

TIANXIANG ZHAO

Pennsylvania State University, University Park

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EDUCATION

Pennsylvania State University

June 2019 - present

College of Information Science and Technology

Advisor: Suhang Wang, Xiang Zhang

University of Science and Technology of China

Sep 2017 - June 2019

School of the Software

University of Science and Technology of China

Sep 2013 - June 2017

School of the Gifted Young

Bachelor in Computer Science

RESEARCH INTERESTS

My research is fundamentally grounded in landing modern machine learning algorithms, with particular emphasis on

- Imperfect supervision due to crowd-sourced data collection pipeline or intrinsic data biases, including noisy label, imbalance, semi-supervision, etc.,
- Interpretable deep model to increase model transparency, including both ad-hoc and post-hoc explanation strategies.
- Designing more efficient and scalable learning or inference algorithms.

RESEARCH EXPERIENCE

Microsoft Research

May 2023 - Aug 2023

Redmond, US

Research Intern

- Mentor: Tobias Schnabel, Jennifer Neville
- Focusing on the design of a more interpretable recommendation system
- Research interests: Recommendation System, Interpretation

NEC Labs

May 2022 - Aug 2022

Princeton, US

Research Intern in NLP

- Mentor: Wenchao Yu
- Focusing on imitation learning with latent skill discovery.
- Research interests: Reinforcement Learning, Imitation Learning, Positive-unlabeled learning

NEC Labs

May 2021 - Aug 2021

Princeton, US

Research Intern in NLP

- Mentor: Wenchao Yu
- Focusing on interpreting RL agents with causality theory.
- Research interests: Causal Discovery, Reinforcement Learning, Imitation Learning

Tencent AI Lab*Research Intern in NLP*

Jan 2019 - June 2019

Shenzhen, China

- Mentor: Lemao Liu
- Focusing on applying reinforcement learning to machine translation.
- Research interests: Neural Machine Translation, Reinforcement Learning

SenseTime*Research Intern in Computer Vision*

July 2018 - Jan 2019

Beijing, China

- Mentor: Xu Jia, Jing Shao
- Focusing on designing efficient networks to be run on mobile devices.
- Research interests: Domain Adaptation, Knowledge Distillation, Network Architecture

PUBLICATIONS

Accepted:

1. **Tianxiang Zhao**, Wenchao Yu, Suhang Wang, Lu Wang, Xiang Zhang, Yuncong Chen, Yanchi Liu, Wei Cheng, Haifeng Chen. “Interpretable Imitation Learning with Dynamic Causal Relations”. Accepted by WSDM 2024 (Oral).
2. Fali Wang, **Tianxiang Zhao**, Suhang Wang. “Distribution Consistency based Self-Training for Graph Neural Networks with Sparse Labels”. Accepted by WSDM 2024.
3. **Tianxiang Zhao**, Dongsheng Luo, Xiang Zhang, Suhang Wang. “Faithful and Consistent Graph Neural Network Explanations with Rationale Alignment”. Accepted by ACM TIST, 2023.
4. **Tianxiang Zhao**, Wenchao Yu, Suhang Wang, Lu Wang, Xiang Zhang, Yuncong Chen, Yanchi Liu, Wei Cheng, Haifeng Chen “Skill Disentanglement for Imitation Learning from Suboptimal Demonstrations.” Accepted by KDD 2023.
5. Huaisheng Zhu, Xianfeng Tang, **Tianxiang Zhao**, Suhang Wang. “You Need to Look Globally: Discovering Representative Topology Structures to Enhance Graph Neural Network”. Accepted by PAKDD 2023.
6. **Tianxiang Zhao**, Dongsheng Luo, Xiang Zhang, Suhang Wang. “TopoImb: Toward Topology-level Imbalance in Learning from Graphs.” Accepted by LOG 2023.
7. **Tianxiang Zhao**, Dongsheng Luo, Xiang Zhang, Suhang Wang. “Towards Faithful and Consistent Explanations for Graph Neural Networks.” Accepted by WSDM 2023.
8. **Tianxiang Zhao**, Xiang Zhang, Suhang Wang. “Exploring Edge Disentanglement for Node Classification.” Accepted by WebConf 2022 (Previous WWW).
9. Lei Wang, Ee-Peng Lim, Zhiwei Liu, **Tianxiang Zhao**. “Explanation guided contrastive learning for sequential recommendation”. Accepted by CIKM 2022.
10. Yuqing Hu, Xiaoyuan Cheng, Suhang Wang, Jianli Chen, **Tianxiang Zhao**, Enyan Dai. “Times series forecasting for urban building energy consumption based on graph convolutional network”. Accepted by Applied Energy 2022.
11. **Tianxiang Zhao**, Enyan Dai, Kai Shu, Suhang Wang. “Towards Fair Classifiers Without Sensitive Attributes: Exploring Biases in Related Features.” Accepted by WSDM 2022.
12. **Tianxiang Zhao**, Xiang Zhang, Suhang Wang. “GraphSMOTE: Imbalanced Node Classification on Graphs with Graph Neural Networks.” Accepted by WSDM 2021.

