

Yue Zhao

CONTACT	✉ yue.z@usc.edu	213-821-2369
INFORMATION	GitHub LinkedIn Viterbi Web USC Faculty Directory Google Scholar  22,000+ GitHub Stars	CS Department, GCS Hall Los Angeles, CA United States, 90089 Department of Computer Science University of Southern California Top ~700 Worldwide
RESEARCH SUMMARY	My research builds reliable, safe, and scalable AI . I organize my work into two tiers: (1) advancing the scientific foundations of reliability and safety in modern AI systems, and (2) developing scalable infrastructure and applications that translate these foundations into real-world impact.	

Tier 1: Foundations of Reliable & Safe AI

I study principles that make AI models robust, predictable, and aligned under distribution shift, uncertainty, and adversarial pressures. This tier comprises two complementary directions:

1. Reliable Models (OOD & Anomaly Detection)

Developing algorithms and benchmarks that detect rare, unseen, or abnormal behavior across modalities.

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|--|--|
| <input type="checkbox"/> OOD Generalization | <input type="checkbox"/> Multimodal & Graph Settings |
| <input type="checkbox"/> Anomaly Detection | <input type="checkbox"/> Robust Learning |
| <input type="checkbox"/> Model Selection | <input type="checkbox"/> Data Efficiency |
| <input type="checkbox"/> Benchmarks & Evaluation | |

2. Safety of LLMs & Agents

Understanding and mitigating failure modes in large language models and multi-agent systems.

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|---|---|
| <input type="checkbox"/> LLM Safety & Reliability | <input type="checkbox"/> Privacy & Model Extraction Risks |
| <input type="checkbox"/> Hallucination Mitigation | <input type="checkbox"/> Trust/Stress Evaluation |
| <input type="checkbox"/> Jailbreak Detection | <input type="checkbox"/> Robust Reasoning & Routing |
| <input type="checkbox"/> Multi-agent Reliability | |

Tier 2: Scalable Open Systems & Scientific/Societal Impact

I build open, scalable platforms and apply reliable AI methods to high-impact scientific and societal domains.

3. ML Systems (Infrastructure)

Designing efficient, reproducible, and open-source systems for model training, evaluation, deployment, and workflow automation. Open-source tools include **PyOD** (35M+ downloads) and related libraries with **22K+** GitHub stars.

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|---|--|
| <input type="checkbox"/> Open-source ML Systems | <input type="checkbox"/> Distributed/Agentic Inference |
| <input type="checkbox"/> Scalable AI Infrastructure | <input type="checkbox"/> Reproducibility & Evaluation |
| <input type="checkbox"/> Automated ML Workflows | <input type="checkbox"/> Accessibility & Adoption |

4. AI for Science & Society (Applications)

Leveraging foundation models to advance climate and weather forecasting, healthcare and biomedicine, and political or social decision-making.

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|---|---|
| <input type="checkbox"/> AI for Science | <input type="checkbox"/> Healthcare & Biomedicine |
| <input type="checkbox"/> Scientific Foundation Models | <input type="checkbox"/> Computational Social Systems |
| <input type="checkbox"/> Climate & Weather Modeling | <input type="checkbox"/> Decision Modeling |

FULL-TIME	University of Southern California		
PROFESSIONAL EXPERIENCE	<i>Thomas Lord Department of Computer Science</i> Assistant Professor (Tenure-Track)		Aug. 2023 - Present
	<ul style="list-style-type: none"> • Foundations Of Robust Trustworthy Intelligent Systems (FORTIS) Lab: Link • USC Machine Learning Center (MaSCle): Link 		
	Stealth Startup <i>AI Research & Systems</i>		Mar. 2024 – Present
	External Technical Advisor (Part-Time, Contract-based)		
EDUCATION	PwC Canada <i>Consulting & Deals</i>		
	Senior Consultant (Data Scientist)	Aug. 2017 - Jun. 2019	
	Consultant (Data Scientist)	Feb. 2017 - Jul. 2017	
	Carnegie Mellon University <i>Ph.D. in Information Systems and Management</i>	Pittsburgh, PA	
		Sep. 2019 - May. 2023	
	<ul style="list-style-type: none"> • Affiliation: CMU automated learning systems group (Catalyst) and Data Analytics Techniques Algorithms (DATA) Lab • Advisors and Mentors: CMU: Prof. Leman Akoglu, Prof. Zhihao Jia, and Prof. George Chen. I collaborate with Prof. Jure Leskovec at Stanford, and Prof. Philip S. Yu at UIC. 		
	University of Toronto <i>Master of Science in Computer Science</i>	Toronto, ON	
		Sep. 2015 - Dec. 2016	
	University of Cincinnati <i>Bachelor of Science in Computer Engineering</i> Minor: Computer Science and Mathematics	Cincinnati, OH	
		Sep. 2010 - May. 2015	

 AWARDS, GRANTS, AND FUNDING	As Principal Investigator (August 2023 onwards)		
	Second Prize CCC Award @ IEEE ICDM, BlueSky Track	<i>Recognition</i>	Nov. 2025
	Best Short Paper Award @ ACM SIGSPATIAL	<i>Recognition</i>	Nov. 2025
	NSF POSE I	<i>Funding</i>	Aug. 2025
	Capital One Research Awards	<i>Grant</i>	Oct. 2024
	Amazon Research Awards	<i>Gift</i>	Aug. 2024
	Best Paper Award @ KDD Resource-Efficient Learning Workshop	<i>Recognition</i>	Aug. 2024
	NSF ATD	<i>Funding</i>	Aug. 2024
	NSF POSE II	<i>Funding</i>	Jun. 2024
	Google Cloud Research Innovators	<i>Recognition</i>	Mar. 2024
	AAAI New Faculty Highlights	<i>Recognition</i>	Feb. 2024

Note: Monetary values represent my portion of the funding. Total project budgets may be larger.

