

# Jiaming Song

✉ [tsong@cs.stanford.edu](mailto:tsong@cs.stanford.edu)

🌐 [tsong.me](http://tsong.me)

## Education

2016 – **Stanford University**, Palo Alto, CA.  
Ph.D. Program in Computer Science. Advisor: [Stefano Ermon](#).

2012 – 2016 **Tsinghua University (THU)**, Beijing, China.  
B.Eng. in Computer Science and Technology. Graduated with Outstanding Honor (Top 1%).

## Publications

July 2020 **Bridging the Gap Between f-GANs and Wasserstein GANs**  
**Jiaming Song**, Stefano Ermon.  
To appear in *the 37th International Conference on Machine Learning (ICML 2020)*.

July 2020 **Training Deep Energy-Based Models with f-Divergence Minimization**  
Lantao Yu, Yang Song, **Jiaming Song**, Stefano Ermon.  
To appear in *the 37th International Conference on Machine Learning (ICML 2020)*.

July 2020 **Domain Adaptive Imitation Learning**  
Kuno Kim, Yihong Gu, **Jiaming Song**, Shengjia Zhao, Stefano Ermon.  
To appear in *the 37th International Conference on Machine Learning (ICML 2020)*.

October 2019 **Unsupervised Out-of-distribution Detection with Batch Normalization**  
**Jiaming Song**, Yang Song, Stefano Ermon.  
In *arXiv preprint arXiv:1910.09115*.

August 2020 **Robust and On-the-fly Dataset Denoising for Image Classification**  
**Jiaming Song**, Lunjia Hu, Michael Auli, Yann Dauphin, Tengyu Ma.  
To appear in *the 16th European Conference on Computer Vision (ECCV 2020)*.

April 2020 **Understanding the Limitations of Variational Mutual Information Estimators**  
**Jiaming Song**, Stefano Ermon.  
In *the 8th International Conference on Learning Representations (ICLR 2020)*.

April 2020 **A Theory of Usable Information under Computational Constraints**  
Yilun Xu, Shengjia Zhao, **Jiaming Song**, Russell Stewart, Stefano Ermon.  
In *the 8th International Conference on Learning Representations (ICLR 2020)*. Oral presentation..

May 2020 **Gaussianization Flows**  
Chenlin Meng, Yang Song, **Jiaming Song**, Stefano Ermon.  
In *the 23th International Conference on Artificial Intelligence and Statistics (AISTATS 2020)*.

May 2020 **Permutation Invariant Graph Generation via Score-Based Generative Modeling**  
Chenhao Niu, Yang Song, **Jiaming Song**, Shengjia Zhao, Aditya Grover, Stefano Ermon.  
In *the 23th International Conference on Artificial Intelligence and Statistics (AISTATS 2020)*.

December 2019 **Bias Correction of Learned Generative Models using Likelihood-free Importance Weighting**  
Aditya Grover, **Jiaming Song**, Alekh Agarwal, Kenneth Tran, Ashish Kapoor, Eric Horvitz, Stefano Ermon.  
In *the 32nd Neural Information Processing Systems (NeurIPS 2019)*.

