

Jiashuo Liu

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Education Department of Computer Science and Technology 2020.09 - Present
Tsinghua University, Beijing, China
Ph.D. Candidate, advised by Prof. Peng Cui and Prof. Bo Li
GPA: 3.97/4.0; Rank: 3/129

Department of Computer Science and Technology 2016.08 - 2020.06
Tsinghua University, Beijing, China
Bachelor of Engineering
GPA: 3.81/4.0; Rank: 11/169

Experience Applied Mathematics and Theoretical Physics 2024.06 - 2024.10 (expected)
Cambridge University, Cambridge, UK
Advisor: Prof. Mihaela van der Schaar
Visiting Student Researcher

Management Science and Engineering 2023.10 - 2024.04
Stanford University, California, US
Advisor: Prof. Jose Blanchet
Visiting Student Researcher

Decision, Risk, and Operations division 2023.01 - Present
Columbia Business School, New York, US
Advisor: Prof. Hongseok Namkoong
Visiting Student Researcher (remote)

Invited Talks [T3] Data Heterogeneity Analysis for Out-of-Distribution Generalization
Peng Cui, **Jiashuo Liu**, Bo Li, Renzhe Xu
Tutorial at SIAM International Conference on Data Mining (SDM), 2024

[T2] Modeling & Exploiting Data Heterogeneity under Distribution Shifts
Website: <https://sites.google.com/view/neurips2023-tutorial-datahete>
Video: <https://neurips.cc/virtual/2023/tutorial/73953>
Jiashuo Liu, Tiffany (Tianhui) Cai, Peng Cui, Hongseok Namkoong
Tutorial at Neural Information Processing Systems (NeurIPS), 2023
Highlighted as NeurIPS 2023 Favorite Papers/Presentations by Two Sigma (9/3500+)

[T1] Mining the Data Heterogeneity for Out-of-Distribution Generalization
Jiashuo Liu
NUS-Tsinghua Extreme Search Center (NExT), 2022 (online)

Publications (* indicates equal contribution; † denotes alphabetical order.)

First Author

[10] Stability Evaluation via Distributional Perturbation Analysis
Jose Blanchet, Peng Cui, Jiajin Li, **Jiashuo Liu** (α - β order)
In the International Conference on Machine Learning (ICML), 2024

[9] Geometry-Calibrated DRO: Combating Over-Pessimism with Free Energy Implications

Jiashuo Liu, Jiayun Wu, Tianyu Wang, Hao Zou, Peng Cui

In the International Conference on Machine Learning (ICML), 2024

In NeurIPS Information Processing Systems (NeurIPS), 2023, Workshop on Distribution Shifts.

[8] Enhancing Distributional Stability among Sub-Populations

Jiashuo Liu, Jiayun Wu, Jie Peng, Xiaoyu Wu, Yang Zheng, Bo Li, Peng Cui

In the International Conference on Artificial Intelligence and Statistics (AISTATS), 2024

[7] On the Need for a Language Describing Distribution Shifts: Illustrations on Tabular Datasets

Jiashuo Liu*, Tianyu Wang*, Peng Cui, Hongseok Namkoong

In Neural Information Processing Systems (NeurIPS), 2023, Datasets and Benchmarks Track

Highlighted as NeurIPS 2023 Favorite Papers/Presentations by Two Sigma (9/3500+)

[6] Measure the Predictive Heterogeneity

Jiashuo Liu, Jiayun Wu, Renjie Pi, Renzhe Xu, Xingxuan Zhang, Bo Li, Peng Cui

The 11th International Conference on Learning Representations (ICLR), 2022

[5] Distributionally Robust Learning with Stable Adversarial Training

Jiashuo Liu, Zheyuan Shen, Peng Cui, Linjun Zhou, Kun Kuang, Bo Li

In IEEE Transactions on Knowledge and Data Engineering (TKDE), 2022

[4] Distributionally Robust Optimization with Data Geometry

Jiashuo Liu*, Jiayun Wu*, Bo Li, Peng Cui

In Neural Information Processing Systems (NeurIPS), 2022

[Spotlight, top 3%]

[3] Kernelized Heterogeneous Risk Minimization

Jiashuo Liu*, Zheyuan Hu*, Peng Cui, Bo Li, Zheyuan Shen

In Neural Information Processing Systems (NeurIPS), 2021

[2] Heterogeneous Risk Minimization

Jiashuo Liu, Zheyuan Hu, Peng Cui, Bo Li, Zheyuan Shen

In International Conference on Machine Learning (ICML), 2021

[Short talk, top 21.5%]

[1] Stable Adversarial Learning under Distributional Shifts

Jiashuo Liu, Zheyuan Shen, Peng Cui, Linjun Zhou, Kun Kuang, Bo Li, Yishi Lin

In AAAI Conference on Artificial Intelligence (AAAI), 2021.

