

## Ryan J. Giordano

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EDUCATION	<b>Massachusetts Institute of Technology</b> , Cambridge, MA USA <i>Department of EECS, Computer Science &amp; Artificial Intelligence Lab</i> Postdoctoral Research Fellow. Advisor: Tamara Broderick	2019–
	<b>University of California</b> , Berkeley, CA USA Ph.D., Statistics. Advisors: Michael I. Jordan, Jon McAuliffe, Tamara Broderick	2013–2019
	<b>London School of Economics</b> , London, UK MSc. with distinction, Econometrics.	2007–2009
	<b>University of Illinois</b> , Urbana-Champaign, IL, USA BA., Mathematics. BS., Theoretical and Applied Mechanics.	1997–2002 1997–2002
PROFESSIONAL EXPERIENCE	<b>Google Inc.</b> , Mountain View, CA USA Senior Engineer, Quantitative Analysis	2009–2013
	<b>Macquarie Group</b> , London, UK Risk Management Intern	2008
	<b>LSE Financial Markets Group</b> , London, UK Research Intern	2007
	<b>United States Peace Corps</b> , Kokshetau, KZ Successful completion of service as an education volunteer.	2004–2006
	<b>Hewlett-Packard</b> , Boise, ID Lifetest Coordinator and Reliability Engineer.	2002–2004
HONORS AND AWARDS	Hariri Institute Junior Faculty Fellow, Boston University (2020–2023) Data Science Faculty Fellow, Boston University (2020–) Bayes Comp travel award (2020) ISBA@NeurIPS travel award (2016) DoD National Defense Science and Engineering Graduate Fellowship (2013–2015) NSF Graduate Research Fellowship (2013) ( <i>declined for DoD NDSEG</i> ) Hertz Fellowship Finalist (2013) Summa Cum Laude, Columbia University (2012) Phi Beta Kappa (2011) Rabi Scholar, Columbia College (2008–2012) Intel Science Talent Search Finalist (2008)	
PREPRINTS	• T. D. Nguyen, <b>R. J. Giordano</b> , L. Masoero, L. Mackey & T. Broderick (2020). Independent finite approximations for Bayesian nonparametric inference: construction, error bounds, and practical implications. <i>arXiv:2009.10780 [stat.ME]</i> . [pdf]	

- W. J. Bradshaw, E. C. Alley, **R. J. Giordano**, A. L. Lloyd & K. M. Esvelt (2020). Bidirectional contact tracing dramatically improves COVID-19 control. *medRxiv 2020.05.06.20093369*. [pdf]
- **R. J. Giordano** & Jeffrey W. Miller (2020). Robust and Reproducible Model Selection Using Bagged Posteriors. *arXiv:2007.14845 [stat.ME]*. [pdf]
- **R. J. Giordano** & Jeffrey W. Miller (2019). Robust Inference and Model Criticism Using Bagged Posteriors. *arXiv:1912.07104 [stat.ME]*. [pdf]
- M. Shiffman, W. Stephenson, G. Schiebinger, **R. J. Giordano**, T. C. Campbell, A. Regev & T. Broderick (2018). Reconstructing probabilistic trees of cellular differentiation from single-cell RNA-seq data. *arXiv:1811.11790 [q-bio.QM]*. [pdf]

