

Zhuoning GUO

INFORMATION RETRIEVAL · MULTIMODAL LARGE LANGUAGE MODELS · RECOMMENDER SYSTEMS

(+86) 18159593737 | zhuoning.guo@gmail.com | April 17th, 2000 | gzn00417.github.io | gzn00417 | Google Scholar

Educations

The Hong Kong University of Science and Technology (Guangzhou)

PH.D. IN ARTIFICIAL INTELLIGENCE, INFORMATION HUB

- Supervisor: Prof. Xiaowen Chu (IEEE Fellow)

Guangzhou, Guangdong, China

Sep. 2022 - Oct. 2026 (Expected)

Harbin Institute of Technology

B.E. IN SOFTWARE ENGINEERING

- GPA: 3.6/4.0 (Overall rank: Top 7%)

Harbin, Heilongjiang, China

Aug. 2018 - Jun. 2022

Internships

Alibaba Tongyi Lab

RESEARCH INTERN

- Topics:** Foundational embedding models for multimodal retrieval
- Contributions:** Develop the open-source state-of-the-art multimodal video embedding model trained on 13M+ public data with 6.5+% improvement on universal video retrieval tasks, laying a foundation for the next generation of Qwen-Embedding series

Hangzhou, Zhejiang, China

Mar. 2025 - Feb. 2026 (Expected)

Baidu Recommendation Architecture Department

RESEARCH INTERN

- Topics:** Information retrieval for web-scale recommender system
- Contributions:** Propose an industrial training-inference co-designed retrieval framework with improvements of 20+% on ANNS, 1.0+% on ToP, and 0.5+% on DAU; This framework is deployed in 20+ applications for 100M+ video recommendations with 100M+ requests per second

Remote

Feb. 2024 - Feb. 2025

Baidu Research

RESEARCH INTERN

- Topics:** Spatial-temporal modeling for business intelligence
- Contributions:** Design a predictive and analytical framework for the nationwide labor market understanding, including forecasting models, scientific discoveries, and proprietary reports

Haidian, Beijing, China

Oct. 2021 - Aug. 2022

Tencent AI Lab

RESEARCH INTERN

- Topics:** Graph learning for social science
- Contributions:** Support research on non-pharmaceutical interventions in COVID-19 by modeling human mobility for contact reduction

Remote

May 2021 - Oct. 2021

Microsoft Research Asia (MSRA)

RESEARCH INTERN

- Topics:** Computer vision and graphics for design intelligence
- Contributions:** Support intelligent slides refinement suggestion via deep learning of layout autoencoder and aesthetic evaluator, back-end and front-end development of a plug-in in Microsoft PowerPoint

Haidian, Beijing, China

Nov. 2020 - Apr. 2021

Publications

- [1] **Towards Universal Video Retrieval: Generalizing Video Embedding via Synthesized Multimodal Pyramid Curriculum** [Paper] [Page]

Zhuoning Guo, Mingxin Li, Yanzhao Zhang, Dingkun Long, Pengjun Xie, Xiaowen Chu

arXiv preprint

- [2] **GPU-accelerated Multi-relational Parallel Graph Retrieval for Web-scale Recommendations** [Paper]

Zhuoning Guo, Guangxing Chen, Qian Gao, Xiaochao Liao, Jianjia Zheng, Lu Shen, Hao Liu

arXiv preprint

- [3] **HiFGL: A Hierarchical Framework for Cross-silo Cross-device Federated Graph Learning** [Paper]

Zhuoning Guo, Duanyi Yao, Qiang Yang, Hao Liu

Proceedings of the 30th ACM SIGKDD Conference on Knowledge Discovery and Data Mining 2024 (Oral)