Others

[10] Domain-wise Data Acquisition to Improve Performance under Distribution Shift

Yue He, Dongbai Li, Pengfei Tian, Han Yu, **Jiashuo Liu**, Hao Zou, Peng Cui

In the International Conference on Machine Learning (ICML), 2024

[9] Distributionally Generative Augmentation for Fair Facial Attribute Classification

Fengda Zhang, Qianpei He, Kun Kuang, **Jiashuo Liu**, Long Chen, Chao Wu, Jun Xiao, Hanwang Zhang

In the Conference on Computer Vision and Pattern Recognition (CVPR), 2024

[8] Rethinking the Evaluation Protocol of Domain Generalization
Han Yu, Xingxuan Zhang, Renzhe Xu, **Jiashuo Liu**, Yue He, Peng Cui
In the Conference on Computer Vision and Pattern Recognition (CVPR), 2024

[7] Towards Robust Out-of-Distribution Generalization Bounds via Sharpness
Yingtian Zou, Kenji Kawaguchi, Yingnan Liu, **Jiashuo Liu**, Mong-Li Lee, Wynne Hsu
In the International Conference on Learning Representations (ICLR), 2024.
[Spotlight, top 5%]

[6] Offline Policy Evaluation in Large Action Spaces via Outcome-Oriented Action Grouping
Jie Peng, Hao Zou, **Jiashuo Liu**, Shaoming Li, Yibao Jiang, Jian Pei, Peng Cui
The ACM Web Conference (WWW), 2023.

[5] Towards the ultimate PMT waveform analysis for neutrino and dark matter experiments
Dacheng Xu, Benda Xu, Erjin Bao, Yiyang Wu, Aiqiang Zhang, Yuyi Wang, Geliang Zhang, Yu Xu, Ziyi Guo, Jihui Pei, Hanyang Mao, **Jiashuo Liu**, Zhe Wang, Shaomin Chen
In Journal of Instrumentation (JINST), 2022.

[4] Invariant Preference Learning for General Debiasing in Recommendation
Zimu Wang, Yue He, **Jiashuo Liu**, Wenchao Zou, Philip Yu, Peng Cui
In SIGKDD Conference on Knowledge Discovery and Data Mining (KDD), 2022.

[3] Triple Generative Adversarial Networks.
Chongxuan Li, Kun Xu, Jun Zhu, **Jiashuo Liu**, Bo Zhang
In Transactions on Pattern Analysis and Machine Intelligence (TPAMI), 2021.

[2] Signed Graph Neural Network with Latent Groups
Haoxin Liu, Ziwei Zhang, Peng Cui, Yafeng Zhang, Qiang Cui, **Jiashuo Liu**, Wenwu Zhu
In SIGKDD Conference on Knowledge Discovery and Data Mining (KDD), 2021.

[1] Stable Learning via Differentiated Variable Decorrelation
Zheyang Shen, Peng Cui, **Jiashuo Liu**, Tong Zhang, Bo Li, Zhitang Chen
In SIGKDD Conference on Knowledge Discovery and Data Mining (KDD), 2020.

Preprints

(* indicates equal contribution.)

Predictive Heterogeneity: Measures and Applications
Jiashuo Liu, Jiayun Wu, Bo Li, Peng Cui
Revision & Resubmit at JMLR

Towards Out-of-Distribution Generalization: A Survey
Jiashuo Liu*, Zheyang Shen*, Yue He, Xingxuan Zhang, Renzhe Xu, Han Yu, Peng Cui
under review

Distributionally Invariant Learning: Rationalization and Practical Algorithms
Jiashuo Liu, Jiayun Wu, Jie Peng, Zheyang Shen, Bo Li and Peng Cui
under review

Patents

Invariant learning method and device based on heterogeneity hybrid data. Issued

2023

Peng Cui, **Jiashuo Liu**

CN Patent: CN 113205184 B, filed April 28, 2021, and issued January 31, 2023.

Distribution robustness adversarial learning method. Issued 2022

Peng Cui, **Jiashuo Liu**

CN Patent: CN 112085194 B, filed August 30, 2020, and issued December 13, 2022.

Selected Awards

Tsinghua-Huawei Scholarship (first-class)	2023.11
Tsinghua Excellent Comprehensive Scholarship	2022.11
China National Scholarship [top 2%]	2021.10
Tsinghua Excellent Undergraduate	2020.06
Tsinghua TP-Link Scholarship	2019.11
Tsinghua-Toyota Scholarship	2018.11
Tsinghua Excellent Comprehensive Scholarship	2017.11
Tsinghua Second-Class Freshmen Scholarship	2016.08

Services

Reviewer for:

Journal: Operations Research, IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), IEEE Transactions on Knowledge and Data Engineering (TKDE), IEEE Transactions on Multimedia (TMM)

Conference: ICLR: 2024; ICML: 2022, 2023, 2024; NeurIPS: 2023; UAI: 2022,2023,2024; AISTATS: 2021,2023,2024; CVPR: 2022,2023,2024; ECCV: 2024; ICCV: 2023; AAAI: 2022; IJCAI: 2022,2023;

Teaching

Software Engineering TA, instructed by Prof. Xiaoying Bai, Dan Pei, Jianyong Wang
Fall 2019, 2020, 2021, 2022, Spring 2022, 2023

Object-oriented Programming TA, instructed by Prof. Jingtao Fan
Summer 2022

Computer Skills

Languages: C, C++, Python

Mathematical Computation: Matlab, Mosek, Gurobi

Operating Systems: Linux, Mac OSX, Windows.