Prior to Principal Investigator Role (Before August 2023)

Meta 2022 AI4AI Research Award (student co-PI)	<i>Recognition</i>	Oct. 2022
The Norton Labs Graduate Fellowship	<i>Fellowship</i>	Mar. 2022
CMU Presidential Fellowship	<i>Fellowship</i>	2019
Mitacs-Accelerate Research and Development Funding	<i>Funding</i>	2016-2017
University Global Award and Scholarship	<i>Scholarship</i>	2010-2015
Mantei/Mae Award & Scholar	<i>Award</i>	2012-2015
Engineer of the Month	<i>Recognition</i>	Jun. 2014

Note: Monetary values are omitted for awards and recognitions received prior to PI role.

Preprints & Under Submission

Note: *first authors and [†]corresponding authors if more than one.

88. Jinbo Liu, Defu Cao, Yifei Wei, Tianyao Su, Yuan Liang, Yushun Dong, Yue Zhao, Xiyang Hu
 Topology Matters: Measuring Memory Leakage in Multi-Agent LLMs
Under submission
arXiv preprint arXiv:2512.04668
87. Shawn Li, Ryan Rossi, Sungchul Kim, Sunav Choudhary, Franck Dernoncourt, Puneet Mathur, Zhengzhong Tu, Yue Zhao
 Charts Are Not Images: On the Challenges of Scientific Chart Editing
Under submission
arXiv preprint arXiv:2512.00752
86. Kay Liu, Yuwei Han, Haoyan Xu, Henry Peng Zou, Yue Zhao, Philip S. Yu
 TAGFN: A Text-Attributed Graph Dataset for Fake News Detection in the Age of LLMs
Under submission
arXiv preprint arXiv:2511.21624
85. Haoyan Xu, Ruizhi Qian, Zhengtao Yao, Ziyi Liu, Li Li, Yuqi Li, Yanshu Li, Wenqing Zheng, Daniele Rosa, Daniel Barcklow, Senthil Kumar, Jieyu Zhao, Yue Zhao
 LLM-Powered Text-Attributed Graph Anomaly Detection via Retrieval-Augmented Reasoning
Under submission
arXiv preprint arXiv:2511.17584
84. Haoyan Xu, Ruizhi Qian, Jiate Li, Yushun Dong, Minghao Lin, Hanson Yan, Zhengtao Yao, Qinghua Liu, Junhao Dong, Ruopeng Huang, Yue Zhao[†], Mengyuan Li[†]
 A Systematic Study of Model Extraction Attacks on Graph Foundation Models
Under submission
arXiv preprint arXiv:2511.11912
83. Yuexing Hao, Yue Huang, Haoran Zhang, Chenyang Zhao, Zhenwen Liang, Paul Pu Liang, Yue Zhao, Lichao Sun, Saleh Kalantari, Xiangliang Zhang, Marzyeh Ghassemi
 The Role of Computing Resources in Publishing Foundation Model Research
Under submission
arXiv preprint arXiv:2510.13621
82. Wang Wei, Tianskai Yang, Hongjie Chen, Yue Zhao, Franck Dernoncourt, Ryan A. Rossi, Hoda Eldardiry
 Learning to Route LLMs from Bandit Feedback: One Policy, Many Trade-offs
Under submission
arXiv preprint arXiv:2510.07429
81. Langzhou He, Junyou Zhu, Fangxin Wang, Junhua Liu, Haoyan Xu, Yue Zhao, Philip S. Yu, Qitian Wu
 Can Molecular Foundation Models Know What They Don't Know? A Simple Remedy with Preference Optimization
Under submission
arXiv preprint arXiv:2509.25509
80. Yuehan Qin, Li Li, Defu Cao, Tianskai Yang, Yue Zhao
 M3OOD: Automatic Selection of Multimodal OOD Detectors
Under submission
arXiv preprint arXiv:2508.11936
79. Bolin Shen, Eren Erman Ozguven, Yue Zhao, Guang Wang, Yiqun Xie, Yushun Dong
 Learning from the Storm: A Multivariate Machine Learning Approach to Predicting Hurricane-Induced Economic Losses
Under submission
arXiv preprint arXiv:2506.17964
78. Zixiang Xu, Yanbo Wang, Yue Huang, Jiayi Ye, Haomin Zhuang, Zirui Song, Lang Gao, Chenxi Wang, Zhaorun Chen, Yujun Zhou, Sixian Li, Wang Pan, Yue Zhao, Jieyu Zhao, Xiangliang Zhang, Xiuying Chen
 SocialMaze: A Benchmark for Evaluating Social Reasoning in Large Language Models
Under submission
arXiv preprint arXiv:2505.23713