- [4] **Talent Demand-Supply Joint Prediction with Dynamic Heterogeneous Graph Enhanced Meta-Learning** [Paper]
Zhuoning Guo, Hao Liu, Le Zhang, Qi Zhang, Hengshu Zhu, Hui Xiong
 Proceedings of the 28th ACM SIGKDD Conference on Knowledge Discovery and Data Mining 2022 **(Oral)**
- [5] **Labor Migration Modeling through Large-scale Job Query Data** [Paper]
Zhuoning Guo, Le Zhang, Hengshu Zhu, Weijia Zhang, Hui Xiong, Hao Liu
 Advances in Knowledge Discovery and Data Mining: 28th Pacific-Asia Conference on Knowledge Discovery and Data Mining 2025 **(Oral)**
- [6] **Against Multifaceted Graph Heterogeneity via Asymmetric Federated Prompt Learning** [Paper]
Zhuoning Guo, Ruiqian Han, Hao Liu
 arXiv preprint
- [7] **Discrepant Homophily Co-Preserved Graph Convolutional Network for Labor Migration Forecasting** [Paper]
Zhuoning Guo, Le Zhang, Hengshu Zhu, Weijia Zhang, Hui Xiong, Hao Liu
 Workshop of Talent Management Computing (TMC) at SIGKDD 2024
- [8] **Convergence-aware Clustered Federated Graph Learning Framework for Collaborative Inter-company Labor Market Forecasting** [Paper]
Zhuoning Guo, Hao Liu, Le Zhang, Qi Zhang, Hengshu Zhu, Hui Xiong
 arXiv preprint
- [9] **Human Mobility Modeling During the COVID-19 Pandemic via Deep Graph Diffusion Infomax** [Paper]
Yang Liu, Yu Rong, Zhuoning Guo, Nuo Chen, Tingyang Xu, Fugee Tsung, Jia Li
 Proceedings of the Thirty-Seventh AAAI Conference on Artificial Intelligence 2023
- [10] **A Cross-View Hierarchical Graph Learning Hypernetwork for Skill Demand-Supply Joint Prediction** [Paper]
Wen Shuo Chao, Zhaopeng Qiu, Likang Wu, Zhuoning Guo, Zhi Zheng, Hengshu Zhu, Hao Liu
 Proceedings of the Thirty-Eighth AAAI Conference on Artificial Intelligence 2024 **(Oral)**
- [11] **Aesthetics++: Refining Graphic Designs by Exploring Design Principles and Human Preference** [Paper]
Wenyuan Kong, Zhaoyun Jiang, Shizhao Sun, Zhuoning Guo, Weiwei Cui, Ting Liu, Jian-Guang Lou, Dongmei Zhang
 IEEE Transactions on Visualization & Computer Graphics

Visits

The Hong Kong University of Science and Technology

Hong Kong, China

VISITING PH.D. STUDENT

Jan. 2024 - Aug. 2024

- Affiliated to the Department of Computer Science and Engineering during the visiting period

University of Cambridge

Cambridge, England, UK

VISITING UNDERGRADUATE

Jan. 2020 - Feb. 2020

- Supported by the scholarship from Harbin Institute of Technology (HIT) for the undergraduate visiting program

Awards

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| 2014.11 | First Award, Junior High School, National Olympiad in Informatics in Provinces (NOIP) , Independent Recruitment Admission Qualification of Fuzhou No.1 High School | Fujian, China |
| 2016.11 | First Award, Senior High School, National Olympiad in Informatics in Provinces (NOIP) , Independent Recruitment Admission Qualification of Harbin Institute of Technology | Fujian, China |
| 2020.03 | Finalist (Top 1%), Mathematical Contest in Modeling (MCM) , Team Leader | International |
| 2020.08 | Special Award (Top 4), National IoT Competition (Northeast Region) , Team Leader | Northeast China |
| 2019.10 | First Award, Contemporary Undergraduate Mathematical Contest in Modeling , Team Leader | China |

Honors

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| 2025 | Outstanding Reviewer , SIGKDD 2025 | International |
| 2019 | Outstanding CLP Member , Harbin Institute of Technology | University |
| 2020 | Outstanding Student Cadre , Harbin Institute of Technology | University |

Services

2025	Session Chair , SIGKDD 2025	International
2022-2025	Conference Reviewer , SIGKDD, NeurIPS, ICLR, WebConf, IJCAI, ICDM	International
2024-2025	Journal Reviewer , TOIS, Information Science	International
2023	Teaching Assistant , AIAA 5028: Machine Learning on Graphs at HKUST(GZ)	University
2026	Teaching Assistant , UFUG 2602: Data Structure at HKUST(GZ)	University
2020-2022	Chairman , HIT Massive Data Club	Laboratory
2020-2022	Captain , The Football Team of the Faculty of Computing	Department
2019-2022	President , HIT Chess Club	Organization

Volunteers

The Innovation & Entrepreneurship Education Alliance of China		Harbin, Heilongjiang, China
CONFERENCE VOLUNTEER		Oct. 2019
• Supported the annual national conference hosted by Harbin Institute of Technology, engaging with academic and industry stakeholders.		
Rural Primary School		Shangri-La, Yunnan, China
TEACHING VOLUNTEER		Jan. 2019 - Feb. 2019
• Delivered foundational lessons to students in an underserved rural community, emphasizing clarity and accessibility in knowledge transfer.		

Skills

Languages (English)	IELTS 6.5 (5.5), Aug. 2021
Programming Languages	Python (Recently), C/C++, Java, Bash, C#
Frameworks & Tools	PyTorch (-Lightning), Transformers, Deepspeed, vLLM, Pandas, DGL, PyG, NetworkX, ...