- June 2019 **Multi-Agent Adversarial Inverse Reinforcement Learning**  
Lantao Yu, **Jiaming Song**, Stefano Ermon.  
*In the 36th International Conference on Machine Learning (ICML 2019).*
- June 2019 **Calibrated Model-based Reinforcement Learning**  
Ali Malik, Volodymyr Kuleshov, **Jiaming Song**, Danny Nemer, Harlan Seymour, Stefano Ermon.  
*In the 36th International Conference on Machine Learning (ICML 2019).*
- April 2019 **Learning Controllable Fair Representations**  
**Jiaming Song**, Pratyusha Kalluri, Aditya Grover, Shengjia Zhao, Stefano Ermon.  
*In the 22nd International Conference on Artificial Intelligence and Statistics (AISTATS 2019).*  
Abridged in *ICML Workshop on Theoretical Foundations and Applications of Deep Generative Models.*
- January 2019 **InfoVAE: Information Maximizing Variational Autoencoders**  
Shengjia Zhao, **Jiaming Song**, Stefano Ermon.  
*In the 33rd AAAI Conference on Artificial Intelligence (AAAI 2018).*  
Abridged in *ICML Workshop on Theoretical Foundations and Applications of Deep Generative Models.*
- December 2018 **Multi-Agent Generative Adversarial Imitation Learning**  
**Jiaming Song**, Hongyu Ren, Dorsa Sadigh, Stefano Ermon.  
*In the 31th Neural Information Processing Systems (NeurIPS 2018).*  
Abridged in *the 6th International Conference on Learning Representations (ICLR 2018) Workshop Track, 1st Workshop on Goal Specifications for Reinforcement Learning.*
- December 2018 **Bias and Generalization in Deep Generative Models: An Empirical Study**  
Shengjia Zhao\*, Hongyu Ren\*, Arianna Yuan, **Jiaming Song**, Noah Goodman, Stefano Ermon.  
*In the 31th Neural Information Processing Systems (NIPS 2018).*.. Spotlight Presentation.
- August 2018 **Learning with Weak Supervision from Physics and Data-Driven Constraints**  
Hongyu Ren, Russell Stewart, **Jiaming Song**, Volodymyr Kuleshov, Stefano Ermon.  
*In AI Magazine 39(1): 27-38.*
- August 2018 **A Lagrangian Perspective on Latent Variable Generative Models**  
Shengjia Zhao, **Jiaming Song**, Stefano Ermon.  
*In the 2018 Conference on Uncertainty in Artificial Intelligence (UAI 2018).* Oral Presentation.  
Abridged in *2018 Bay Area Machine Learning Symposium, ICML 2018 Workshop on Theoretical Foundations and Applications of Deep Generative Models.*
- July 2018 **Accelerating Natural Gradient with Higher-Order Invariance**  
Yang Song, **Jiaming Song**, Stefano Ermon.  
*In the 35th International Conference on Machine Learning (ICML 2018).*
- July 2018 **Adversarial Constraint Learning for Structured Prediction**  
Hongyu Ren, Russell Stewart, **Jiaming Song**, Volodymyr Kuleshov, Stefano Ermon.  
*In 2018 International Joint Conference on Artificial Intelligence (IJCAI 2018).*  
Abridged in *NIPS Workshop on Learning with Limited Data.*
- December 2017 **A-NICE-MC: Adversarial Training for MCMC**  
**Jiaming Song**, Shengjia Zhao, Stefano Ermon.  
*In the 30th Neural Information Processing Systems (NIPS 2017).*  
Abridged in *ICML 2017 Workshop on Implicit Models.*
- December 2017 **InfoGAIL: Interpretable Imitation Learning from Visual Demonstration**  
Yunzhu Li, **Jiaming Song**, Stefano Ermon.  
*In the 30th Neural Information Processing Systems (NIPS 2017).*
- August 2017 **Learning Hierarchical Features from Generative Models**  
Shengjia Zhao, **Jiaming Song**, Stefano Ermon.  
*In the 34th International Conference on Machine Learning (ICML 2017).*

- June 2016 **Factored Sigmoid Belief Networks for Sequence Learning**  
**Jiaming Song**, Zhe Gan, Lawrence Carin.  
 In *33rd International Conference on Machine Learning (ICML 2016)*.
- June 2015 **Organizational Churn: A Roll of the Dice?**  
 Canyao Liu\*, **Jiaming Song\***, Chuan Yu\*.  
 In *Undergraduate Mathematics and its Applications (UMAP), Issue 36.2*. Invited paper.
- June 2015 **Discriminative Nonparametric Latent Feature Relational Models with Data Augmentation**  
 Bei Chen, Ning Chen, Jun Zhu, **Jiaming Song**, Bo Zhang.  
 In *10th Association for the Advancement of Artificial Intelligence Conference (AAAI 2016)*.

## Workshop Papers and Manuscripts

- July 2018 **Dual Optimization for Latent Variable Generative Models**  
 Shengjia Zhao\*, **Jiaming Song\***, Stefano Ermon.  
 In *ICML 2018 Workshop on Theoretical Foundations and Applications of Deep Generative Models*.
- July 2018 **Markov Chain Monte Carlo for Learning Belief Networks**  
 Laetitia Shao\*, **Jiaming Song\***, Aditya Grover, Stefano Ermon.  
 In *ICML 2018 Workshop on Theoretical Foundations and Applications of Deep Generative Models*.
- December 2017 **Structured Prediction with Adversarial Constraint Learning**  
 Hongyu Ren, Russell Stewart, **Jiaming Song**, Volodymyr Kuleshov, Stefano Ermon.  
 In *NIPS 2017 Workshop on Learning with Limited Data*.
- December 2017 **A Lagrangian Perspective on Latent Variable Generative Modeling**  
 Shengjia Zhao, **Jiaming Song**, Stefano Ermon.  
 In *NIPS 2017 Workshop on Bayesian Deep Learning*.
- December 2017 **An Empirical Study of the Generalization Behavior of Generative Adversarial Networks**  
 Hongyu Ren, Shengjia Zhao, **Jiaming Song**, Lijie Fan, Stefano Ermon.  
 In *NIPS 2017 Workshop on Deep Learning: Bridging Theory and Practice*.
- April 2017 **Generative Adversarial Learning of Markov Chains**  
**Jiaming Song**, Shengjia Zhao, Stefano Ermon.  
 In *the 5th International Conference on Learning Representations (ICLR 2017) Workshop*.
- February 2016 **Max-Margin Nonparametric Latent Feature Relational Models for Link Prediction**  
 Jun Zhu, **Jiaming Song**, Bei Chen.  
 In *arXiv preprint arXiv:1602.07428*.
- February 2017 **Towards Deeper Understanding of Variational Autoencoding Models**  
 Shengjia Zhao, **Jiaming Song**, Stefano Ermon.  
 In *arXiv preprint arXiv:1702.08658*.

