Jinquan Hang

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Research Interests

Enterprise data is typically stored across multiple tables with different schemas, so each prediction task requires its own manual feature engineering. If we choose certain columns as entity identifiers, each entity corresponds to one node, and each row connects the entities it involves, allowing a model to automatically learn from the tables as one unified graph. Because this data is usually too large for a single machine, my research focuses on distributed processing and learning over tables represented as graphs, especially on the effective and efficient use of long-range structures under neighborhood explosion.

Education

Ph.D. in Computer Science — Sep. 2022 – Expected May 2027
Rutgers University, New Brunswick, NJ — *Advisor: Desheng Zhang*

M.S. in Electronics and Communication Engineering — Sep. 2019 – Jun. 2022
Peking University, China — *Advisor: Jinlong Lin*

B.S. in Electronic Information Engineering — Sep. 2015 – Jun. 2019
Northeastern University, China

Publications

First-authored

[1] **Jinquan Hang**, Zhiqing Hong, Xinyue Feng, Desheng Zhang, Haotian Wang, Guang Wang. "BiLink: Bidirectional Meta-paths for Link Discovery in Billion-Scale Heterogeneous Graphs." *Proceedings of the VLDB Endowment (PVLDB)*, 19(12):4316–4329, 2026. [paper] [code]

[2] **Jinquan Hang**, Zhiqing Hong, Xinyue Feng, Guang Wang, Dongjiang Cao, Jiayang Qiao, Haotian Wang, Desheng Zhang. "Complex-Path: Effective and Efficient Node Ranking with Paths in Billion-Scale Heterogeneous Graphs." *Proceedings of the VLDB Endowment (PVLDB)*, 17(12):3973–3986, 2024. [paper] [code]

[3] **Jinquan Hang**, Zhiqing Hong, Xinyue Feng, Guang Wang, Guang Yang, Feng Li, Xining Song, Desheng Zhang. "Paths2Pair: Meta-path Based Link Prediction in Billion-Scale Commercial Heterogeneous Graphs." *ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD)*, pp. 5082–5092, 2024. [paper] [code]

[4] **Jinquan Hang**, Zheng Dong, Hongke Zhao, Xin Song, Peng Wang, Hengshu Zhu. "Outside In: Market-aware Heterogeneous Graph Neural Network for Employee Turnover Prediction." *ACM International Conference on Web Search and Data Mining (WSDM)*, pp. 353–362, 2022. [paper]

Co-authored

[5] Xinyue Feng, Shuxin Zhong, **Jinquan Hang**, Wenjun Lyu, Yuequn Zhang, Guang Yang, Haotian Wang, Desheng Zhang, Guang Wang. "Hierarchical Structure Sharing Empowers Multi-task Heterogeneous GNNs for Customer Expansion." *ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD)*, pp. 4424–4434, 2025. [paper]

[6] Xinyue Feng, Shuxin Zhong, **Jinquan Hang**, Yuequn Zhang, Guang Yang, Haotian Wang, Desheng Zhang, Guang Wang. "NeighSqueeze: Compact Neighborhood Grouping for Efficient Billion-Scale Heterogeneous Graph Learning." *ACM International Conference on Information and Knowledge Management (CIKM)*, pp. 5658–5665, 2025. [paper]

[7] Guang Yang, Meiqi Tu, Zelong Li, **Jinquan Hang**, Taichi Liu, Ruofeng Liu, Yi Ding, Yu Yang, Desheng Zhang. "Behavior-Aware Hypergraph Convolutional Network for Illegal Parking Prediction with Multi-Source Contextual Information." *ACM International Conference on Information and Knowledge Management (CIKM)*, pp. 2827–2836, 2024. [paper]

[8] Guang Yang, Yuequn Zhang, **Jinquan Hang**, Xinyue Feng, Zejun Xie, Desheng Zhang, Yu Yang. "CARPG: Cross-City Knowledge Transfer for Traffic Accident Prediction via Attentive Region-Level Parameter Generation." *ACM International Conference on Information and Knowledge Management (CIKM)*, pp. 2939–2948, 2023. [paper]

Manuscripts Under Review

Jinquan Hang, Zhiqing Hong, Xinyue Feng, Desheng Zhang, Yunhuai Liu, Guang Wang. "UPaths2Pair: Unified Meta-path Processing for Link Discovery in Billion-Scale Heterogeneous Graphs."
IEEE Transactions on Knowledge and Data Engineering (TKDE) Major Revision

Research Applications

New Coauthor and Reference Discovery
Built a link discovery framework and used it to predict an author's new coauthors and references, on a billion-scale academic graph built from OpenAlex. It selected more than 1.4 billion candidate pairs for each task and ranked them by predicted probability. Using only the top 1% of the ranked pairs, it recalled over 31% of the actual new coauthors and references. Also launched a demo at joinminer.com, where KDD 2026 attendees can explore their predicted new coauthors and references.

Key Personnel Discovery
Applied the same framework to find the unknown key personnel of companies, on a billion-scale graph built from JD Logistics' internal data. Contacting the key personnel it discovered raised the contact success rate by 86% over the previously deployed expert-designed rules. It was then scaled nationwide, selecting 1.8 billion candidate company–person pairs and predicting the most likely key personnel of 200 million companies.

High-Value Customer Ranking
Built a node ranking framework and used it to rank customers by their potential to become high-value, on a billion-scale graph built from JD Logistics' internal data. Calling the customers it ranked highest raised the success rate by 252% over the previously deployed expert-designed rules. Since December 2022, it has continuously ranked customers for sales outreach.

Industry Experience

Research Intern, JD Logistics, Beijing, China 2022, 2023, 2024, 2025, 2026
Research Intern, Baidu Talent Intelligence Center, Beijing, China Sep. 2020 – Aug. 2021

Teaching Experience

Teaching Assistant, Department of Computer Science, Rutgers University

- Software Methodology Fall 2022, Fall 2023, Spring 2024
- Introduction to Discrete Structures I Spring 2023

Awards and Honors

- ACM WSDM Student Travel Award 2022
- National First Prize (twice), National University Students Intelligent Car Race, China 2018
- National Second Prize, National Undergraduate Electronic Design Contest, China 2017

Professional Service

- Reviewer, ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD) 2026