Jiaxin Shi

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Education

2015-present **Ph.D. student**, State Key Lab of Intelligent Technology and Systems, Department of Computer Science & Technology, Tsinghua University. Advisor: Jun Zhu.

2011-2015 **B.Eng.**, Department of Computer Science & Technology, Tsinghua University.

Research Interests

I'm generally interested in probabilistic learning and approximate Bayesian inference, including and not limited to these topics: variational inference, probabilistic kernel methods (e.g., Gaussian processes), spectral methods, generative models, and Bayesian deep learning.

Experience & Internships

Jul-Sep 2018 **Intern**, RIKEN Center for Advanced Intelligence Project, Japan. Worked with Dr. Emtiyaz Khan on Gaussian processes and variational message passing.

Jul-Sep 2014 **Undergraduate Research Intern**, Machine Learning Department, Carnegie Mellon University. Supervised by Prof. Eric Xing on projects of distributed topic models.

Professional Service

I review for Journal of Machine Learning Research (JMLR), NeurIPS 2019, ICML 2019 and ACML 2019.

Honors & Awards

2018 **Microsoft Research Asia Fellowship**, 2018.
2018- Travel Award: NeurIPS 2018, ICLR 2018/2019.
2016 Honorable mention (ranked 1/80), Duke-Tsinghua Machine Learning Summer School 2016.
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 & Working Papers

2017 **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.

Conference Papers

2019 Yang Song*, Sahaj Garg*, **Jiaxin Shi**, and Stefano Ermon. Sliced score matching. To appear in *The 35th Conference on Uncertainty in Artificial Intelligence (UAI)*, 2019.

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)*, 2019.

2018 Shengyang Sun*, Guodong Zhang*, **Jiaxin Shi***, and Roger Grosse. Functional variational Bayesian neural networks. In *International Conference on Learning Representations (ICLR)*, 2019.

2018 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.

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.

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.

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

Workshop Abstracts

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

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, Sweden, 2018.

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

Visualization & Graphics

2018 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.

2017 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.

2016 Fanglue Zhang, Jue Wang, Eli Shechtman, Ziye 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 for Bayesian Deep Learning.

Github: github.com/thu-ml/zhusuan
White paper: ZhuSuan: A Library for Bayesian Deep Learning
Documentation: zhusuan.readthedocs.io

Selected Talks

A Spectral Approach to Gradient Estimation for Implicit Distributions.
Nov 2018 - Symposium on Machine Learning and Applications (MLA), Nanjing University, China.
July 2018 - International Conference on Machine Learning (ICML), Stockholm, Sweden.

An Introduction to Bayesian Deep Learning.
Apr 2018 - Invited lecture, 70240033: Artificial Intelligence, Tsinghua University.

Doing Bayesian Deep Learning with ZhuSuan.

Apr 2019 - RealAI Inc., Beijing, China.

Mar 2018 - GPU Technology Conference, San Jose, US.

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.