

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. M. W. Dusenberry, **D. Tran**, E. Choi, J. Kemp, J. Nixon, G. Jerfel, K. Heller, and A. Dai. Analyzing the role of model uncertainty in electronic health records. 2018.
2. **D. Tran**, K. Vafa, K. K. Agrawal, L. Dinh, and D. Poole. Discrete flows: Invertible generative models for discrete data. 2018.
3. J. Nixon, M. W. Dusenberry, L. Zhang, G. Jerfel, and **D. Tran**. Measuring calibration in deep learning. 2018.
4. M. Hoffman, P. Sountsov, J. V. Dillon, I. Langmore, **D. Tran**, and S. Vasudevan. Neutra-lizing bad geometry in hamiltonian monte carlo using neural transport. *arXiv preprint arXiv:1903.03704*, 2019.
5. **D. Tran**, M. W. Dusenberry, D. Hafner, and M. van der Wilk. Bayesian layers: A module for neural network uncertainty. 2018.
6. **D. Tran**, Y. Burda, and I. Sutskever. Feature-matching auto-encoders.
7. **D. Tran** and V. Mansinghka. Probabilistic programming for deep generative models.
8. J. Dillon, I. Langmore, **D. Tran**, E. Brevdo, S. Vasudevan, D. Moore, B. Patton, A. Alemi, M. Hoffman, and R. Saurous. TensorFlow Distributions.
9. **D. Tran**, A. Kucukelbir, A. B. Dieng, M. Rudolph, D. Liang, and D. M. Blei. Edward: A library for probabilistic modeling, inference, and criticism.
10. **D. Tran**, A. Kucukelbir, A. Gelman, B. Carpenter, and D. M. Blei. Stan: Generalizing and automating variational inference.
11. **D. Tran**, F. J. R. Ruiz, S. Athey, and D. M. Blei. Model criticism for Bayesian causal inference.
12. 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

13. **D. Tran**, P. Toulis, and E. M. Airoldi. Stochastic gradient descent methods for estimation with large data sets. *Journal of Statistical Software*, To appear.
14. **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.
15. 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

16. D. Hafner, **D. Tran**, A. Irpan, T. Lillicrap, and J. Davidson. Reliable uncertainty estimates in deep neural networks using noise contrastive priors. In *Uncertainty in Artificial Intelligence*, 2019.
17. **D. Tran**, M. D. Hoffman, D. Moore, C. Suter, S. Vasudevan, A. Radul, M. Johnson, and R. A. Saurous. Simple, distributed, and accelerated probabilistic programming. In *Neural Information Processing Systems*, 2018.
18. N. Shazeer, Y. Cheng, N. Parmar, **D. Tran**, A. Vaswani, P. Koanantakool, P. Hawkins, H. Lee, M. Hong, C. Young, R. Sepassi, and B. Hechtman. Mesh-TensorFlow: Deep learning for supercomputers. In *Neural Information Processing Systems*, 2018.
19. M. D. Hoffman, M. Johnson, and **D. Tran**. Autoconj: Recognizing and exploiting conjugacy without a domain-specific language. In *Neural Information Processing Systems*, 2018.
20. N. Parmar, A. Vaswani, J. Uszkoreit, L. Kaiser, N. Shazeer, A. Ku, and **D. Tran**. Image Transformer. In *International Conference on Machine Learning*, 2018.
21. 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.
22. **D. Tran** and D. M. Blei. Implicit causal models for genome-wide association studies. In *International Conference on Learning Representations*, 2018.
23. **D. Tran**, R. Ranganath, and D. M. Blei. Hierarchical implicit models and likelihood-free variational inference. In *Neural Information Processing Systems*, 2017.
24. 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.
25. **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.
26. R. Ranganath, J. Alotaibi, **D. Tran**, and D. M. Blei. Operator variational inference. In *Neural Information Processing Systems*, 2016.
27. R. Ranganath, **D. Tran**, and D. M. Blei. Hierarchical variational models. In *International Conference on Machine Learning*, 2016.
28. **D. Tran**, M. Kim, and F. Doshi-Velez. Spectral M-estimation with application to hidden Markov models. In *Artificial Intelligence and Statistics*, 2016.
29. P. Toulis, **D. Tran**, and E. M. Airoldi. Towards stability and optimality in stochastic gradient descent. In *Artificial Intelligence and Statistics*, 2016.
30. **D. Tran**, R. Ranganath, and D. M. Blei. The variational Gaussian process. In *International Conference on Learning Representations*, 2016.
31. **D. Tran**, D. M. Blei, and E. M. Airoldi. Copula variational inference. In *Neural Information Processing Systems*, 2015.

