Xingbo Fu

PhD in Computer Engineering
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Research Interests

My research interests are generally in machine learning and generative AI, with a particular focus on retrieval-augmented generation (RAG), LLM fine-tuning, and agentic design on structured data.

Education

University of Virginia August 2020 — December 2025
PhD in Computer Engineering *Charlottesville, Virginia, USA*

Xi'an Jiaotong University September 2017 — June 2020
Master in Control Science and Engineering *Xi'an, Shaanxi, China*

Xi'an Jiaotong University September 2013 — June 2017
Bachelor in Automation *Xi'an, Shaanxi, China*

Experience

Netflix June 2025 — September 2025
Machine Learning Research Intern *Los Gatos, California, USA*

- **LLM-powered QA agent design**: chat agent design for question answering based on Netflix content knowledge graph stored in graph database
- **LLM fine-tuning**: instruction tuning of LLaMA3.1-8B using synthetic question-Cypher query pairs
- **Prompt tuning strategy**: novel prompt tuning strategy design for in-context learning by aligning abstracted questions and Cypher queries semantically to improve demonstration selection quality
- **Performance evaluation**: dataset construction and metric design for Text-to-Cypher evaluation, achieving the SOTA performance against five methods

Amazon May 2024 — August 2024
Applied Scientist Intern *Seattle, Washington, USA*

- **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

University of Virginia August 2021 — December 2025
Research Assistant *Charlottesville, Virginia, USA*

- **Graph foundation models**: graph prompt tuning for graph model adaptation
- **Federated graph learning**: collaborative training of graph models over heterogeneous graph data
- **AI for science**: spatial-temporal learning in antibiogram pattern prediction

Selected 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)
- **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)

- **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)
- **FedHERO: A Federated Learning Approach for Node Classification Task on Heterophilic Graphs**
  Zihan Chen, ***Xingbo Fu***, *Yushun Dong*, *Jundong Li*, *Cong Shen*
  Transactions on Machine Learning Research (TMLR 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)
- **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
- **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)

Awards

- 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

Technical Skills

- **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