

## 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– **Postdoctoral Fellow.**

8/2022 Institute for Foundations of Machine Learning, The University of Texas at Austin

6/2020– **Research Intern.**

8/2020 Microsoft Research New England

6/2019– **Research Intern.**

8/2019 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 sampling and probabilistic inference methods with theoretical guarantees and their applications with deep neural networks on real-world big data.

## Publications

### **Rethinking Data Distillation: Do Not Overlook Calibration.**

International Conference on Computer Vision (ICCV), 2023

Dongyao Zhu, Bowen Lei, Jie Zhang, Yanbo Fang, Yiqun Xie, *Ruqi Zhang*, Dongkuan Xu

### **DISCS: A Benchmark for Discrete Sampling.**

ICML Workshop on Sampling and Optimization in Discrete Space (SODS), 2023

Katayoon Goshvadi, Haoran Sun, Xingchao Liu, Azade Nova, *Ruqi Zhang*, Will Grathwohl, Dale Schuurmans, Hanjun Dai

### **Long-tailed Classification from a Bayesian-decision-theory Perspective.**

Symposium on Advances in Approximate Bayesian Inference (AABI), 2023

Bolian Li, *Ruqi Zhang*

### **Analysis of Climate Campaigns on Social Media using Bayesian Model Averaging.**

AAAI/ACM Conference on AI, Ethics, and Society, 2023

**Oral Presentation, top 11%**

Tunazzina Islam, *Ruqi Zhang*, Dan Goldwasser

### **DP-Fast MH: Private, Fast, and Accurate Metropolis-Hastings for Large-Scale Bayesian Inference.**

International Conference on Machine Learning (ICML), 2023

Wanrong Zhang, *Ruqi Zhang*

### **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*

**On Equivalences between Weight and Function-Space Langevin Dynamics.**

ICBINB Workshop @ NeurIPS 2022, 2023

Ziyu Wang, Yuhao Zhou, *Ruqi Zhang*, Jun Zhu

**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 Presentation, top 3%**

*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 Presentation, top 2%**

*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 Presentation, top 2.5%**

*Ruqi Zhang*, Christopher De Sa

**Large Scale Sparse Clustering.**

International Joint Conference on Artificial Intelligence (IJCAI), 2016

*Ruqi Zhang*, Zhiwu Lu

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## 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

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## Talks

**Invited talk at NeurIPS Workshop on Machine Learning with New Compute Paradigms.**

NeurIPS, December 2023

**Invited talk at ICML Workshop on Structured Probabilistic Inference & Generative Modeling.**

ICML, July 2023

**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

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## Teaching

Purdue Instructor, CS 37300, Data Mining And Machine Learning, Spring 2024

Instructor, CS 57800, Statistical Machine Learning, Fall 2023

Instructor, CS 57800, Statistical Machine Learning, Spring 2023 (78 students)

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

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## Service

Organizer 4th and 5th Symposium on Advances in Approximate Bayesian Inference (AABI)

ICML 2023 Workshop on Sampling and Optimization in Discrete Space

ICML 2021, Women in Machine Learning (WiML) Un-Workshop on Safely Navigating Scalability-reliability Trade-offs in ML Methods

Reviewer **Journals**

Transactions on Machine Learning Research

Statistics and Computing

**Conferences**

NeurIPS 2018, 2019, 2020, 2021, 2022, 2023; ICML 2019, 2020, 2021 (expert reviewer), 2022, 2023; 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, 2023

Mentor AISTATS 2022 Submission Mentoring Program  
Department Purdue CS PhD Admission Committee 2023

## Grants and Awards

- 2023 Purdue Ross-Lynn Research Scholar Fund
- 2023 Conference on Uncertainty in Artificial Intelligence (UAI) Top Reviewer
- 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