13. Xiaoyuan Cheng, Yuqing Hu, Jianxiang Huang, Suhang Wang, **Tianxiang Zhao**, Enyan Dai. "Urban Building Energy Modeling: A Time-Series Building Energy Consumption Use Simulation Prediction Tool Based on Graph Neural Network." In Computing in Civil Engineering 2021.
14. Weijieying Ren, Kunpeng Liu, **Tianxiang Zhao**, Yanjie Fu. "Fair and effective policing for neighborhood safety: understanding and overcoming selection biases". Accepted by Frontiers in big data 2021.
15. **Tianxiang Zhao**, Xianfeng Tang, Xiang Zhang, Suhang Wang. "Semi-Supervised Graph-to-Graph Translation." Accepted by CIKM 2020.
16. **Tianxiang Zhao**, Lemao Liu, Huayang Li, Guoping Huang, Enhong Chen, Guiquan Liu, Shuming Shi. "Balancing Quality and Human Involvement: An Effective Approach to Interactive Neural Machine Translation." Accepted by AAAI 2020.
17. AS Adishesha, **Tianxiang Zhao**. "Emotion Embedded Pose Generation". ECCV 2020 workshop.
18. **Tianxiang Zhao**, Guiquan Liu, Le Wu, Chao Ma, Enhong Chen. "Energy Based Model for Zero Shot Learning." Accepted by ICDM 2018.
19. Xiaoying Ren, Linli Xu, **Tianxiang Zhao**(second student author), Chen Zhu, Junliang Guo, Enhong Chen. "Tracking and Forecasting Dynamics in Crowdfunding: A Basis-Synthesis Approach." Short paper, Accepted by ICDM 2018.

Under Review:

1. Fali Wang, **Tianxiang Zhao**, Suhang Wang. "Distribution Consistency based Self-Training for Graph Neural Networks with Sparse Labels".
2. Enyan Dai, **Tianxiang Zhao**, Huaisheng Zhu, Junjie Xu, Zhimeng Guo, Hui Liu, Jiliang Tang, Suhang Wang. "A Comprehensive Survey on Trustworthy Graph Neural Networks: Privacy, Robustness, Fairness, and Explainability"
3. Weijieying Ren, **Tianxiang Zhao**, Pengyang Wang, Hui Xiong. "Robust Pseudo Labeling and Anti-forgetting With Evolving Shifted Data".
4. **Tianxiang Zhao**, Xiang Zhang, Suhang Wang. "Synthetic over-sampling for imbalanced node classification with graph neural networks". arXiv:2206.05335.

TEACHING EXPERIENCE

IST 261: Application Development Design Fall 2020

- Teaching Assistant
- Instructor: Margaret Fisher

DS 220, Data Management for Data Sciences Fall 2021, Spring 2022, Fall 2022, Spring 2023

- Teaching Assistant
- Instructor: Xiang Zhang

SRA 268: Data Analytics Fall 2023

- Teaching Assistant
- Instructor: Mahir Akgun

MENTORING EXPERIENCE

- Huaisheng Zhu, Graduate student at the Pennsylvania State University 2022-2023
Topic: Message passing on graph-structured data
Publish a first-author paper on PAKDD2023
- Fali Wang, Graduate student at the Pennsylvania State University 2022-Now
Topic: Active learning under distribution shift
Submitted a first-author paper to WSDM24
- Yilong Wang, Graduate student at the Pennsylvania State University 2023-Now
Topic: Unsupervised domain adaptation

SELECTED PROFESSIONAL TALKS

Skill Discovery for Imitating Suboptimal Demonstration	Aug 2023
· Presenting at KDD2023	
Explainability in Graph Neural Networks	March 2023
· Talk at Florida International University	
Towards Faithful and Consistent Explanations	February 2023
· Presenting at WSDM2023	
Unsupervised Edge Disentanglement	February 2022
· Presenting at WebConf 2022	
Imbalanced Node Classification with Graph Neural Networks	February 2021
· Presenting at WSDM2021	

PROFESSIONAL SERVICE

Session Chair

- Scalable, Distributed Systems Trustable AI @KDD2022

Program Committee

- AAAI Conference on Artificial Intelligence (AAAI) 2022-2024
- SIGKDD Conference on Knowledge Discovery and Data Mining (KDD) 2022-2023
- ACM International Conference on Web Search and Data Mining (WSDM) 2022-2024
- SIAM International Conference on Data Mining (SDM) 2024
- International Joint Conferences on Artificial Intelligence (IJCAI) 2023

Journal Reviewer

- ACM Transactions on Knowledge Discovery from Data (TKDD)
- IEEE Transactions on Neural Networks and Learning Systems (TNNLS)

SELECTED HONORS

- School Scholarship in University of Science and Technology of China, 2013 and 2016
- WSDM Student Travel Award of 2022
- KDD Student Travel Award of 2023