

# Xingbo Fu

PhD Student  
University of Virginia  
Charlottesville, Virginia 22903

☎ (434)466-0718  
✉ [xf3av@virginia.edu](mailto:xf3av@virginia.edu)  
🏠 [www.xingbofu.com](http://www.xingbofu.com)  
🌐 [www.linkedin.com/in/xingbofu](https://www.linkedin.com/in/xingbofu)

## Research Interests

My research interests are generally in machine learning and data mining, with a particular focus on graph machine learning, prompt optimization, and retrieval-augmented generation (RAG).

## Education

<b>University of Virginia</b> <i>PhD in Computer Engineering</i>	August 2020 – December 2025 (Expected) Charlottesville, Virginia, USA
<b>Xi'an Jiaotong University</b> <i>Master in Control Science and Engineering</i>	September 2017 – June 2020 Xi'an, Shaanxi, China
<b>Xi'an Jiaotong University</b> <i>Bachelor in Automation</i>	September 2013 – June 2017 Xi'an, Shaanxi, China

## Experience

<b>Netflix</b> <i>Machine Learning Research Intern</i>	June 2025 – September 2025 Los Gatos, California, USA
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- **Pipeline design:** GraphRAG pipeline design on Netflix Content Knowledge Graph (CKG) in Neo4j with Text2Cypher generation
- **Application development:** GraphRAG-powered AI agent development using LangChain and LLMs
- **Performance evaluation:** Dataset construction and metric design for Text2Cypher evaluation, achieving the SOTA performance against five methods

<b>Amazon</b> <i>Applied Scientist Intern</i>	May 2024 – August 2024 Seattle, Washington, USA
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- **Morel pre-training and fine-tuning:** temporal graph foundation model pre-training via link prediction and fine-tuning for fraud detection on Amazon marketplace data
- **Algorithmic design:** edge type-wise graph prompting for temporal graph foundation model adaptation
- **Performance evaluation:** empirical validation of graph prompting on production data for fraud detection, achieving 2.84% performance improvement

<b>University of Virginia</b> <i>Research Assistant</i>	August 2021 – Present Charlottesville, Virginia, USA
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- **Graph foundation models:** graph prompt tuning for graph model adaptation (ICLR 2025, KDD 2025)
- **Federated graph learning:** collaborative training of graph models over heterogeneous graph data (AAAI 2025, KDD 2024, TMLR 2024, arXiv 2024, KDD 2023, KDD Explorations 2022)
- **AI for science:** spatial-temporal learning in healthcare (ICHI 2023)

## Publications

- **GraphTOP: Graph Topology-Oriented Prompting for Graph Neural Networks**  
*Xingbo Fu, Zhenyu Lei, Zihan Chen, Binchi Zhang, Chuxu Zhang, Jundong Li*  
The 39th Annual Conference on Neural Information Processing Systems (NeurIPS 2025)
- **Edge Prompt Tuning for Graph Neural Networks**  
*Xingbo Fu, Yinhan He, Jundong Li*  
The 13th International Conference on Learning Representations (ICLR 2025)