## PUBLICATIONS

20. A. K. Dhaka, A. Catalina, M. R. Andersen, M. Magnusson, **R. J. Giordano**, A. Vehtari (2020). Robust, Accurate Stochastic Optimization for Variational Inference In *Proc. of the 34th Annual Conference on Neural Information Processing Systems (NeurIPS)*. [pdf]
19. **R. J. Giordano**, M. Kasprzak, T. C. Campbell & T. Broderick (2020). Practical posterior error bounds from variational objectives. In *Proc. of the 22nd International Conference on Artificial Intelligence and Statistics (AISTATS)*. [pdf]
18. B. Trippe, **R. J. Giordano**, R. Agrawal & T. Broderick (2019). LR-GLM: High-Dimensional Bayesian Inference Using Low-Rank Data Approximations. In *Proc. of the 36th International Conference on Machine Learning (ICML)*. [pdf]
17. R. Agrawal, **R. J. Giordano**, B. Trippe & T. Broderick (2019). The kernel interaction trick: fast Bayesian discovery of pairwise interactions in high dimensions. In *Proc. of the 36th International Conference on Machine Learning (ICML)*. [pdf]
16. **R. J. Giordano**, T. C. Campbell, M. Kasprzak & T. Broderick (2019). Scalable Gaussian process inference with finite-data mean and variance guarantees. In *Proc. of the 21st International Conference on Artificial Intelligence and Statistics (AISTATS)*. [pdf]
15. R. Agrawal, T. C. Campbell, **R. J. Giordano** & T. Broderick (2019). Data-dependent compression of random features for large-scale kernel approximation. In *Proc. of the 21st International Conference on Artificial Intelligence and Statistics (AISTATS)*. [pdf]
14. T. C. Campbell\*, **R. J. Giordano**\*, J. P. How & T. Broderick (2019). Truncated Random Measures. *Bernoulli* 25(2), 1256–1288. [pdf]
13. **R. J. Giordano**\* & D. M. Roy\* (2019). Sequential Monte Carlo as approximate sampling: bounds, adaptive resampling via  $\infty$ -ESS, and an application to particle Gibbs. *Bernoulli* 25(1), 584–622. [pdf]
12. **R. J. Giordano**\* & L. Mackey\* (2018). Random feature Stein discrepancies. In *Proc. of the 32nd Annual Conference on Neural Information Processing Systems (NeurIPS)*. [pdf]
11. **R. J. Giordano**, R. P. Adams & T. Broderick (2017). PASS-GLM: polynomial approximate sufficient statistics for scalable Bayesian GLM inference. In *Proc. of the 31st Annual Conference on Neural Information Processing Systems (NeurIPS)*. [pdf]  
 ▷ Selected for spotlight presentation (top 22% of accepted papers)
10. **R. J. Giordano**\* & J. Zou\* (2017). Quantifying the Accuracy of Approximate Diffusions and Markov Chains. In *Proc. of the 19th International Conference on Artificial Intelligence and*

*Statistics (AISTATS)*. [pdf]

9. **R. J. Giordano**, T. C. Campbell & T. Broderick (2016). Coresets for Scalable Bayesian Logistic Regression. In *Proc. of the 30th Annual Conference on Neural Information Processing Systems (NeurIPS)*. [pdf]

8. **R. J. Giordano** & J. B. Tenenbaum (2015). Risk and Regret of Hierarchical Bayesian Learners. In *Proc. of the 32nd International Conference on Machine Learning (ICML)*. [pdf]

7. **R. J. Giordano**<sup>\*</sup>, A. Saeedi<sup>\*</sup>, K. Narasimhan<sup>\*</sup> & V. K. Mansinghka (2015). JUMP-Means: Small-Variance Asymptotics for Markov Jump Processes. In *Proc. of the 32nd International Conference on Machine Learning*. [pdf]

6. **R. J. Giordano** & C. Rudin (2014). A statistical learning theory framework for supervised pattern discovery. In *Proc. of SIAM International Conference on Data Mining (SDM)*. [pdf]

5. A. Pakman, **R. J. Giordano**, C. Smith & L. Paninski (2014). Fast state-space methods for inferring dendritic synaptic connectivity. *Journal of Computational Neuroscience* 36(3), 415–443. [pdf]

4. E. Pnevmatikakis, K. Rahnama Rad, **R. J. Giordano** & L. Paninski (2014). Fast low-SNR Kalman filtering and forward-backward smoothing via a low-rank perturbative approach. *Journal of Computational and Graphical Statistics* 23(2), 316–339. [pdf]

3. **R. J. Giordano** & L. Paninski (2012). Optimal experimental design for sampling voltage on dendritic trees in the low-SNR regime. *Journal of Computational Neuroscience* 32(2), 347–66. [pdf]

2. M. Vilain, **R. J. Giordano** & B. Wellner (2009). Sources of performance in CRF transfer training: a business name-tagging case study. In *Proc. of Recent Advances in Natural Language Processing (RANLP)*. [pdf]

1. M. Vilain, **R. J. Giordano** & B. Wellner (2009). A simple feature-copying approach to long-distance dependencies. In *Proc. of the 13th Conference on Computational Natural Language Learning (CONLL)*. [pdf]

<sup>\*</sup> = contributed equally

#### WORKSHOP PAPERS

3. B. Trippe, **R. J. Giordano** & T. Broderick (2018). Fast Bayesian Inference in GLMs with Low Rank Data Approximations. In *Symposium on Advances in Approximate Bayesian Inference*.

2. **R. J. Giordano**, L. Masoero, L. Mackey & T. Broderick (2017). Generic finite approximations for practical Bayesian nonparametrics. In *NeurIPS 2017 Workshop on Advances in Approximate Bayesian Inference*.

1. M. Shiffman, W. Stephenson, G. Schiebinger, T. C. Campbell, **R. J. Giordano**, A. Regev & T. Broderick (2017). Probabilistic reconstruction of cellular differentiation trees from single-cell RNA-seq data. In *NeurIPS 2017 Workshop on Machine Learning in Computational Biology*.

