

# Bowen Jin

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## RESEARCH INTERESTS

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Large Language Models • Information Retrieval • Graph Models • Recommender System

**My research interests lie in modeling multimodal data including texts, graphs, images, and their intersection. I strive to answer the following questions.**

- What structured knowledge do large language models and large multimodal models contain?
- How to leverage external structure knowledge to better enhance large language models and large multimodal models?
- How to empower structure learning (e.g., graph learning) with the associated text and image signal?

## EDUCATION

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**University of Illinois at Urbana-Champaign** *2021.08 - 2026.06*  
Ph.D. Student in Computer Science. Advisor: Prof. Jiawei Han

**Tsinghua University** *2017.09 - 2021.07*  
B.S. in Electrical Engineering & Statistics. Advisor: Prof. Yong Li  
Outstanding Graduates (Top 1%).

## RESEARCH EXPERIENCE

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**University of Illinois at Urbana-Champaign** *2021.09 - Present*  
· Research Assistant. Data Mining Group. Advisor: Prof. Jiawei Han  
· Project: Multimodal Representation Learning with Large Language Models (ICLR'23, ACL'23, KDD'23)

**Amazon.com Inc** *2023.05 - 2023.12*  
· Research Intern. Query Understanding Group. Mentor: Dr. Xianfeng Tang  
· Project: Semantic ID and Generative retrieval.

**Microsoft** *2022.05 - 2022.08*  
· Research Intern. Information and Data Science Group. Mentors: Dr. Chenyan Xiong and Alec Berntson  
· Project: Dense Retrieval for Heterogeneous Data.

**Microsoft** *2020.09 - 2021.03*  
· Research Intern. Social Computing Group. Mentors: Dr. Zheng Liu and Dr. Xing Xie  
· Project: Knowledge-empowered News Recommendation.

**University of California Los Angeles** *2020.07 - 2020.09*  
· Research Assistant. Data Mining Group. Mentor: Prof. Yizhou Sun  
· Project: Kernel-based Graph Pooling for Graph representation Learning.

**Tsinghua University** *2018.09 - 2020.07*  
· Research Assistant. Future Intelligence Lab. Advisor: Prof. Yong Li  
· Project: Recommendation with Graph Neural Networks (SIGIR'20)

**University of Michigan** *2019.07 - 2019.09*  
· Research Assistant. Michigan Institute for Data Science. Advisor: Prof. Ji Zhu  
· Project: Statistical Network Analysis

## SELECTED PUBLICATIONS

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**Bowen Jin**, Yu Zhang, Sha Li, and Jiawei Han.  
Bridging Text Data and Graph Data: Towards Semantics and Structure-aware Knowledge Discovery.  
The 17th ACM International Conference on Web Search & Data Mining (WSDM 2024). **Tutorial.**

**Bowen Jin**, Yu Zhang, Qi Zhu, and Jiawei Han.  
Heterformer: Transformer-based Deep Node Representation Learning on Heterogeneous Text-Rich Networks.  
The 29th ACM SIGKDD Conference on Knowledge Discovery & Data Mining (KDD 2023).

**Bowen Jin**, Wentao Zhang, Yu Zhang, Yu Meng, Xinyang Zhang, Qi Zhu, and Jiawei Han.  
Patton: Language Model Pretraining on Text-rich Networks.  
The 61st Annual Meeting of the Association for Computational Linguistics (ACL 2023).

**Bowen Jin**, Yu Zhang, Yu Meng, and Jiawei Han.

Edgeformers: Graph-Empowered Transformers for Representation Learning on Textual-Edge Networks.  
The 11th International Conference on Learning Representations (ICLR 2023).

**Bowen Jin**, Chen Gao, Xiangnan He, Depeng Jin, and Yong Li.

Multi-behavior Recommendation with Graph Convolutional Networks.

The 43rd ACM SIGIR Conference on Research and Development in Information Retrieval (SIGIR 2020).

Tianxin Wei, **Bowen Jin**, Ruirui Li, Hansi Zeng, Zhengyang Wang, Jianhui Sun, Qingyu Yin, Hanqing Lu, Suhang Wang, Jingrui He, and Xianfeng Tang.

Towards Universal Multi-Modal Personalization: A Language Model Empowered Generative Paradigm.

The 12th International Conference on Learning Representations (ICLR 2024).

Hansi Zeng, Chen Luo, **Bowen Jin**, Sheikh Muhammad Sarwar, Tianxin Wei, Hamed Zamani.

Scalable and Effective Generative Information Retrieval.

The 2024 ACM Web Conference (WWW 2024).

