Bowen Jin

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EDUCATION

University of Illinois, Urbana Champaign — **Urbana, United States**
Major: Computer Science. Ph.D. — Aug 2021 - Jun 2026 (expected)

Tsinghua University — **Beijing, China**
Major: Electronic Engineering. B. Eng. GPA: **3.9 / 4.0**, **Rank: 5 /242** — Sep 2017 - Jun 2021

Tsinghua University — **Beijing, China**
Minor: Statistics — Sep 2018 - Jun 2021

RESEARCH INTEREST

Text Mining, Natural Language Processing, Graph Mining, Knowledge Representation, Data Mining, Recommender System

SELECTED PUBLICATIONS

- **Bowen Jin**, Chen Gao, Xiangnan He, Yong Li, Depeng Jin. *Multi-behavior Recommendation with Graph Convolution Networks*. **Accepted and published on SIGIR 2020 Conference.**

HONORS AND AWARDS

Excellent Graduates, Tsinghua University (50/3000) — 2021
National Scholarship, Ministry of Education of the People's Republic of China (5/242) — 2018/ 2019/ 2020
"Star of Tomorrow" Award, Microsoft Research Asia — 2021
Honorable Mention (top 15%), Mathematical Contest in Modeling — 2019

RESEARCH EXPERIENCE

Text-Rich Network Representation Learning

Research Assistant in DMG Group, University of Illinois, Urbana Champaign — Oct 2021 - now
Advisor: Prof. Jiawei Han — **Beijing, China**

- Designed and implemented a GNN-nested Transformer Model, which can encode text and network structure jointly.
- Conducted experiments on link prediction, node classification, node clustering, text retrieval on two million-size datasets, DBLP and Goodreads, and obtain averagely 2% improvement compared to baselines.
- Proposed a warm-up process for textless nodes and did study for the pretraining process.

Urban Knowledge Graph Construction

Research Assistant in the Future Communications and Internet Lab, Tsinghua University — Mar 2021 - Jun 2021
Advisor: Prof. Yong Li — **Beijing, China**

- Designed and applied rule-based entity/relation extraction method for urban text domain information extraction.
- Extracted and constructed a text-based urban knowledge graph for Beijing and Shanghai and obtain 490k+/29k+ and 488k+/28k+ entities/entities for each of them respectively.

Pretrain LM for Disentangled News Recommendation / Efficient GNN for Recommendation

Research Intern in Microsoft Research — Sep2020 - Mar2021
Advisor: Dr. Zheng Liu & Dr. Xing Xie — **Beijing, China**

- Implemented and applied Bert-based Bi-encoder, Cross-encoder and Poly-encoder for news/ads recommendation and retrieval on Microsoft million-scale real world dataset.
- Implemented and designed two knowledge-injected methods (news title retrieval and mask entity prediction) to pretrain transformers for news recommendation on million-scale news dataset.
- Designed two knowledge-fused methods to disentangle news multiple semantics and improved recommendation accuracy by 3%.
- Implemented a hashing-based neighbor sampling strategy which improves graph-related recommendation efficiency by 20%.

Kernel-based Graph Pooling for Graph Representation Learning

Remote Research Assistant in the Department of Computer Science, UCLA — Jul 2020 - Sep 2020
Advisor: Prof. Yizhou Sun — **Los Angeles, USA**

- Proposed a kernel-based graph pooling method combining kernel K-means with graph neural network to help make the graph pooling decision, which can be utilized into real world tasks such as molecular classification and social network analysis.
- As the first to propose subgraph detection task, generated both synthetic datasets and real-world datasets for this specific task. Compared our method with several baseline methods in this task and got 3% F1 score improvement.
- Utilized our method to solve graph classification problem and obtained 2% improvement for F1 score comparing with the best baseline method.
- Implemented our method into image processing task such as pixel clustering, made visualization comparison with baseline methods and demonstrated the effectiveness of our method.

Multi-behavior Recommendation / POI Recommendation

Research Assistant in the Future Communications and Internet Lab, Tsinghua University Sep 2018 - Jul 2020

Advisor: Prof. Yong Li **Beijing, China**

- Utilized graph to model user and item interaction in recommender system and proposed graph-related methods to capture collaborative filtering signals.
- Proposed a multi-behavior recommender system and the accuracy of recommendation recall was improved by 6.51% and finally reached 25.02% on ten-thousand level real world datasets.
- Designed models to utilize social information for POI recommendation and the accuracy of recommendation recall was improved by 6.85% and finally reached 37.32% on ten-thousand level real world datasets.
- Wrote 3000+ lines of code to implement our methods and several baseline models (MF, NeuMF etc.) in recommender system.

Statistical Network Analysis

Research Assistant in the Department of Statistics, University of Michigan—Ann Arbor Jul 2019 - Sep 2019

Advisor: Prof. Ji Zhu **Ann Arbor, USA**

- Investigated related works (Deepwalk, Node2vec, Line) in graph embedding field and wrote 1000+ lines of code to implement graph embedding models to do semi-supervised network link-prediction tasks.
- Conducted the task of imputing network node feature missing values with graph generative models.
- Finished several experiments and compared the performance of several kinds of generative patterns on predicting feature missing values on facebook dataset.

OTHERS

Skills:

- Programming: Python, C, C++, MATLAB, R, Linux, Markdown, Shell, SQL
- Machine Learning: PyTorch, Tensorflow, scikit-learn, Pytorch-Geometric, Networkx, Huggingface