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

Research Intern — Oct 2017 –
Google Research

Research Intern — May 2017 – Oct 2017
OpenAI

Visiting Researcher — May 2016 – Aug 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. **D. Tran**, D.M. Blei. Implicit causal models.
2. **D. Tran**, Y. Burda, I. Sutskever. Generative models for alignment and data efficiency in language.
3. 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.
4. **D. Tran**, A. Kucukelbir, A.B. Dieng, D. Liang, M. Rudolph, and D.M. Blei. Edward: A library for probabilistic modeling, inference, and criticism.
5. **D. Tran**, F.J.R. Ruiz, S. Athey, and D.M. Blei. Model criticism for Bayesian causal inference.
6. **D. Tran** and V. Mansinghka. Edward: Probabilistic programming with deep learning applications.
7. **D. Tran**, A. Kucukelbir, A. Gelman, B. Carpenter, and D.M. Blei. Stan: Generalizing and automating variational inference.

JOURNAL ARTICLES

8. **D. Tran**, P. Toulis, and E.M. Airoldi. Stochastic gradient descent methods for estimation with large data sets. *Journal of Statistical Software*, To appear.
9. **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.
10. 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

11. **D. Tran**, R. Ranganath, D.M. Blei. Deep and hierarchical implicit models. In *Neural Information Processing Systems*, 2017.
12. A.B. Dieng, **D. Tran**, R. Ranganath, J. Paisley, and D.M. Blei. The χ divergence for approximate inference. In *Neural Information Processing Systems*, 2017.
13. **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.
14. R. Ranganath, J. Altosaar, **D. Tran**, and D.M. Blei. Operator variational inference. In *Neural Information Processing Systems*, 2016.
15. R. Ranganath, **D. Tran**, and D.M. Blei. Hierarchical variational models. In *International Conference on Machine Learning*, 2016.

16. **D. Tran**, M. Kim, and F. Doshi-Velez. Spectral M-estimation with application to hidden Markov models. In *Artificial Intelligence and Statistics*, 2016.
17. P. Toulis, **D. Tran**, and E.M. Airoldi. Towards stability and optimality in stochastic gradient descent. In *Artificial Intelligence and Statistics*, 2016.
18. **D. Tran**, R. Ranganath, and D.M. Blei. The variational Gaussian process. In *International Conference on Learning Representations*, 2016.
19. **D. Tran**, D.M. Blei, and E.M. Airoldi. Copula variational inference. In *Neural Information Processing Systems*, 2015.

Software

1. Observations: A one line API for loading standard data sets in machine learning 2017–
   D. Tran, A. Kucukelbir, A.B. Dieng, D. Liang, M. Rudolph, and D.M. Blei.
2. 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.
3. 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.
4. 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

Association for the Advancement of Artificial Intelligence 2018

Artificial Intelligence and Statistics 2017, 2018

International Conference on Learning Representations 2016, 2017, 2018

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

NIPS Workshop: Advances in Approximate Bayesian Inference 2017

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. Snap – VENICE, CA 2017
2. IROS Workshop: Machine Learning Methods for High-Level Cognitive Capabilities in Robotics – VANCOUVER, CA 2017
3. Workshop on Deep Probabilistic Models – CAMBRIDGE, UK 2017

4. Gaussian Process Summer School – SHEFFIELD, UK 2017
5. Probabilistic Programming Meetup – MENLO PARK, CA 2017
6. Diana-HEP Meeting – GENEVA, CH 2017
7. 2nd S2I2 HEP/CS Workshop – PRINCETON, NJ 2017
8. Pfizer – BOSTON, MA 2017
9. The New York Academy of Sciences – NEW YORK, NY 2017
10. Etsy – BROOKLYN, NY 2017
11. PPAML/DARPA Meeting – ARLINGTON, VA 2017
12. New York City Machine Learning Meetup – NEW YORK, NY 2017
13. Johns Hopkins University – BALTIMORE, MD 2017
14. NIPS Workshop: Advances in Approximate Bayesian Inference – BARCELONA, ES 2016
15. NIPS Workshop: Practical Bayesian Nonparametrics – BARCELONA, ES 2016
16. Netflix Research – LOS GATOS, CA 2016
17. OpenAI – SAN FRANCISCO, CA 2016
18. Twitter Cortex – CAMBRIDGE, MA 2016
19. Google Brain – MOUNTAIN VIEW, CA 2016
20. International Conference on Learning Representations – SAN JUAN, PR 2016
21. PPAML/DARPA Meeting – NEW YORK, NY 2016
22. Harvard University – CAMBRIDGE, MA 2016
23. NIPS Workshop: Advances in Approximate Bayesian Inference – MONTREAL, CA 2015
24. NIPS Workshop: Black Box Learning and Inference – MONTREAL, CA 2015
25. Massachusetts Institute of Technology – CAMBRIDGE, MA 2015
26. Harvard University – CAMBRIDGE, MA 2015
27. Microsoft Research – CAMBRIDGE, MA 2015
28. University of Connecticut – STORRS, CT 2015
29. Max Planck Institute for Intelligent Systems – TÜBINGEN, DE 2015