Dustin Tran

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Education

Ph.D. Computer Science, Columbia University Advisors: David M. Blei, Andrew Gelman	2016–
M.S. Computational Science & Engineering, Harvard University Advisor: Edoardo M. Airoldi	2014–2015
B.A. (Hon.) Mathematics, Statistics, University of California, Berkeley	2010–2014

Employment

Research Intern Google Research	Oct 2017 –
Research Intern OpenAI	May 2017 – Oct 2017
Visiting Student Graduate School of Business, Stanford University Collaborators: Susan Athey, Matt Hoffman, Kevin Murphy	May 2016 – Aug 2016
Visiting Student Department of Statistics and Computer Science, Columbia University Supervisors: David M. Blei, Andrew Gelman	2015

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. Y. Wen, P. Vicol, J. Ba, **D. Tran**, and R. Grosse. Flipout: Efficient pseudo-independent weight perturbations on mini-batches.
2. **D. Tran**, Y. Burda, and I. Sutskever. Feature-matching auto-encoders.
3. **D. Tran** and D. M. Blei. Implicit causal models for genome-wide association studies.
4. **D. Tran** and V. Mansinghka. Probabilistic programming for deep generative models.
5. J. Dillon, I. Langmore, **D. Tran**, E. Brevdo, S. Vasudevan, D. Moore, B. Patton, A. Alemi, M. Hoffman, and R. Saurous. TensorFlow Distributions.
6. **D. Tran**, A. Kucukelbir, A. B. Dieng, M. Rudolph, D. Liang, and D. M. Blei. Edward: A library for probabilistic modeling, inference, and criticism.
7. **D. Tran**, A. Kucukelbir, A. Gelman, B. Carpenter, and D. M. Blei. Stan: Generalizing and automating variational inference.
8. **D. Tran**, F. J. R. Ruiz, S. Athey, and D. M. Blei. Model criticism for Bayesian causal inference.
9. 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.

JOURNAL ARTICLES

10. **D. Tran**, P. Toulis, and E. M. Airoldi. Stochastic gradient descent methods for estimation with large data sets. *Journal of Statistical Software*, To appear.
11. **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.
12. 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

13. **D. Tran**, R. Ranganath, and D. M. Blei. Hierarchical implicit models and likelihood-free variational inference. In *Neural Information Processing Systems*, 2017.
14. A. B. Dieng, **D. Tran**, R. Ranganath, J. Paisley, and D. M. Blei. Variational inference via χ upper bound minimization. In *Neural Information Processing Systems*, 2017.
15. **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.

16. R. Ranganath, J. Altosaar, **D. Tran**, and D. M. Blei. Operator variational inference. In *Neural Information Processing Systems*, 2016.
17. R. Ranganath, **D. Tran**, and D. M. Blei. Hierarchical variational models. In *International Conference on Machine Learning*, 2016.
18. **D. Tran**, M. Kim, and F. Doshi-Velez. Spectral M-estimation with application to hidden Markov models. In *Artificial Intelligence and Statistics*, 2016.
19. P. Toulis, **D. Tran**, and E. M. Airoldi. Towards stability and optimality in stochastic gradient descent. In *Artificial Intelligence and Statistics*, 2016.
20. **D. Tran**, R. Ranganath, and D. M. Blei. The variational Gaussian process. In *International Conference on Learning Representations*, 2016.
21. **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.
2. TensorFlow Distributions: Probability distributions for machine intelligence 2016–
   J.V. Dillon, I. Langmore, **D. Tran**, E. Brevdo, S. Vasudevan, D. Moore, B. Patton, A. Alemi, M. Hoffman, R.A. Saurous.
3. 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.
4. Stan: A platform for statistical modeling and high-performance statistical computation 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, S. Weber.
5. 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, 2018
Knowledge Discovery and Data Mining	2016
Neural Information Processing Systems	2016, 2017
Uncertainty in Artificial Intelligence	2016, 2017, 2018

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. POPL Workshop: Probabilistic Programming Languages, Semantics, and Systems – LOS ANGELES, CA 2018
2. NIPS Workshop: Bayesian Deep Learning – LONG BEACH, CA 2017
3. NIPS Workshop: Deep Learning for Physical Sciences – LONG BEACH, CA 2017
4. NIPS Workshop: Highlights, Learn How to Code a Paper with State of the Art Frameworks – LONG BEACH, CA 2017
5. Snap – VENICE, CA 2017
6. IROS Workshop: Machine Learning Methods for High-Level Cognitive Capabilities in Robotics – VANCOUVER, CA 2017
7. Workshop on Deep Probabilistic Models – CAMBRIDGE, UK 2017
8. Gaussian Process Summer School – SHEFFIELD, UK 2017
9. Probabilistic Programming Meetup – MENLO PARK, CA 2017
10. Diana-HEP Meeting – GENEVA, CH 2017
11. 2nd S2I2 HEP/CS Workshop – PRINCETON, NJ 2017
12. Pfizer – BOSTON, MA 2017
13. The New York Academy of Sciences – NEW YORK, NY 2017
14. Etsy – BROOKLYN, NY 2017
15. PPAML/DARPA Meeting – ARLINGTON, VA 2017
16. New York City Machine Learning Meetup – NEW YORK, NY 2017
17. Johns Hopkins University – BALTIMORE, MD 2017
18. NIPS Workshop: Advances in Approximate Bayesian Inference – BARCELONA, ES 2016
19. NIPS Workshop: Practical Bayesian Nonparametrics – BARCELONA, ES 2016
20. Netflix Research – LOS GATOS, CA 2016
21. OpenAI – SAN FRANCISCO, CA 2016
22. Twitter Cortex – CAMBRIDGE, MA 2016
23. Google Brain – MOUNTAIN VIEW, CA 2016
24. International Conference on Learning Representations – SAN JUAN, PR 2016
25. PPAML/DARPA Meeting – NEW YORK, NY 2016
26. Harvard University – CAMBRIDGE, MA 2016
27. NIPS Workshop: Advances in Approximate Bayesian Inference – MONTREAL, CA 2015

28. NIPS Workshop: Black Box Learning and Inference – MONTREAL, CA 2015
29. Massachusetts Institute of Technology – CAMBRIDGE, MA 2015
30. Harvard University – CAMBRIDGE, MA 2015
31. Microsoft Research – CAMBRIDGE, MA 2015
32. University of Connecticut – STORRS, CT 2015
33. Max Planck Institute for Intelligent Systems – TÜBINGEN, DE 2015