Software

1. Bayesian Layers: A module for neural network uncertainty 2018
D. Tran, M. Dusenberry, M. van der Wilk, D. Hafner.
2. Mesh-TensorFlow: Deep learning for supercomputers 2018
N. Shazeer, Y. Cheng, N. Parmar, **D. Tran**, A. Vaswani, P. Koanantakool, P. Hawkins, H. Lee, M. Hong, C. Young, R. Sepassi, B. Hechtman.
3. Edward2: Simple, distributed, and accelerated probabilistic programming 2018
D. Tran, M. D. Hoffman, D. Moore, C. Suter, S. Vasudevan, A. Radul, M. Johnson, and R. A. Saurous.
4. Tensor2Tensor: Library of deep learning models and datasets 2017
5. Observations: A one-line API for loading standard data sets in machine learning 2017
D. Tran.
6. 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.
7. sgd: An R package for large-scale estimation 2015
D. Tran, P. Toulis, and E.M. Airolidi.
8. 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.

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

PROGRAM COMMITTEE

- Area Chair: Neural Information Processing Systems 2019–
- Area Chair: International Conference on Machine Learning 2019–
- Area Chair: Artificial Intelligence and Statistics 2019–

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

WORKSHOP ORGANIZATION

Symposium: Advances in Approximate Bayesian Inference	2019
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

Aditya Grover (Google AI Resident, Summer 2019–)
 Jason Lee (Google AI Resident, Summer 2019–)
 Yulia Rubanova (Google AI Resident, Summer 2019–)
 Mingzhang Yin (Google AI Resident, Summer 2019–)
 Michael W. Dusenberry (Google AI Resident, Fall 2018–)
 Andreea Gane (Google AI Resident, Fall 2018)
 Keyon Vafa (Google Brain Intern, Summer 2018–Spring 2019)
 Akshay Khatri (M.S. Columbia University, Spring 2017)

Invited Talks and Panels

1. Advances and Challenges in Machine Learning Languages Workshop – CAMBRIDGE, UK 2019
2. UC Berkeley: CS 294 Special Topics in Deep Learning – BERKELEY, CA 2019
3. NeurIPS Workshop: Bayesian Nonparametrics – MONTREAL, CA 2018
4. International Conference on Probabilistic Programming – CAMBRIDGE, MA 2018
5. Broad Institute – CAMBRIDGE, MA 2018
6. Probabilistic Programming Industry Meetup – MENLO PARK, CA 2018
7. Facebook AI Research – NEW YORK, NY 2018
8. Uber AI Labs – SAN FRANCISCO, CA 2018
9. Google Research – MOUNTAIN VIEW, CA 2018
10. POPL Workshop: Probabilistic Programming Languages, Semantics, and Systems – LOS ANGELES, CA 2018
11. NIPS Workshop: Bayesian Deep Learning – LONG BEACH, CA 2017
12. NIPS Workshop: Deep Learning for Physical Sciences – LONG BEACH, CA 2017
13. NIPS Workshop: Highlights, Learn How to Code a Paper with State of the Art Frameworks – LONG BEACH, CA 2017
14. Snap – VENICE, CA 2017
15. IROS Workshop: Machine Learning Methods for High-Level Cognitive Capabilities in Robotics – VANCOUVER, CA 2017
16. Workshop on Deep Probabilistic Models – CAMBRIDGE, UK 2017
17. Gaussian Process Summer School – SHEFFIELD, UK 2017

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