

Dustin Tran

Research Scientist
Google Brain
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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. Airolidi	2014–2015
B.A. (Hon.) Mathematics, Statistics, University of California, Berkeley	2010–2014

Employment

Research Scientist Google Brain	2018–
Research Intern Google	Oct 2017 – Jan 2018
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

Awards

John M. Chambers Statistical Software Award (for Edward)	2018
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
Cal Alumni Leadership Scholarship (\$2,500)	2010

Publications

PREPRINTS

1. D. Hafner, **D. Tran**, A. Irpan, T. Lillicrap, and J. Davidson. Reliable uncertainty estimates in deep neural networks using noise contrastive priors. 2018.
2. **D. Tran**, Y. Burda, and I. Sutskever. Feature-matching auto-encoders.
3. **D. Tran** and V. Mansinghka. Probabilistic programming for deep generative models.
4. J. Dillon, I. Langmore, **D. Tran**, E. Brevdo, S. Vasudevan, D. Moore, B. Patton, A. Alemi, M. Hoffman, and R. Saurous. TensorFlow Distributions.
5. **D. Tran**, A. Kucukelbir, A. B. Dieng, M. Rudolph, D. Liang, and D. M. Blei. Edward: A library for probabilistic modeling, inference, and criticism.
6. **D. Tran**, A. Kucukelbir, A. Gelman, B. Carpenter, and D. M. Blei. Stan: Generalizing and automating variational inference.
7. **D. Tran**, F. J. R. Ruiz, S. Athey, and D. M. Blei. Model criticism for Bayesian causal inference.
8. 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

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

12. **D. Tran**, M. D. Hoffman, S. Vasudevan, C. Suter, D. Moore, A. Radul, M. Johnson, and R. A. Saurous. Edward2: Simple, distributed, accelerated. In *Neural Information Processing Systems*, 2018.
13. N. Shazeer and Others. Deep learning for supercomputers. In *Neural Information Processing Systems*, 2018.
14. M. D. Hoffman, M. Johnson, and **D. Tran**. Autoconj: Recognizing and exploiting conjugacy without a domain-specific language. In *Neural Information Processing Systems*, 2018.
15. N. Parmar, A. Vaswani, J. Uszkoreit, L. Kaiser, N. Shazeer, A. Ku, and **D. Tran**. Image Transformer. In *International Conference on Machine Learning*, 2018.
16. Y. Wen, P. Vicol, J. Ba, **D. Tran**, and R. Grosse. Flipout: Efficient pseudo-independent weight perturbations on mini-batches. In *International Conference on Learning Representations*, 2018.

17. **D. Tran** and D. M. Blei. Implicit causal models for genome-wide association studies. In *International Conference on Learning Representations*, 2018.
18. **D. Tran**, R. Ranganath, and D. M. Blei. Hierarchical implicit models and likelihood-free variational inference. In *Neural Information Processing Systems*, 2017.
19. 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.
20. **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.
21. R. Ranganath, J. Alotaibi, **D. Tran**, and D. M. Blei. Operator variational inference. In *Neural Information Processing Systems*, 2016.
22. R. Ranganath, **D. Tran**, and D. M. Blei. Hierarchical variational models. In *International Conference on Machine Learning*, 2016.
23. **D. Tran**, M. Kim, and F. Doshi-Velez. Spectral M-estimation with application to hidden Markov models. In *Artificial Intelligence and Statistics*, 2016.
24. P. Toulis, **D. Tran**, and E. M. Airolidi. Towards stability and optimality in stochastic gradient descent. In *Artificial Intelligence and Statistics*, 2016.
25. **D. Tran**, R. Ranganath, and D. M. Blei. The variational Gaussian process. In *International Conference on Learning Representations*, 2016.
26. **D. Tran**, D. M. Blei, and E. M. Airolidi. Copula variational inference. In *Neural Information Processing Systems*, 2015.

Software

1. TensorFlow Probability: Probabilistic reasoning for intelligence 2018–
D. Tran, D. Moore, C. Suter, J.V. Dillon, I. Langmore, E. Brevdo, S. Vasudevan, D. Moore, B. Patton, A. Alemi, A. Radul, M. Hoffman, R.A. Saurous.
2. Observations: A one-line API for loading standard data sets in machine learning 2017–2018
D. Tran.
3. Edward: A library for probabilistic modeling, inference, and criticism 2016–2018
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. sgdr: An R package for large-scale estimation 2015–
D. Tran, P. Toulis, and E.M. Airolidi.

Teaching

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

Professional Service

PROGRAM COMMITTEE

Area Chair: International Conference on Machine Learning	2019–
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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–
International Conference on Learning Representations	2016–
International Conference on Machine Learning	2016–2018
Knowledge Discovery and Data Mining	2016
Neural Information Processing Systems	2016–
Uncertainty in Artificial Intelligence	2016–

WORKSHOP ORGANIZATION

Symposium: Advances in Approximate Bayesian Inference	2018
UAI Workshop: Uncertainty in Deep Learning	2018
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

Mike Dusenberry (Google AI Resident, Fall 2018)

Keyon Vafa (Google Brain Intern, Summer 2018)

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

Invited Talks and Panels

1. Probabilistic Programming Industry Meetup – MENLO PARK, CA 2018
2. Facebook AI Research – NEW YORK, NY 2018
3. Uber AI Labs – SAN FRANCISCO, CA 2018
4. Google Research – MOUNTAIN VIEW, CA 2018
5. POPL Workshop: Probabilistic Programming Languages, Semantics, and Systems – LOS ANGELES, CA 2018
6. NIPS Workshop: Bayesian Deep Learning – LONG BEACH, CA 2017
7. NIPS Workshop: Deep Learning for Physical Sciences – LONG BEACH, CA 2017
8. NIPS Workshop: Highlights, Learn How to Code a Paper with State of the Art Frameworks – LONG BEACH, CA 2017
9. Snap – VENICE, CA 2017
10. IROS Workshop: Machine Learning Methods for High-Level Cognitive Capabilities in Robotics – VANCOUVER, CA 2017
11. Workshop on Deep Probabilistic Models – CAMBRIDGE, UK 2017
12. Gaussian Process Summer School – SHEFFIELD, UK 2017
13. Probabilistic Programming Meetup – MENLO PARK, CA 2017

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