## Professional Experiences

- June 2018 - **Research Intern**, Facebook AI Research. Mentors: Michael Auli, Yann Dauphin and Tengyu Ma.  
 Sept 2018 Research on deep learning and optimization.
- June 2017 - **Research Intern**, OpenAI. Mentors: Rocky Duan and John Schulman.  
 Sept 2017 Research on deep reinforcement learning.
- April 2016 - **Detection, Tracking and Reidentification Group**, Megvii Inc. Mentor: Chi Zhang  
 July 2016 Developed a scalable framework to provide distant supervision for unlabeled data, which allows model distillation and merging network structures for different tasks, such as detection and parsing.  
[Megvii Inc.](#) is a leading unicorn start-up in China, with emphasis on machine learning and computer vision.

- July 2015 - **Information Initiative @ Duke (iiD)**, Duke University. Advisor: Prof. [Lawrence Carin](#).
- September 2015 Worked on conditional factored deep generative models using recent Neural Variational Inference methods, which allows for semi-supervised deep learning and sequence generation with side information.
- November 2014 **Statistical AI & Learning (TSAIL) Group**, Tsinghua University. Advisor: Prof. [Jun Zhu](#).
- June 2015 Explored stochastic variational methods for link prediction problems. Proposed an efficient method that would train on a network with over 3 million nodes, a significant improvement over original methods.
- July 2014 - **Visual Computing Group**, Microsoft Research Asia. Advisor: [Jingdong Wang](#).
- October 2014 Implemented a convolutional neural network for multiple label image annotation with [Caffe](#).

---

## Honors and Awards

- June 2018 **Qualcomm Innovation Fellowship (US) Winner**, issued by Qualcomm.  
Safe Multi-Agent Imitation Learning for Self-Driving (top 4.5%)
- June 2016 **Qualcomm Scholarship**, issued by Qualcomm.  
Offered to Tsinghua undergraduates with exceptional research experiences (top 1%).
- June 2015 **Google Excellence Scholarship**, issued by Google.  
This scholarship is offered to Chinese undergraduate and graduate students who possess remarkable academic achievements and project experiences. 58 students are selected nationwide (6 in Tsinghua University).
- April 2015 **Outstanding Winner**, Interdisciplinary Contest in Modeling 2015.  
Highest award (9 out of 2317) of the contest. Published a paper which models organizational churn using Bayesian-inspired methods and network science. See [github.com/jiamings/icm2015](https://github.com/jiamings/icm2015) for more details.
- April 2015 **Third Prize**, 33rd Tsinghua Challenge Cup, issued by Tsinghua University.  
Our project implements fast, scalable video segmentation and classification which utilizes deep activation features. Please see [jiamings.github.io/projects/decaf-video](https://jiamings.github.io/projects/decaf-video) for details.
- October 2014 **Outstanding Undergraduate**, issued by the China Computer Federation (CCF).  
Only 4 students in Tsinghua, and 100 in China are awarded each year.
- May 2014 **Spark Program for Technological Innovation**, Tsinghua University.  
Among top 50/3000 students for achievements in scientific and technological innovations.
- December 2013 **Zhong Shimo Scholarship**, issued by Dept. of Computer Science and Technology.  
Highest scholarship in the CS Department. (top 0.75%)
- July 2011 **Bronze Prize, National Olympiad in Informatics**, issued by China Computer Federation (CCF).

---

## Professional Services and Outreach

### Journal Reviewer

- IEEE Transactions on Pattern Recognition and Machine Intelligence
- Journal of Artificial Intelligence Research
- ACM Transaction on Intelligent Systems and Technology

## Conference Reviewer / Program Committee

- ICML (2019, 2020)
- NeurIPS (2019, 2020)
- ICLR (2018, 2019, 2020)
- COLT (2019)
- UAI (2019, 2020)
- CVPR (2019, 2020)
- ECCV (2020)
- ICCV (2019)
- ACML (2018, 2019)
- WACV (2020)

December 2019 **NeurIPS 2019 Workshop on Information Theory and Machine Learning**, Chair

December 2018 **NeurIPS 2018**, Mentor.

Invited to mentoring breakfast session for researchers of color.

Fall 2017 - Now **Ermon Group Blog**,

Maintaining an academic blog post (<http://ermongroup.github.io/blog/>), with several thousand visitors per month.

April 2018 **Data Learning and Inference 2018**, Organizer

Organizing the Generative Models for Reinforcement Learning workshop.

December 2017 **Women in Machine Learning (WiML) 2017**, Mentor.

Invited to discussion panel on “A-NICE-MC: Adversarial Training for MCMC”.

December 2017 **Global NIPS Paper Implementation Challenge**, Mentor.

Provide guidance to reproduce results in NIPS 2017 papers.

---

## Teaching

Winter 2020 **CS228 (Probabilistic Graphical Models)**, Stanford University

Fall 2018 **CS236 (Deep Generative Models)**, Stanford University

---

## Talks

November 2018 **Deep Generative Models for Imitation Learning and Fairness**, Microsoft Research

November 2018 **Learning Controllable Fair Representations**, Stanford University

March 2018 **A-NICE-MC: Adversarial Training for MCMC**, Stanford University