#### MISCELLANEA

3. **R. J. Giordano**, M. Kasprzak, T. C. Campbell & T. Broderick (2018). Practical bounds on the error of Bayesian posterior approximations: A nonasymptotic approach. *arXiv:1809.09505 [stat.TH]*. [pdf]

2. **R. J. Giordano**, A. Saeedi & M. J. Johnson (2014). Detailed Derivations of Small-variance

Asymptotics for some Hierarchical Bayesian Nonparametric Models. *arXiv:1501.00052 [stat.ML]*.  
[pdf]

1. **R. J. Giordano** & F. Wood (2014). Infinite structured hidden semi-Markov models. *arXiv:1407.0044 [stat.ME]*. [pdf]

## INVITED TALKS

### Upcoming

ISBA World Meeting, Kunming, China	July 2021
University of Haifa, Haifa, Israel / Virtual Statistics Seminar	March 2021
SIAM Conference on Computational Science and Engineering (CSE21), Virtual Minisymposium on “Model error in statistical inverse problems”	March 2021
Harvard University, Boston, MA B3D Seminar Series	TBD

### Previous

#### *Using Bagged Posteriors for Robust Inference*

Northeastern University, Boston, MA SPIRAL Seminar Series	February 2020
Oxford University, Oxford, UK Statistics Seminar	October 2019
Bristol University, Bristol, UK Data Science Seminar Statistics Seminar	October 2019
Massachusetts Institute of Technology, Cambridge, MA Doctoral Seminar in Statistics	November 2019
Broad Institute of MIT and Harvard, Cambridge, MA Models, Inference, and Algorithms	December 2019

#### *Scalable, Reliably Accurate Bayesian Inference via Approximate Likelihoods and Random Features*

Google AI, Cambridge, MA	February 2019
Broad Institute of MIT and Harvard, Cambridge, MA	February 2019
Northeastern University, Boston, MA	February 2019
Boston University, Boston, MA	January 2019

#### *Finite-dimensional Approximations of Completely Random Measures*

Stochastic Processes and Applications (SPA), Gothenburg, Sweden	June 2018
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#### *Scaling Bayesian Inference by Constructing Approximating Exponential Families*

Boston Bayesian Meetup, Boston, MA	April 2018
Schlumberger Doll Research, Cambridge, MA	April 2018
Raytheon BBN Technologies, Cambridge, MA	February 2018

## CONTRIBUTED TALKS

### Previous

#### *Using Bagged Posteriors for Robust Inference*

Bayes Comp, Gainesville, FL	January 2020
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	<i>Robustness and scalability of Bayesian nonnegative matrix factorization</i>	
	Joint Statistical Meeting (JSM), Denver, CO	July 2019
	<i>Scaling Bayesian Inference by Constructing Approximating Exponential Families</i>	
	ISBA World Meeting, Edinburgh, Scotland	June 2018
	<i>Truncated Random Measures</i>	
	11th Conference on Bayesian Nonparametrics (BNP11), Paris, France	June 2017
PROFESSIONAL SERVICE	<b>Senior Program Committee</b>	
	• Area Chair, International Conference on Artificial Intelligence and Statistics (AISTATS), 2021	
	• Area Chair, Advances in Neural Information Processing Systems (NeurIPS), 2019	
	• Senior Program Committee, Uncertainty in Artificial Intelligence (UAI), 2019	
	<b>Journal Reviewing</b>	
	• Annals of Statistics	
	• Journal of Machine Learning Research	
	• PLoS One	
	• Technometrics	
	<b>Conference Reviewing</b>	
	• Advances in Neural Information Processing Systems (NeurIPS), 2013–2015, 2016–2018, 2020	
	• International Conference on Machine Learning (ICML), 2015–2016, 2020	
	• International Conference on Artificial Intelligence and Statistics (AISTATS), 2017–2018	
TEACHING	<i>Boston University</i>	
	• Instructor, CAS MA 214 Applied Statistics	Fall 2020
	• Lab Instructor, CAS MA 214 Applied Statistics	Spring 2020
	<i>Massachusetts Institute of Technology</i>	
	• Teaching Assistant, 6.862 Applied Machine Learning (Graduate-level)	2017
	• Guest Lecturer, 6.438 Fundamentals of Probability	2016
	• Teaching Assistant, 6.867 Machine Learning (Graduate-level)	2016
	<i>Columbia University</i>	
	• Teaching Assistant, Data Structures	2011
	• Guest Lecturer, Statistical Analysis of Neural Data (Graduate-level)	2011