DR. SHIQI ZHANG

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Curriculum Vitae: March 10, 2025

EDUCATION

National University of Singapore (NUS) Aug. 2019 - Aug. 2024
Ph.D. in Computer Science *Singapore*

· *Dissertation Title:* Effective and Efficient Random Walk Proximity Measures for Graph Analytics

University of Edinburgh (UoE) Sep. 2018 - Dec. 2018
Visiting Student, School of Informatics *Edinburgh, UK*

Southern University of Science and Technology (SUSTech) Sep. 2015 - Jun. 2019
B.Eng. in Computer Science and Engineering *Shenzhen, China*

LANGUAGE SKILLS

Chinese (Native), English (Proficient)

WORK EXPERIENCE

Postdoctoral Research Fellow Aug. 2024 - Present
School of Computing, National University of Singapore *Singapore*

· *User Persona Generation and Assignment:* Developed methods leveraging large language models (LLMs) and historical interaction data to analyze user personas, achieving up to 15% improvement in robustness and accuracy for customer segmentation and product recommendation (manuscript under revision).
· *Lightweight GraphRAG:* Proposed KET-RAG, a cost-effective Graph Retrieval-Augmented Generation framework, achieving comparable or superior retrieval quality to Microsoft's GraphRAG with significantly reduced indexing costs and improved generation quality by up to 32.4% (preprint available).
· *Social Behavior Modeling:* Conducting ongoing research on social behavior dynamics using LLM-based multi-agent systems.

Research Scientist Intern Oct. 2021 - Oct. 2022
Common Data Platform (CDP), Interactive Entertainment Group (IEG), Tencent *Shenzhen, China*

· *Friendship Closeness Measure:* Developed a closeness measure incorporating group-level conformity, improving friend ranking adoption rate by up to 34.2% in online A/B testing.
· *Information Diffusion Model:* Designed a model capturing multi-stage behavior conversion during information dissemination, significantly enhancing key opinion leader (KOL) selection and friend ranking performance.
· *Influence Maximization:* Formulated and solved a novel problem to maximize user engagement in friend ranking contexts, achieving up to 5.4% improvement in engaged user numbers.

RESEARCH FUNDING AND GRANTS

NUS Research Scholarship Aug. 2019 - Aug. 2023
National University of Singapore *Singapore*

RESEARCH OUTPUT

Summary

- Total Publications: 9 (6 as first author, 1 as corresponding author)
- Publication Venues: SIGMOD, PVLDB, KDD, WWW, etc.
- Google Scholar Citations: 60+ (as of March 10, 2025)
- H-index: 6

Publications

- Yiqian Huang, Shiqi Zhang, Xiaokui Xiao. *KET-RAG: A Cost-Efficient Multi-Granular Indexing Framework for Graph-RAG.* arXiv preprint. 2025.
- (Under double-blind review) *You Are What You Bought: Generating Customer Personas for E-commerce Applications.* 2025.
- Yiqian Huang, Shiqi Zhang, Laks V.S. Lakshmanan, Wenqing Lin, Xiaokui Xiao, and Bo Tang. *Efficient Algorithms for Influence Maximization with Matroid Constraints.* Proceedings of the VLDB Endowment (PVLDB). 2025.
- Shiqi Zhang, Jiachen Sun, Wenqing Lin, Xiaokui Xiao, Yiqian Huang, and Bo Tang. *Information Diffusion Meets Invitation Mechanism.* Proceedings of the Web Conference (WWW). 2024.
- Shiqi Zhang, Yiqian Huang, Jiachen Sun, Wenqing Lin, Xiaokui Xiao, Bo Tang. *Capacity Constrained Influence Maximization in Social Networks.* Proceedings of the ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD). 2023.
- Shiqi Zhang, Renchi Yang, Jing Tang, Xiaokui Xiao, Bo Tang. *Efficient Approximation Algorithms for Spanning Centrality.* Proceedings of the ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD). 2023.
- Shiqi Zhang, Renchi Yang, Xiaokui Xiao, Xiao Yan, Bo Tang. *Effective and Efficient PageRank-based Positioning for Graph Visualization.* Proceedings of the ACM SIGMOD International Conference on Management of Data (SIGMOD). 2023.
- Shiqi Zhang, Jiachen Sun, Wenqing Lin, Xiaokui Xiao, Bo Tang. *Measuring Friendship Closeness: A Perspective of Social Identity Theory.* Proceedings of the ACM International Conference on Information and Knowledge Management (CIKM). 2022.
- Renchi Yang, Jieming Shi, Yin Yang, Keke Huang, Shiqi Zhang, and Xiaokui Xiao. *Effective and Scalable Clustering on Massive Attributed Graphs.* Proceedings of the Web Conference (WWW). 2021.
- Shiqi Zhang, Xinxun Zeng, and Bo Tang. *RCELF: A residual-based approach for Influence Maximization Problem.* Information Systems (InfoSys). 2021.

RESEARCH SUPERVISION AND LEADERSHIP

Research Supervision and Leadership 2023 - Present
School of Computing, National University of Singapore *Singapore*

- Mentored undergraduate, master's, and Ph.D. students, resulting in multiple top-tier publications.
- Leading ongoing research projects focused on advanced multi-agent social behavior modeling utilizing large language models (LLMs).

TEACHING EXPERIENCE

Teaching Assistant Jan. 2020 - May. 2023
School of Computing, National University of Singapore *Singapore*

- Data Structures and Algorithms - Responsible for laboratory sessions and grading
- Database Systems - Guided project development and provided consultations

Tutorial Instructor Feb. 2018 - Jun. 2019
Southern University of Science and Technology *Shenzhen, China*

· Data Structures and Algorithms - Conducted tutorial sessions and consultations
· Operating Systems - Laboratory teaching assistant

ACADEMIC SERVICES

· Program Committee Member: IJCAI 2024
· External Reviewer: WebSci 2024, WSDM 2023, CIKM 2022, KDD 2022

SELECTED AWARDS

· Dean's Graduate Research Excellence Award, NUS, 2024
· Research Achievement Award, NUS, 2023
· Student Travel Awards, SIGMOD 2023, CIKM 2022
· Monthly Best Employee Award, Tencent, 2022
· Outstanding Student Teaching Assistant Award, SUSTech, 2019

SCIENTIFIC AND SOCIETAL IMPACT

KET-RAG System

· *Open Science Impact:* Publicly released source code (GitHub), rapidly gaining attention ($\approx$ 100 stars within three weeks).
· *Media Coverage:* Prominently featured by industry experts and influencers on LinkedIn (e.g., Post 1, Post 2), and widely disseminated through WeChat with significant readership (Article).

Influence and Diffusion Models in Online Gaming Platforms

· *Research Impact:* First successful integration of influence maximization algorithms into real-world gaming scenarios, enhancing user engagement significantly.
· *Media Recognition:* Research outcomes featured prominently in Tencent official reports and widely disseminated via WeChat official accounts (Article 1, Article 2).