77. Haoyan Xu, Zhengtao Yao, Xuzhi Zhang, Ziyi Wang, Langzhou He, Yushun Dong, Philip S. Yu, Mengyuan Li, Yue Zhao
GLIP-OOD: Zero-Shot Graph OOD Detection with Foundation Model
Under submission
arXiv preprint arXiv:2504.21186
76. Haoyan Xu, Zhengtao Yao, Ziyi Wang, Zhan Cheng, Xiyang Hu, Mengyuan Li, Yue Zhao
Graph Synthetic Out-of-Distribution Exposure with Large Language Models
Under submission
arXiv preprint arXiv:2504.21198
75. Weidi Luo, Qiming Zhang, Tianyu Lu, Xiaogeng Liu, Yue Zhao, Zhen Xiang, Chaowei Xiao
Doxing via the Lens: Revealing Privacy Leakage in Image Geolocation for Agentic Multi-Modal Large Reasoning Model
Under submission
arXiv preprint arXiv:2504.19373
74. Yuehan Qin, Shawn Li, Yi Nian, Xinyan Velocity Yu, Yue Zhao[†], Xuezhe Ma[†]
Don't Let It Hallucinate: Premise Verification via Retrieval-Augmented Logical Reasoning
Under submission
arXiv preprint arXiv:2504.06438
73. Yiming Tang, Yi Fan, Chenxiao Yu, Tiansai Yang, Yue Zhao, Xiang Hu
StealthRank: LLM Ranking Manipulation via Stealthy Prompt Optimization
Under submission
arXiv preprint arXiv:2504.05804
72. Chengxuan Qian, Shuo Xing, Shawn Li, Yue Zhao, Zhengzhong Tu
DecAlign: Hierarchical Cross-Modal Alignment for Decoupled Multimodal Representation Learning
Under submission
arXiv preprint arXiv:2503.11892
71. Xiongxiao Xu, Haoran Wang, Yueqing Liang, Philip S. Yu, Yue Zhao, Kai Shu
Can Multimodal LLMs Perform Time Series Anomaly Detection?
Under submission
arXiv preprint arXiv:2502.17812
70. Kaixiang Zhao, Lincan Li, Kaize Ding, Neil Zhenqiang Gong, Yue Zhao, Yushun Dong
A Survey of Model Extraction Attacks and Defenses in Distributed Computing Environments
Under submission
arXiv preprint arXiv:2502.16065
69. Yue Huang, Chujie Gao, Siyuan Wu, Haoran Wang, Xiangqi Wang, Yujun Zhou, Yanbo Wang, Jiayi Ye, Jiawen Shi, Qihui Zhang, Yuan Li, Han Bao, Zhaoyi Liu, Tianrui Guan, Dongping Chen, Ruoxi Chen, other authors, Yue Zhao, other authors, Xiangliang Zhang
On the Trustworthiness of Generative Foundation Models: Guideline, Assessment, and Perspective
Under submission
arXiv preprint arXiv:2502.14296
<https://trustgen.github.io/>
68. Shixuan Li, Wei Yang, Peiyu Zhang, Xiongye Xiao, Defu Cao, Yuehan Qin, Xiaole Zhang, Yue Zhao, Paul Bogdan
ClimateLLM: Efficient Weather Forecasting via Frequency-Aware Large Language Models
Under submission
arXiv preprint arXiv:2502.11059
67. Lincan Li, Jiaqi Li, Catherine Chen[†], Fred Gui[†], other collaborators, Yue Zhao[†], Yushun Dong[†]
Political-LLM: Large Language Models in Political Science
Under submission
arXiv preprint arXiv:2412.06864
66. Chenxiao Yu, Jinyi Ye, Yuangang Li, Zhaotian Weng, Zheng Li, Emilio Ferrara, Xiyang Hu[†], Yue Zhao[†]
A Large-Scale Simulation on Large Language Models for Decision-Making in Political Science
Under submission
arXiv preprint arXiv:2412.15291
65. Junda Wu, Hanjia Lyu, Yu Xia, Zhehao Zhang, Joe Barrow, Ishita Kumar, Mehnoosh Mirtahebi, Hongjie Chen, Ryan A. Rossi, Franck Dernoncourt, Tong Yu, Ruiyi Zhang, Jiuxiang Gu, Nesreen K.

Ahmed, Yu Wang, Xiang Chen, Hanieh Deilamsalehy, Namyong Park, Sungchul Kim, Huanrui Yang, Subrata Mitra, Zhengmian Hu, Nedim Lipka, Yue Zhao, Jiebo Luo, Julian McAuley
Personalized Multimodal Large Language Models: A Survey
Under submission
arXiv preprint arXiv:2412.02142

64. Han Bao, Yue Huang, Yanbo Wang, Jiayi Ye, Xiangqi Wang, Xiuying Chen, Yue Zhao, Tianyi Zhou, Mohamed Elhoseiny, Xiangliang Zhang
AutoDavis: Automatic and Dynamic Evaluation Protocol of Large Vision-Language Models on Visual Question-Answering?
ICML 2025 DataWorld Workshop
arXiv preprint arXiv:2410.21259

