

# Jiaxin Shi

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## Current Position

2020- Postdoctoral Researcher  
Microsoft Research New England, Cambridge, MA.

## Education

2015-2020 Ph.D., Computer Science & Technology  
Tsinghua University, Beijing. Advisor: [Jun Zhu](#).

2011-2015 B.Eng., Computer Science & Technology  
Tsinghua University, Beijing.

## Experience & Internships

Oct-Dec 2019 Research Intern  
Vector Institute, Toronto, short-term visit hosted by Prof. Roger Grosse.

Jun-Sep 2019 Research Scientist Intern  
DeepMind, London, worked with Dr. Andriy Mnih and Dr. Michalis Titsias.

Jul-Sep 2018 Research Intern  
RIKEN Center for Advanced Intelligence Project, Tokyo, worked with Dr. Emtiyaz Khan.

Nov-Jul 2015 Intern  
Mobvoi Inc., Beijing, worked with Dr. Libin Shen.

Jul-Sep 2014 Undergraduate Research Intern  
Carnegie Mellon University, supervised by Prof. Eric Xing on projects of distributed topic models.

## Honors & Awards

2019 **Best Student Paper Runner-Up Award**, 2nd Symposium on Advances in Approximate Bayesian Inference (AABI), Vancouver, 2019.

2018 **Microsoft Research Asia Fellowship**, 2018.

2018- Travel Award: ICML 2019, NeurIPS 2018, ICLR 2018/2019.

2016 Honorable mention (ranked 1/80), Duke-Tsinghua Machine Learning Summer School.

2015 **Excellent Graduate Award**, Department of Computer Science & Technology, Tsinghua University.

2014 First prize (8 out of 77) of Tsinghua Contribution Award of Laboratory Construction.

2011-2013 Huang-Yicong Couple Scholarship, Tsinghua University.

## Publications

(\*) denotes equal contribution.

### PREPRINTS

Jiaxin Shi, Chang Liu, and Lester Mackey. Sampling with mirrored Stein operators. *arXiv preprint arXiv:2106.12506*, 2021

## CONFERENCE PAPERS

Shengyang Sun, **Jiaxin Shi**, Andrew Gordon Wilson, Roger Grosse. Scalable variational Gaussian processes via harmonic kernel decomposition. To appear in *International Conference on Machine Learning (ICML)*, 2021.

Yuhao Zhou, **Jiaxin Shi**, and Jun Zhu. Nonparametric score estimators. In *International Conference on Machine Learning (ICML)*, pages 11513–11522, 2020.

**Jiaxin Shi**, Michalis K. Titsias, and Andriy Mnih. Sparse orthogonal variational inference for Gaussian processes. *International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2020.

Yang Song\*, Sahaj Garg\*, **Jiaxin Shi**, and Stefano Ermon. Sliced score matching: A scalable approach to density and score estimation. *The 35th Conference on Uncertainty in Artificial Intelligence (UAI)*, 2019.

**Jiaxin Shi**, Mohammad Emtiyaz Khan, and Jun Zhu. Scalable training of inference networks for Gaussian-process models. In *International Conference on Machine Learning (ICML)*, pages 5758–5768, 2019

Shengyang Sun\*, Guodong Zhang\*, **Jiaxin Shi\***, and Roger Grosse. Functional variational Bayesian neural networks. In *International Conference on Learning Representations (ICLR)*, 2019.

Yucen Luo, Tian Tian, **Jiaxin Shi**, Jun Zhu, and Bo Zhang. Semi-crowdsourced clustering with deep generative models. In *Advances in Neural Information Processing Systems (NeurIPS)*, pages 3216–3226, 2018.

**Jiaxin Shi**, Shengyang Sun, and Jun Zhu. A spectral approach to gradient estimation for implicit distributions. *International Conference on Machine Learning (ICML)*, pages 4644–4653, 2018.

Jingwei Zhuo, Chang Liu, **Jiaxin Shi**, Jun Zhu, Ning Chen, and Bo Zhang. Message passing Stein variational gradient descent. In *International Conference on Machine Learning (ICML)*, pages 6013–6022, 2018.

**Jiaxin Shi\***, Shengyang Sun\*, and Jun Zhu. Kernel implicit variational inference. *International Conference on Learning Representations (ICLR)*, 2018.

## WORKSHOP ABSTRACTS

Shengyang Sun\*, **Jiaxin Shi\***, Roger Grosse. Neural networks as inter-domain inducing points. *3rd Symposium on Advances in Approximate Bayesian Inference*, 2020.