SeongKu Kang, Shivam Agarwal, **Bowen Jin**, Dongha Lee, Hwanjo Yu, Jiawei Han.

Improving Retrieval in Theme-Specific Applications using a Corpus Topical Taxonomy.

The 2024 ACM Web Conference (WWW 2024).

Yu Zhang, **Bowen Jin**, Xiushi Chen, Yanzhen Shen, Yunyi Zhang, Yu Meng, and Jiawei Han.

Weakly-supervised Multi-label Classification of Full-Text Scientific Papers.

The 29th ACM SIGKDD Conference on Knowledge Discovery & Data Mining (KDD 2023).

Yu Zhang, **Bowen Jin**, Qi Zhu, Yu Meng, and Jiawei Han.

The Effect of Metadata on Scientific Literature Tagging: A Cross-Field Cross-Model Study.

The 2023 ACM Web Conference (WWW 2023).

Pengcheng Jiang, Shivam Agarwal, **Bowen Jin**, Xuan Wang, Jimeng Sun, and Jiawei Han.

Text-augmented Open Knowledge Graph Completion via Pretrained Language Models.

The 61st Annual Meeting of the Association for Computational Linguistics (ACL 2023 Findings).

**Bowen Jin**, Wentao Zhang, Yu Zhang, Yu Meng, Han Zhao, and Jiawei Han.

Learning Multiplex Embeddings on Text-rich Networks with One Text Encoder.

(submitted to ICML 2024).

**Bowen Jin**, Hansi Zeng, Guoyin Wang, Xiushi Chen, Tianxin Wei, Ruirui Li, Zhengyang Wang, Zheng Li, Yang Li, Hanqing Lu, Suhang Wang, Jiawei Han, and Xianfeng Tang.

Language Models as Semantic Indexers.

(submitted to ICML 2024).

**Bowen Jin**, Gang Liu, Chi Han, Meng Jiang, Heng Ji, Jiawei Han.

Large Language Models on Graphs: A Comprehensive Survey.

(submitted to TKDE 2024).

**Bowen Jin**, Chulin Xie, Jiawei Zhang, Kashob Kumar Roy, Yu Zhang, Zheng Li, Ruirui Li, Xianfeng Tang, Suhang Wang, Yu Meng, Jiawei Han.

Graph Chain-of-Thought: Augmenting Large Language Models by Reasoning on Graphs.

(submitted to ACL 2024).

Sizhe Zhou, Yu Meng, **Bowen Jin**, Jiawei Han.

Grasping the Essentials: Tailoring Large Language Models for Zero-Shot Relation Extraction.

(submitted to ACL 2024).

Yu Zhang, Yanzhen Shen, Xiushi Chen, **Bowen Jin**, Jiawei Han.

“Why Should I Review This Paper?” Unifying Semantic, Topic, and Citation Factors for Paper-Reviewer Matching.

(submitted to KDD 2024).

## PROFESSIONAL SERVICES

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### Conference Program Committee Member

WSDM 2023; KDD 2023; NeurIPS 2023;

ICLR 2024; WWW 2024; SDM 2024; ICML 2024; ACL 2024; COLM 2024;

### Journal Reviewer

IEEE Transactions on Knowledge and Data Engineering (TKDE);

ACM Transactions on Information System (TOIS);

### Student Volunteer

KDD 2023

### Guest Instructor

UIUC CS512 Fall 23

**Lead TA**  
UIUC CS412 Spring 24

## AWARDS

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**2024** Apple PhD Fellowship  
**2024** WSDM 2024 NSF Student Travel Grant  
**2023** KDD 2023 Student Travel Grant  
**2021** Outstanding Graduates, Tsinghua University (Top 1%)  
**2021** “Star of Tomorrow” Award, Microsoft Research  
**2020** National Scholarship (Top 1%)  
**2019** National Scholarship (Top 1%)  
**2019** Honorable Mention (top 15.35%), Mathematical Contest in Modeling  
**2018** National Scholarship (Top 1%)  
**2017** First Prize, National Olympiad in Mathematics in Provinces

## TECHNICAL STRENGTHS

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<b>Skills</b>	Machine Learning, Natural Language Processing, Language Modeling, Graph Mining, Weakly Supervised Learning, Unsupervised Learning, Information Retrieval
<b>Programming Languages</b>	Python, C/C++, MATLAB, R, Linux, Markdown, Shell, SQL
<b>Machine Learning Packages</b>	PyTorch, Keras, HuggingFace Transformers, Scikit-learn, PyTorch-Geometric, Deep Graph Library
<b>Tools</b>	Bash, L <sup>A</sup> T <sub>E</sub> X, Git