Peer-reviewed Journal Papers

63. Haoyan Xu, Kay Liu, Zhengtao Yao, Philip S. Yu, Kaize Ding[†], Yue Zhao[†]
LEGO-Learn: Label-Efficient Graph Open-Set Learning
Transactions on Machine Learning Research (TMLR), 2025
62. Hao Dong, Gaetan Frusque, Yue Zhao, Eleni Chatzi, Olga Fink
NNG-Mix: Improving Semi-supervised Anomaly Detection with Pseudo-anomaly Generation
IEEE Transactions on Neural Networks and Learning Systems (TNNLS), 2024
61. Ling Yang*, Zhilong Zhang*, Yang Song, Shenda Hong, Runsheng Xu, Yue Zhao, Wentao Zhang, Bin Cui, Ming-Hsuan Yang
Diffusion Models: A Comprehensive Survey of Methods and Applications
ACM Computing Surveys (CSUR), 2023
(*equal contribution)
60. Yue Zhao*, Martin Q. Ma*, Xiaorong Zhang, Leman Akoglu
The Need for Unsupervised Outlier Model Selection: A Review and Evaluation of Internal Evaluation Strategies
ACM SIGKDD Explorations Newsletter (SIGKDD Explor.), 2023
(*equal contribution)
59. Kexin Huang*, Tianfan Fu*, Wenhao Gao*, Yue Zhao, Yusuf Roohani, Jure Leskovec, Connor W. Coley, Cao Xiao, Jimeng Sun, Marinka Zitnik
Artificial Intelligence Foundation for Therapeutic Science
Nature Chemical Biology (NCHEMB), 2022
(*equal contribution)
58. Yue Zhao*, Zheng Li*, Xiyang Hu, Nicola Botta, Cezar Ionescu, George H. Chen
ECOD: Unsupervised Outlier Detection Using Empirical Cumulative Distribution Functions
IEEE Transactions on Knowledge and Data Engineering (TKDE), 2022.
(*equal contribution)
57. Yue Zhao, Zain Nasrullah, Zheng Li
PyOD: A Python Toolbox for Scalable Outlier Detection
Journal of Machine Learning Research (JMLR), 2019.

Conference & Workshop Papers

56. Ojas Nimase, Yue Zhao, Yushun Dong
Navigating Between Explainability and Extractability in Machine Learning as a Service
IEEE International Conference on Data Mining (ICDM) BlueSky Track,  Second Prize CCC Award, 2025.
55. Yuangang Li, Yiqing Shen, Yi Nian, Jiechao Gao, Ziyi Wang, Chenxiao Yu, Shawn Li, Jie Wang, Xiyang Hu, Yue Zhao
Mitigating Hallucinations in Large Language Models via Causal Reasoning
Thirty-Seventh AAAI Conference on Artificial Intelligence (AAAI), 2026
54. Tiansai Yang, Junjun Liu, Wingchun Siu, Jiahang Wang, Zhuangzhuang Qian, Chanjuan Song, Cheng Cheng, Xiyang Hu, Yue Zhao

- AD-AGENT: A Multi-agent Framework for End-to-end Anomaly Detection
Findings of the Association for Computational Linguistics: IJCNLP-AACL, 2025.
53. Ruosi Shao, Md Shamim Seraj, Kangyi Zhao, Yingtao Luo, Lincan Li, Bolin Shen, Averi Bates, Yue Zhao, Chongle Pan, Lisa Hightow-Weidman, Shayok Chakraborty, Yushun Dong
 LLM-Empowered Patient-Provider Communication: A Data-Centric Survey From a Clinical Perspective
Findings of the Association for Computational Linguistics: IJCNLP-AACL, 2025.
52. Li Li, Peilin Cai, Ryan A. Rossi, Franck Dernoncourt, Branislav Kveton, Junda Wu, Tong Yu, Lixin Song, Tiankai Yang, Yuehan Qin, Nesreen K. Ahmed, Samyadeep Basu, Subhojoyoti Mukherjee, Ruiyi Zhang, Yuxiao Zhou, Zichao Wang, Yue Huang, Yu Wang, Xiangliang Zhang, Philip S. Yu, Xiyang Hu, Yue Zhao
 A Personalized Conversational Benchmark: Towards Simulating Personalized Conversations
NeurIPS Workshop on Multi-Turn Interactions in Large Language Models (MTI-LLM), Spotlight, 2025.
 arXiv preprint arXiv:2505.14106
51. Yanbo Wang, Zixiang Xu, Yue Huang, Xiangqi Wang, Zirui Song, Lang Gao, Chenxi Wang, Xiangru Tang, Yue Zhao, Arman Cohan, Xiangliang Zhang, Xiuying Chen
 DyFlow: Dynamic Workflow Framework for Agentic Reasoning
Advances in Neural Information Processing Systems (NeurIPS), 2025
50. Shawn Li, Jiashu Qu, Yuxiao Zhou, Yuehan Qin, Tiankai Yang, Yue Zhao
 Treble Counterfactual VLMs: A Causal Approach to Hallucination
Findings of the Association for Computational Linguistics: EMNLP, 2025.
49. Yuangang Li, Jiaqi Li, Zhuo Xiao, Tiankai Yang, Yi Nian, Xiyang Hu, Yue Zhao
 NLP-ADBench: NLP Anomaly Detection Benchmark
Findings of the Association for Computational Linguistics: EMNLP, 2025.
48. Lincan Li, Eren Erman Ozguven, Yue Zhao, Guang Wang, Yiqun Xie, Yushun Dong
 TyphoonFormer: Language-Augmented Transformer for Accurate Typhoon Track Forecasting
ACM International Conference on Advances in Geographic Information Systems (SIGSPATIAL), Best Short Paper Award, 2025.
47. Yi Nian*, Shenzhe Zhu*, Yuehan Qin, Shawn Li, Ziyi Wang, Chaowei Xiao, Yue Zhao
 JailDAM: Jailbreak Detection with Adaptive Memory for Vision-Language Model
Conference on Language Modeling (COLM), 2025.
46. Shawn Li, Peilin Cai, Yuxiao Zhou, Zhiyu Ni, Renjie Liang, You Qin, Yi Nian, Zhengzhong Tu, Xiyang Hu, Yue Zhao
 Secure On-Device Video OOD Detection Without Backpropagation
International Conference on Computer Vision (ICCV), 2025.
45. Zerui Xu, Fang Wu, Yue Zhao
 Retrieval-Reasoning Large Language Model-based Synthetic Clinical Trial Generation
ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD Workshop on AI Agent for Information Retrieval), 2025.
ACM Conference on Bioinformatics, Computational Biology, and Health Informatics (ACM BCB), 2025.
44. Haoyan Xu*, Zhengtao Yao*, Yushun Dong, Ziyi Wang, Ryan A. Rossi, Mengyuan Li, Yue Zhao
 Few-Shot Graph Out-of-Distribution Detection with LLMs
European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML PKDD), 2025.
43. Tiankai Yang*, Yi Nian*, Shawn Li, Ruiyao Xu, Yuangang Li, Jiaqi Li, Xiyang Hu, Ryan Rossi, Kaize Ding, Xia Hu, Yue Zhao
 AD-LLM: Benchmarking Large Language Models for Anomaly Detection
Findings of the Association for Computational Linguistics (ACL Findings), 2025.
42. Yu Xia, Subhojoyoti Mukherjee, Zhouhang Xie, Junda Wu, Xintong Li, Ryan Aponte, Hanjia Lyu, Joe Barrow, Hongjie Chen, Franck Dernoncourt, Branislav Kveton, Tong Yu, Ruiyi Zhang, Jiuxiang Gu, Nesreen K. Ahmed, Yu Wang, Xiang Chen, Hanieh Deilamsalehy, Sungchul Kim, Zhengmian Hu, Yue Zhao, Nedim Lipka, Seunghyun Yoon, Ting-Hao Kenneth Huang, Zichao Wang, Puneet Mathur, Soumyabrata Pal, Koyel Mukherjee, Zhehao Zhang, Namyong Park, Thien Huu Nguyen, Jiebo Luo, Ryan A. Rossi, Julian McAuley
 From Selection to Generation: A Survey of LLM-based Active Learning
Annual Meeting of the Association for Computational Linguistics (ACL), 2025.