**Jiaxin Shi**, Michalis Titsias, and Andriy Mnih. Sparse orthogonal variational inference for Gaussian processes. *2nd Symposium on Advances in Approximate Bayesian Inference*, Vancouver, 2019.

Yuhao Zhou, **Jiaxin Shi**, and Jun Zhu. Spectral estimators for gradient fields of log-densities. *ICML Workshop on Stein’s Method*, Long Beach, CA, 2019.

Shengyang Sun\*, Guodong Zhang\*, **Jiaxin Shi\***, and Roger Grosse. Functional variational Bayesian neural networks. *NeurIPS Bayesian Deep Learning Workshop*, Montréal, 2018.

Yucen Luo, Tian Tian, **Jiaxin Shi**, Jun Zhu, and Bo Zhang. Semi-crowdsourced clustering with deep generative models. *ICML Workshop on Theoretical Foundations and Applications of Deep Generative Models*, Stockholm, 2018.

**Jiaxin Shi\***, Shengyang Sun\*, and Jun Zhu. Implicit variational inference with kernel density ratio fitting. *ICML Workshop on Implicit Models*, Sydney, 2017.

## VISUALIZATION & GRAPHICS

Mengchen Liu, **Jiaxin Shi**, Kelei Cao, Jun Zhu, and Shixia Liu. Analyzing the training processes of deep generative models. *IEEE transactions on visualization and computer graphics*, 24(1):77–87, 2018.

Mengchen Liu, **Jiaxin Shi**, Zhen Li, Chongxuan Li, Jun Zhu, and Shixia Liu. Towards better analysis of deep convolutional neural networks. *IEEE transactions on visualization and computer graphics*, 23(1):91–100, 2017. Most cited paper of TVCG 2017.

Fanglue Zhang, Jue Wang, Eli Shechtman, Ziyue Zhou, **Jiaxin Shi**, and Shimin Hu. Plenopatch: Patch-based plenoptic image manipulation. *IEEE transactions on visualization and computer graphics*, 23(5):1561–1573, 2017.

## Software

I created and lead the development of **ZhuSuan**, a python probabilistic programming library based on Tensorflow:

**Jiaxin Shi**, Jianfei Chen, Jun Zhu, Shengyang Sun, Yucen Luo, Yihong Gu, and Yuhao Zhou. ZhuSuan: A library for Bayesian deep learning. *arXiv preprint arXiv:1709.05870*, 2017.

Github: [github.com/thu-ml/zhusuan](https://github.com/thu-ml/zhusuan)

Documentation: [zhusuan.readthedocs.io](https://zhusuan.readthedocs.io)

## Reviewing Service

Journal of Machine Learning Research (JMLR)

International Conference on Artificial Intelligence and Statistics (AISTATS) 2021

International Conference on Learning Representations (ICLR) 2020, 2021, 2022

Neural Information Processing Systems (NeurIPS) 2019, 2020, 2021

International Conference on Machine Learning (ICML) 2019, 2021

Asian Conference on Machine Learning (ACML) 2019, 2020

Symposium on Advances in Approximate Bayesian Inference (AABI) 2021

## Talks

- Jan 2020 - Microsoft Research New England, Cambridge, MA.
- Dec 2019 - Vector Institute, Toronto.
- Sep 2019 - Deep Learning Group Meeting, DeepMind, London.
- Sep 2019 - School of Mathematics, University of Bristol.
- Jun 2019 - International Conference on Machine Learning (ICML), Long Beach, CA.
- Apr 2019 - RealAI Inc., Beijing.
- Nov 2018 - Symposium on Machine Learning and Applications (MLA), Nanjing University.
- Jul 2018 - International Conference on Machine Learning (ICML), Stockholm.
- Jul 2018 - International Forum on Statistics, Renmin University, Beijing.
- Apr 2018 - Invited lecture, 70240033: Artificial Intelligence, Tsinghua University, Beijing.
- Mar 2018 - GPU Technology Conference, San Jose, CA.

## Teaching

- Spring 2018 Teaching Assistant. 70240413: Statistical Machine Learning, Tsinghua University.
- Jul-Aug 2017 Teaching Assistant. Duke-Tsinghua Machine Learning Summer School 2017.
- Spring 2017 Teaching Assistant. 70240413: Statistical Machine Learning, Tsinghua University.

## Academic Supervision

- 2018- Yuhao Zhou, undergraduate, now PhD in Computer Science, Tsinghua University.