Ruqi Zhang

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Current Position

2022–Present **Assistant Professor**, *Department of Computer Science, Purdue University*.

Education

2016–2021 **PhD, Statistics; Special MS, Computer Science**, *Cornell University, Ithaca, NY*.
Advisor: Christopher De Sa, Committee Members: Thorsten Joachims, Giles Hooker

2012–2016 **BS, Mathematics and Applied Mathematics**, *Renmin University of China, Beijing, China*.

Experience

9/2021–8/2022 **Postdoctoral Fellow**.
Institute for Foundations of Machine Learning, The University of Texas at Austin

6/2020–8/2020 **Research Intern**.
Microsoft Research New England

6/2019–8/2019 **Research Intern**.
Microsoft Research Cambridge, UK

Research Interests

I am interested in building scalable, reliable and efficient probabilistic models for machine learning and data science. Currently, I focus on developing fast and robust inference methods with theoretical guarantees and their applications with deep neural networks on real-world big data.

Publications

Calibrating the Rigged Lottery: Making All Tickets Reliable.
International Conference on Learning Representations (ICLR), 2023
Bowen Lei, *Ruqi Zhang*, Dongkuan Xu, Bani K Mallick

Efficient Informed Proposals for Discrete Distributions via Newton's Series Approximation.
International Conference on Artificial Intelligence and Statistics (AISTATS), 2023
Yue Xiang, Dongyao Zhu, Bowen Lei, Dongkuan Xu, *Ruqi Zhang*

Sampling in Constrained Domains with Orthogonal-Space Variational Gradient Descent.
Neural Information Processing Systems (NeurIPS), 2022
Ruqi Zhang, Qiang Liu, Xin T. Tong

A Langevin-like Sampler for Discrete Distributions.
International Conference on Machine Learning (ICML), 2022
Ruqi Zhang, Xingchao Liu, Qiang Liu

Low-Precision Stochastic Gradient Langevin Dynamics.
International Conference on Machine Learning (ICML), 2022
Ruqi Zhang, Andrew Gordon Wilson, Christopher De Sa

Meta-Learning Divergences for Variational Inference.
International Conference on Artificial Intelligence and Statistics (AISTATS), 2021
Ruqi Zhang, Yingzhen Li, Christopher De Sa, Sam Devlin, Cheng Zhang

Asymptotically Optimal Exact Minibatch Metropolis-Hastings.
Neural Information Processing Systems (NeurIPS), 2020
Spotlight, acceptance rate 2.96%
Ruqi Zhang, A. Feder Cooper, Christopher De Sa

AMAGOLD: Amortized Metropolis Adjustment for Efficient Stochastic Gradient MCMC.
International Conference on Artificial Intelligence and Statistics (AISTATS), 2020
Ruqi Zhang, A. Feder Cooper, Christopher De Sa

Cyclical Stochastic Gradient MCMC for Bayesian Deep Learning.
International Conference on Learning Representations (ICLR), 2020
Oral, acceptance rate 1.85%
Ruqi Zhang, Chunyuan Li, Jianyi Zhang, Changyou Chen, Andrew Gordon Wilson

Poisson-Minibatching for Gibbs Sampling with Convergence Rate Guarantees.
Neural Information Processing Systems (NeurIPS), 2019,
Spotlight, acceptance rate 2.43%
Ruqi Zhang, Christopher De Sa

Large Scale Sparse Clustering.
International Joint Conference on Artificial Intelligence (IJCAI), 2016
Ruqi Zhang, Zhiwu Lu

Code Repositories

2020 `https://github.com/ruqizhang/csgmcmc`. PyTorch code for MCMC methods in Bayesian deep learning

2020 `https://github.com/ruqizhang/tunamh`. A library in Julia for minibatch Metropolis-Hastings methods

2020 `https://github.com/ruqizhang/amagold`. PyTorch code for an unbiased stochastic gradient MCMC

2019 `https://github.com/ruqizhang/poisson-gibbs`. Julia code for a minibatch Gibbs sampling method

Talks

Invited talk at Center for Data Science and Machine Learning.
National University of Singapore, October 2022

A Langevin-like Sampler for Discrete Distributions.
Spotlight presentation at ICML, July 2022

Low-Precision Stochastic Gradient Langevin Dynamics.
Spotlight presentation at ICML, July 2022

Scalable and Reliable Inference for Probabilistic Modeling.
Simons Institute, November 2021

Asymptotically Optimal Exact Minibatch Metropolis-Hastings.
Spotlight talk in Rising Stars in Data Science Workshop at University of Chicago, January 2021
Spotlight presentation at NeurIPS, December 2020

Cyclical Stochastic Gradient MCMC for Bayesian Deep Learning.
Oral presentation at ICLR, April 2020

Poisson-Minibatching for Gibbs Sampling with Convergence Rate Guarantees.
Spotlight presentation at NeurIPS, December 2019

Teaching

Purdue Instructor, CS 57800, Statistical Machine Learning, Spring 2023
Instructor, CS 59200, Probabilistic Machine Learning, Fall 2022 (28 students)

Guest Lecturer, CS57100, Artificial Intelligence, Fall 2022

Cornell Head Teaching Assistant, CS 4820, Introduction to Analysis of Algorithms, Spring 2021

Teaching Assistant, ILRST 5050, Statistics at Work, Fall 2018

Teaching Assistant, STSCI 2100, Introductory Statistics, Spring 2018

Teaching Assistant, MATH 3110, Introduction to Analysis, Spring 2017

Teaching Assistant, STSCI 3110, Probability Models and Inference for the Social Sciences, Fall 2016, Fall 2017, Fall 2020

Service

Organizer Symposium on Advances in Approximate Bayesian Inference (AABI)

Reviewer **Journals**

Transactions on Machine Learning Research, Statistics and Computing

Conferences

NeurIPS 2018, 2019, 2020, 2021, 2022; ICML 2019, 2020, 2021 (expert reviewer), 2022; ICLR 2019, 2020, 2021, 2022, 2023; AISTATS 2020, 2021, 2022, 2023; AAAI 2020; UAI 2019; Symposium on Advances in Approximate Bayesian Inference (AABI) 2019, 2020; I Can't Believe It's Not Better@NeurIPS 2020; Neural Compression Workshop@ICLR 2021

Panelist NSF Panelist 2022

Awards

2021 ICML Best Reviewers (Top 10%)

2020 Spotlight Rising Star in Data Science at University of Chicago

2020 NeurIPS Top 10% Reviewers Award

2019 NeurIPS Travel Grant

2013-2015 Academic Outstanding Scholarship, Renmin University of China

2015 Exchange Students Scholarship, University of Helsinki