41. Kaixiang Zhao, Lincan Li, Kaize Ding, Neil Zhenqiang Gong, Yue Zhao, Yushun Dong
A Survey on Model Extraction Attacks and Defenses for Large Language Models
ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD Lecture-Style Tutorial Track), 2025.
40. Shawn Li, Huixian Gong, Hao Dong, Tiansai Yang, Zhengzhong Tu, Yue Zhao
DPU: Dynamic Prototype Updating for Multimodal Out-of-Distribution Detection
Conference on Computer Vision and Pattern Recognition (CVPR), **Highlight**, 2025
39. Hanhui Wang, Yihua Zhang, Ruizheng Bai, Yue Zhao, Sijia Liu, Zhengzhong Tu
Edit Away and My Face Will Not Stay: Personal Biometric Defense against Malicious Generative Editing
Conference on Computer Vision and Pattern Recognition (CVPR), 2025
38. Yanbo Wang, Jiayi Ye, Siyuan Wu, Chujie Gao, Yue Huang, Xiuying Chen, Yue Zhao, Xiangliang Zhang
TRUSTEVAL: A Dynamic Evaluation Toolkit on Trustworthiness of Generative Foundation Models
Annual Conference of the North American Chapter of the Association for Computational Linguistics (NAACL Demo Track), 2025.
37. Yuehan Qin*, Yichi Zhang*, Yi Nian*, Xueying Ding, Yue Zhao
MetaOOD: Meta-learning for Automatic Out-of-Distribution Detection Model Selection
International Conference on Learning Representations (ICLR), 2025
ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD Workshop on Resource-Efficient Learning for Knowledge Discovery), **Best Paper Award**, 2024.
36. Sihan Chen, Zhuangzhuang Qian, Wingchun Siu, Xingcan Hu, Jiaqi Li, Shawn Li, Yuehan Qin, Tiankai Yang, Zhuo Xiao, Wanghao Ye, Yichi Zhang, Yushun Dong, Yue Zhao
PyOD 2: A Python Library for Outlier Detection with LLM-powered Model Selection
International World Wide Web Conference (The Web Conference Demo Track), 2025
35. Sizhe Liu, Yizhou Lu, Siyu Chen, Xiyang Hu, Tianfan Fu, Yue Zhao
DrugAgent: Automating AI-aided Drug Discovery Programming through LLM Multi-Agent Collaboration
AAAI Workshop on Foundation Models for Biological Discoveries (FMs4Bio), 2025.
34. Hao Dong, Yue Zhao, Eleni Chatzi, Olga Fink
MultiOOD: Scaling Out-of-Distribution Detection for Multiple Modalities
Advances in Neural Information Processing Systems (NeurIPS), **Spotlight**, 2024
33. Xueying Ding, Yue Zhao, Leman Akoglu
Fast Unsupervised Deep Outlier Model Selection with Hypernetworks
ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD), 2024
32. Lichao Sun, Yue Huang, Haoran Wang, Siyuan Wu, Qihui Zhang, Chujie Gao, Yixin Huang, Wenhan Lyu, Yixuan Zhang, Xiner Li, Zhengliang Liu, Yixin Liu, Yijue Wang, Zhikun Zhang, 50+ collaborative authors, Yue Zhao
TrustLLM: Trustworthiness in Large Language Models
International Conference on Machine Learning (ICML), 2024
31. Songtao Liu, Hanjun Dai, Yue Zhao, Peng Liu
Preference Optimization for Molecule Synthesis with Conditional Residual Energy-based Models
International Conference on Machine Learning (ICML), **Oral**, 2024
30. Yue Zhao, Leman Akoglu
Hyperparameter Optimization for Unsupervised Outlier Detection
International Conference on Automated Machine Learning (AutoML), 2024
29. Yue Zhao
Towards Reproducible, Automated, and Scalable Anomaly Detection
AAAI Conference on Artificial Intelligence (AAAI), *New Faculty Highlights*, 2024
28. Minqi Jiang*, Chaochuan Hou*, Ao Zheng*, Songqiao Han, Hailiang Huang[†], Qingsong Wen, Xiyang Hu[†], Yue Zhao[†]
ADGym: Design Choices for Deep Anomaly Detection.
Advances in Neural Information Processing Systems (NeurIPS), 2023
([†]Corresponding author)
27. Jaemin Yoo, Yue Zhao, Lingxiao Zhao, Leman Akoglu
DSV: An Alignment Validation Loss for Self-supervised Outlier Model Selection
European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML/PKDD), 2023

