOKLYN, NY 2017
5. PPAML/DARPA Meeting – ARLINGTON, VA 2017
6. New York City Machine Learning Meetup – NEW YORK, NY 2017
7. Johns Hopkins University – BALTIMORE, MD 2017
8. NIPS Workshop: Advances in Approximate Bayesian Inference – BARCELONA, ES 2016
9. NIPS Workshop: Practical Bayesian Nonparametrics – BARCELONA, ES 2016
10. Netflix Research – LOS GATOS, CA 2016
11. OpenAI – SAN FRANCISCO, CA 2016
12. Twitter Cortex – CAMBRIDGE, MA 2016
13. Google Brain – MOUNTAIN VIEW, CA 2016
14. International Conference on Learning Representations – SAN JUAN, PR 2016

15. PPAML/DARPA Meeting – NEW YORK, NY 2016
16. Harvard University – CAMBRIDGE, MA 2016
17. NIPS Workshop: Advances in Approximate Bayesian Inference – MONTREAL, CA 2015
18. NIPS Workshop: Black Box Learning and Inference – MONTREAL, CA 2015
19. Massachusetts Institute of Technology – CAMBRIDGE, MA 2015
20. Harvard University – CAMBRIDGE, MA 2015
21. Microsoft Research – CAMBRIDGE, MA 2015
22. University of Connecticut – STORRS, CT 2015
23. Max Planck Institute for Intelligent Systems – TÜBINGEN, DE 2015