- **Graph Prompting for Graph Learning Models: Recent Advances and Future Directions**  
*Xingbo Fu, Zehong Wang, Zihan Chen, Jiazheng Li, Yaochen Zhu, Zhenyu Lei, Cong Shen, Yanfang Ye, Chuxu Zhang, Jundong Li*  
The 31st ACM SIGKDD Conference on Knowledge Discovery & Data Mining (KDD 2025)
- **Virtual Nodes Can Help: Tackling Distribution Shifts in Federated Graph Learning**  
*Xingbo Fu, Zihan Chen, Yinhan He, Song Wang, Binchi Zhang, Chen Chen, Jundong Li*  
The 39th Annual AAAI Conference on Artificial Intelligence (AAAI 2025)
- **From Cross-Task Examples to In-Task Prompts: A Graph-Based Pseudo-Labeling Framework for In-context Learning**  
*Zihan Chen, Song Wang, Xingbo Fu, Chengshuai Shi, Zhenyu Lei, Cong Shen, Jundong Li*  
The 2025 Conference on Empirical Methods in Natural Language Processing (EMNLP 2025 Findings)
- **Text-Attributed Graph Anomaly Detection via Multi-Scale Cross- and Uni-Modal Contrastive Learning**  
*Yiming Xu, Xu Hua, Zhen Peng, Bin Shi, Jiarun Chen, Xingbo Fu, Song Wang, Bo Dong*  
European Conference on Artificial Intelligence (ECAI 2025)
- **Graph Foundation Models: A Comprehensive Survey**  
*Zehong Wang, Zheyuan Liu, Tianyi Ma, Jiazheng Li, Zheyuan Zhang, Xingbo Fu, Yiyang Li, Zhengqing Yuan, Wei Song, Yijun Ma, Qingkai Zeng, Xiusi Chen, Jianan Zhao, Jundong Li, Meng Jiang, Pietro Lio, Nitesh Chawla, Chuxu Zhang, Yanfang Ye*  
arXiv preprint arXiv:2505.15116 (2025)
- **A Survey of Scaling in Large Language Model Reasoning**  
*Zihan Chen, Song Wang, Zhen Tan, Xingbo Fu, Zhenyu Lei, Peng Wang, Huan Liu, Cong Shen, Jundong Li*  
arXiv preprint arXiv:2504.02181 (2025)
- **Federated Graph Learning with Structure Proxy Alignment**  
*Xingbo Fu, Zihan Chen, Binchi Zhang, Chen Chen, Jundong Li*  
The 30th ACM SIGKDD Conference on Knowledge Discovery & Data Mining (KDD 2024)
- **Federated Graph Learning with Graphless Clients**  
*Xingbo Fu, Song Wang, Yushun Dong, Binchi Zhang, Chen Chen, Jundong Li*  
Transactions on Machine Learning Research (TMLR 2024)
- **Safety in Graph Machine Learning: Threats and Safeguards**  
*Song Wang, Yushun Dong, Binchi Zhang, Zihan Chen, Xingbo Fu, Yinhan He, Cong Shen, Chuxu Zhang, Nitesh V. Chawla, and Jundong Li*  
arXiv preprint arXiv:2405.11034 (2024)
- **Federated Few-Shot Learning**  
*Song Wang, Xingbo Fu, Kaize Ding, Chen Chen, Huiyuan Chen, Jundong Li*  
The 29th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD 2023)
- **Spatial-Temporal Networks for AntibioGram Pattern Prediction**  
*Xingbo Fu, Chen Chen, Yushun Dong, Anil Vullikanti, Eili Klein, Gregory Madden, Jundong Li*  
The 11th IEEE International Conference on Healthcare Informatics (IEEE ICHI 2023)
- **Federated Graph Machine Learning: A Survey of Concepts, Techniques, and Applications**  
*Xingbo Fu, Binchi Zhang, Yushun Dong, Chen Chen, Jundong Li*  
ACM SIGKDD Explorations Newsletter 2022
- **Online Clustering based Fault Data Detection Method for Distributed PV Sites**  
*Shujie Wang, Feng Gao, Jiang Wu, Chao Zheng, Xingbo Fu, and Fangwei Duan*  
The 39th Chinese Control Conference (CCC 2020)
- **Spatiotemporal Attention Networks for Wind Power Forecasting**  
*Xingbo Fu, Feng Gao, Jiang Wu, Xinyu Wei, Fangwei Duan*  
International Conference on Data Mining Workshops (ICDMW 2019)
- **A Simulation Approach to Multi-Station Solar Irradiance Data Considering Temporal Correlations**  
*Xingbo Fu, Feng Gao, Jiang Wu, Ruanming Huang, Yichao Huang, Fei Fei*  
The 8th IEEE Innovative Smart Grid Technologies - Asia (ISGT Asia 2019)

- **Wind Power Capacity Planning in Enterprise's Microgrid based on Approximation Expectation of Operation Cost**  
Yuzhou Zhou, Qiaozhu Zhai, **Xingbo Fu**, Xiaohong Gaun, Feng Gao, Jiang Wu  
The 2019 IEEE Power & Energy Society General Meeting (PESGM 2019)
- **A Simulation Method of Solar Irradiance Data Based on Feature Clustering and Markov Transition Probability Matrix**  
**Xingbo Fu**, Feng Gao, Jiang Wu, Xiaohong Gaun, Xuan Li, Pengyuan Liu  
The 13th World Congress on Intelligent Control and Automation (WCICA 2018)
- **Hybrid Features based K-means Clustering Algorithm for use in Electricity Customer Load Pattern Analysis**  
Pengyuan Liu, Chenye Yang, Jiang Wu, **Xingbo Fu**, Ruanming Huang, Fei Fei  
The 37th Chinese Control Conference (CCC 2018)

## Tutorials

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- **Graph Prompting for Graph Learning Models: Recent Advances and Future Directions**  
**Xingbo Fu**, Zehong Wang, Zihan Chen, Jiazheng Li, Yaochen Zhu, Zhenyu Lei, Cong Shen, Yanfang Ye, Chuxu Zhang, Jundong Li  
The 31st ACM SIGKDD Conference on Knowledge Discovery & Data Mining (KDD 2025)
- **Federated Graph Learning: Recent Advances and Future Directions**  
**Xingbo Fu**, Zihan Chen, Binchi Zhang, Chen Chen, Jundong Li  
SIAM International Conference on Data Mining (SDM 2025)

## Teaching

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- Teaching assistant, Probability (APMA 3100), Spring 2023
- Teaching assistant, Geometry of Data (ECE/CS 6501), Fall 2022
- Teaching assistant, Applied Statistics and Probability (APMA 3110), Spring 2022

## Awards

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- SDM Best Doctoral Forum Poster Award (runner-up), 2025
- SDM Student Travel Award, 2025
- KDD Student Travel Award, 2024
- iPRIME Fellowship Award, 2024
- SDM Student Travel Award, 2023
- Graduate with Honor (10%) (Xi'an Jiaotong University), 2020
- Outstanding Graduate Student (Xi'an Jiaotong University), 2019
- Graduate with Honor (10%) (Xi'an Jiaotong University), 2017

## Technical Skills

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- **Languages:** Python, Matlab, Bash, Java, Latex
- **Operating systems:** Windows, UNIX/Linux
- **Technologies:** PyTorch, PyTorch Geometric, LangChain, Streamlit, Neo4j, TensorFlow, Transformers, NetworkX, DGL, Torchvision, NumPy, Pandas, Scikit-Learn, Matplotlib