26. Peng Xu, Lin Zhang, Xuanzhou Liu, Jiaqi Sun, Yue Zhao, Haiqin Yang, Bei Yu
Do Not Train It: A Linear Neural Architecture Search of Graph Neural Networks
International Conference on Machine Learning (ICML), 2023
25. Yue Zhao, Guoqing Zheng, Subhabrata Mukherjee, Robert McCann, Ahmed Awadallah
ADMoE: Anomaly Detection with Mixture-of-Experts from Noisy Labels
Thirty-Seventh AAAI Conference on Artificial Intelligence (AAAI), 2023
24. Yue Zhao, George H. Chen, Zhihao Jia
TOD: GPU-accelerated Outlier Detection via Tensor Operations
International Conference on Very Large Data Bases (VLDB), 2023
23. Songqiao Han*, Xiyang Hu*, Hailiang Huang*, Minqi Jiang*, Yue Zhao*
ADBench: Anomaly Detection Benchmark
Advances in Neural Information Processing Systems (NeurIPS), 2022
(*equal contribution & the corresponding author)
22. Yue Zhao*, Kay Liu*, Yingtong Dou*, et al.
Benchmarking Node Outlier Detection on Graphs
Advances in Neural Information Processing Systems (NeurIPS), 2022
(*equal contribution)
21. Yue Zhao, Xiaorong Zhang, Leman Akoglu
ELECT: Toward Unsupervised Outlier Model Selection
IEEE International Conference on Data Mining (ICDM), 2022.
20. Zhiming Xu, Xiao Huang, Yue Zhao, Yushun Dong, Jundong Li
Contrastive Attributed Network Anomaly Detection with Data Augmentation
Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD), 2022.
19. Yue Zhao, Ryan A. Rossi, Leman Akoglu
Automatic Unsupervised Outlier Model Selection
Advances in Neural Information Processing Systems (NeurIPS), 2021.
18. Kwei-Herng Lai, Daochen Zha, Junjie Xu, Yue Zhao, Guanchu Wang, Xia Hu
Revisiting Time Series Outlier Detection: Definitions and Benchmarks
Advances in Neural Information Processing Systems (NeurIPS), 2021
17. Kexin Huang*, Tianfan Fu*, Wenhao Gao*, Yue Zhao, Yusuf Roohani, Jure Leskovec, Connor W. Cooley, Cao Xiao, Jimeng Sun, Marinka Zitnik
Therapeutics Data Commons: Machine Learning Datasets and Tasks for Drug Discovery and Development
Advances in Neural Information Processing Systems (NeurIPS), 2021
(*equal contribution)
16. Yue Zhao*, Xiyang Hu*, Cheng Cheng, Cong Wang, Changlin Wan, Wen Wang, Jianing Yang, Haoping Bai, Zheng Li, Cao Xiao, Yunlong Wang, Zhi Qiao, Jimeng Sun, Leman Akoglu
SUOD: Accelerating Large-scale Unsupervised Heterogeneous Outlier Detection
Conference on Machine and Learning Systems (MLSys), 2021. (*equal contribution)
15. Kwei-Herng Lai*, Daochen Zha*, Guanchu Wang, Junjie Xu, Yue Zhao, Devesh Kumar, Yile Chen, Purav Zumkhawaka, Minyang Wan, Diego Martinez and Xia Ben Hu
TODS: An Automated Time Series Outlier Detection System (Demo paper)
Thirty-Fifth AAAI Conference on Artificial Intelligence (AAAI), 2021.
(*equal contribution)
14. Meng-Chieh Lee, Yue Zhao, Aluna Wang, Pierre Jinghong Liang, Leman Akoglu, Vincent S. Tseng, Christos Faloutsos
AutoAudit: Mining Accounting and Time-Evolving Graphs
IEEE International Conference on Big Data (Big Data), 2020
13. Changlin Wan, Dongya Jia, Yue Zhao, Wennan Chang, Sha Cao, Xiao Wang, and Chi Zhang
A Data Denoising Approach to Optimize Functional Clustering of Single Cell RNA-sequencing Data
IEEE International Conference on Bioinformatics and Biomedicine (BIBM), 2020
12. Yue Zhao, Xueying Ding, Jianing Yang, Haoping Bai.
SUOD: Toward Scalable Unsupervised Outlier Detection
Workshops at the Thirty-Fourth AAAI Conference on Artificial Intelligence, 2020.
Extended version published in *MLSys 2021*.

11. Zheng Li, Yue Zhao, Nicola Botta, Cezar Ionescu, Xiyang Hu
COPOD: Copula-Based Outlier Detection
IEEE International Conference on Data Mining (ICDM), 2020.
10. Zheng Li, Yue Zhao, Jialin Fu
SYNC: A Copula based Framework for Generating Synthetic Data from Aggregated Sources
IEEE International Conference on Data Mining Workshops (ICDMW), 2020.
9. Yiqun Mei, Yue Zhao, Wei Liang
DSR: An Accurate Single Image Super Resolution Approach for Various Degradations
IEEE International Conference on Multimedia and Expo (ICME), 2020, London, UK.
8. Yue Zhao, Xuejian Wang*, Cheng Cheng*, Xueying Ding*
Combining Machine Learning Models and Scores using combo Library (Demo paper)
Thirty-Fourth AAAI Conference on Artificial Intelligence (AAAI), 2020.
(*equal contribution)
7. Colin Wan, Zheng Li, Alicia Guo, Yue Zhao
SynC: A Unified Framework for Generating Synthetic Population with Gaussian Copula
Workshops at the Thirty-Fourth AAAI Conference on Artificial Intelligence, 2020.
Extended version published in ICDMW 2020.
6. Zain Nasrullah, Yue Zhao
Music Artist Classification with Convolutional Recurrent Neural Networks
IEEE International Joint Conference on Neural Networks (IJCNN), 2019, Hungary.
5. Yue Zhao, Zain Nasrullah, Maciej K. Hryniwicki, Zheng Li
LSCP: Locally Selective Combination in Parallel Outlier Ensembles
SIAM International Conference on Data Mining (SDM), 2019, Calgary, Canada.
4. Yue Zhao, Maciej K. Hryniwicki
DCSO: Dynamic Combination of Detector Scores for Outlier Ensembles
ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD Workshop on Outlier Detection De-constructed), 2018, London, UK.
Extended version published in SDM 2019, renamed to LSCP.
3. Yue Zhao, Maciej K. Hryniwicki
XGBOD: Improving Supervised Outlier Detection with Unsupervised Representation Learning
IEEE International Joint Conference on Neural Networks (IJCNN), 2018, Rio, Brazil.
2. Yue Zhao, Maciej K. Hryniwicki, Francesca Cheng, Boyang Fu, Xiaoyu Zhu
Employee Turnover Prediction with Machine Learning: A Reliable Approach
Intelligent System Conference (Intellisys), 2018, London, UK.
1. Yue Zhao*, Zhongtian Qiu*, Yiqing Yang*, Weiwei Li*, Mingming Fan
An Empirical Study of Touch-based Authentication Methods on Smartwatches
ACM International Symposium on Wearable Computers (ISWC), 2017, Maui, USA. (*equal contribution)

INTERNSHIP EXPERIENCE	NortonLifeLock Research Group Machine Learning Research Intern	2022
	Microsoft Research Machine Learning Research Intern	2022
	Stanford University, Computer Science Department Visiting Student Researcher (Prof. Jure Leskovec)	2021
	IQVIA, Analytics Center of Excellence Machine Learning Research Intern	2020
	Siemens PLM Software USA Software Engineer (Intern & Contract)	Mar. 2012 - Dec. 2014

TEACHING EXPERIENCE	University of Southern California Instructor CSCI 566 Deep Learning and Its Applications Instructor CSCI 699 Adversarial and Trustworthy Foundation Models Instructor CSCI 566 Deep Learning and Its Applications Instructor CSCI 566 Deep Learning and Its Applications	Los Angeles, CA Fall 2026 (scheduled)
		Spring 2026 (scheduled)
		Spring 2025
		Spring 2024
	Carnegie Mellon University Teaching Assistant Managing Digital Business (Prof. David Riel)	Pittsburgh, PA Fall 2022
	Teaching Assistant & co-Instructor (lectures on AutoML and MLSys) Intro to Artificial Intelligence (Prof. David Steier)	Spring 2022 – Fall 2020
	Teaching Assistant Digital Transformation (Prof. David Riel)	Spring 2022
	Teaching Assistant (helping on course topics) Statistics for IT Managers (Prof. Daniel Nagin)	Fall 2021
	University of Toronto Teaching Assistant & Lab Session Instructor Embedded Systems (Prof. Philip Anderson)	Toronto, ON Fall 2015
	University of Cincinnati Teaching Assistant & Lab Session Instructor Intro to Programming (Prof. George Purdy)	Cincinnati, OH Fall 2014

PH.D. STUDENTS

- Haoyan Xu (USC, ECE Ph.D., 2024 Spring-), co-advised by Mengyuan Li,  Capital One Fellowship
- Yuehan Qin (USC, CS Ph.D., 2024 Fall-)
- Tiansai Yang (USC, CS Ph.D., 2024 Fall-)
- Shawn Li (USC, CS Ph.D., 2024 Fall-),  Capital One Fellowship, Amazon ML Fellowship
- Jiate Li (USC, CS Ph.D., 2025 Fall-)

SERVICES **Conference/Workshop Organizing Committee**

- Workflow Co-Chair for KDD 2023
- Co-organizer, AI for Financial Fraud Detection & Prevention Workshop @ 6th ACM International Conference on AI in Finance
- Co-organizer, SURGeLLM: Structured Understanding, Retrieval, and Generation in LLMs era Workshop @ ACL 2026

External Reviewer for Funding Proposals

- Dutch Research Council (NWO)

Journal Editor

- Associate Editor, ACM Transactions on AI for Science (TAIS), 2025–present
- Associate Editor, IEEE Transactions on Neural Networks and Learning Systems (TNNLS), 2024–present
- Action Editor, Journal of Data-centric Machine Learning Research (DMLR), 2024–present

Program Committee (PC) or Area Chair (AC) for Conferences and Workshops

- ICLR 2025 (AC), ICLR 2026 (AC)
- AAAI 2021, 2022, 2023, 2025 (Senior PC), 2026 (Senior PC)
- ICML 2024, 2025 (AC), 2026 (AC)
- NeurIPS 2021, 2022, 2023, 2025 (AC)
- AISTATS 2024, 2025 (AC)
- MLSys 2024, 2026
- KDD 2020, 2021, 2022, 2023
- IJCAI 2022, 2023
- AAAI Demonstrations 2021, 2022
- MICCAI 2020, 2021, 2022
- ICDM 2020
- KDD Workshop on Outlier Detection and Description (ODD), 2021
- KDD Workshop on Anomaly and Novelty Detection (ANDEA), 2021, 2022
- IJCAI Workshop on Artificial Intelligence for Anomalies and Novelties (AI4AN), 2020, 2021
- INFORMS Workshop on Data Science 2021

Journal Reviewer

- Journal of Machine Learning Research (JMLR)
- PNAS Nexus
- Machine Learning
- IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)
- IEEE Transactions on Knowledge and Data Engineering (TKDE)
- IEEE Internet of Things Journal (IoT-J)
- IEEE Intelligent Systems
- IEEE Journal on Selected Areas in Communications (J-SAC)
- Data Mining and Knowledge Discovery (DMAI)
- ACM Transactions on Management Information Systems (TMIS)
- Knowledge and Information Systems (KAIS)
- INFORMS Journal on Computing (IJOC)
- Big Data
- Artificial Intelligence Review (AIRE)
- Neurocomputing
- IEEE Transactions on Systems, Man, and Cybernetics: Systems
- IEEE/ACM Transactions on Computational Biology and Bioinformatics (TCBB)
- IEEE Network Magazine
- IEEE Computational Intelligence Magazine (CIM)
- BioData Mining
- European Journal of Management and Business Economics (EJM&BE)
- The Journal of Open Source Software (JOSS)

TALKS AND LECTURES	USC symposium on Frontiers of ML/AI NUS Tea Talk SFU@NeurIPS'24 KAIST	<i>Towards Robust AI: Advances in Outlier and OOD Detection</i> <i>Towards Robust AI: Advances in Outlier and OOD Detection</i> <i>Towards Robust AI: Advances in Outlier and OOD Detection</i> <i>Unsupervised Model Selection: Automation with Meta-learning and LLMs</i>	Mar. 2025 Jan. 2025 Dec. 2024 Nov. 2024
	Kennesaw State University	<i>Unsupervised Model Selection: Automation with Meta-learning and LLMs</i>	Oct. 2024
	LinkedIn Anti-Abuse AI Amazon Security AI New York University University of Washington Microsoft USC Retreat on AI and Engineering Safety Visa Research	<i>Outlier Detection: Automation, Systems, and GenAI</i> <i>Outlier Detection: Automation, Systems, and GenAI</i> <i>Safety Measures for LLMs</i>	Aug. 2024 Aug. 2024 Aug. 2024 Jun. 2024 Jun. 2024 Apr. 2024
	USC Symposium on Frontiers of Generative AI	<i>Towards Reproducible, Automated, and Scalable AD</i> <i>Generative AI for Anomaly Detection</i>	Apr. 2024 Mar. 2024
	AAAI New Faculty Highlights (invited)	<i>Towards Reproducible, Automated, and Scalable AD</i>	Feb. 2024
	U of Nevada, Las Vegas Samsung Seminar KDD SoCal Day CMU Catalyst KAUST Emory University USC UC Davis Stony Brook University University of Chicago UC Merced CMU PDL Meeting CMU Data Science Seminar LoG Seminar Intuit Rice University Microsoft Research Wells Fargo Columbia University Morgan Stanley Microsoft Research Morgan Stanley Rutgers Business School Tesla Catalyst, CMU E&Y Canada University of Nottingham	<i>Automated and Scalable ML Algorithms and Systems</i> <i>Automated and Scalable Anomaly Detection Systems</i> <i>Enable Applications by ML with Noisy Inputs</i> <i>How (Not) to Fail Your Academic Job Search</i> <i>Automated and Scalable ML Algorithms and Systems</i> <i>Automated and Scalable ML Algorithms and Systems</i> <i>Guest Lecture Automated Anomaly Detection</i> <i>Large-scale Graph Anomaly Detection</i> <i>Anomaly Detection for Financial Risk Modeling</i> <i>Large-scale Anomaly Detection with Automation</i> <i>Weakly-supervised Anomaly Detection</i> <i>Anomaly Detection for Financial Risk Modeling</i> <i>Guest Lecture Anomaly Detection</i> <i>Automated Outlier Detection</i> <i>Automated Outlier Detection</i> <i>Large-scale Anomaly Detection Systems</i> <i>Outlier Model Selection</i> <i>Large-scale Anomaly Detection Systems</i> <i>Systems for Data Mining Algorithms</i> <i>ML applications in Data Analytics</i> <i>General Machine Learning Applications</i>	Oct. 2023 Aug. 2023 Aug. 2023 May. 2023 Apr. 2023 Apr. 2023 Mar. 2023 Mar. 2023 Feb. 2023 Feb. 2023 Feb. 2023 Jan. 2023 Nov. 2022 Oct. 2022 Aug. 2022 Sep. 2022 Sep. 2022 Aug. 2022 Jul. 2022 Jun. 2022 Jun. 2022 Mar. 2022 Feb. 2022 Dec. 2021 Oct. 2021 Jan. 2021