Yongkang Zhou

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EDUCATION

East China Normal University Shanghai, China
M.S. in Computer Technology Sept. 2023 – Expected June 2026
GPA: 84.8/100
Relevant courses: Algorithm Construction Method, Frontier of Deep Nautual Language Processing, Data Management and Intelligent System, Multimedia Information Retrieval

East China Normal University Shanghai, China
B.Eng. in Computer Science and Technology Sept. 2019 – June 2023
Relevant courses: Computer Organization and Architecture, Data Management and Intelligent System, Artificial Intelligence, Natural Language Processing, Big Data Systems, Data Mining, Trustworthy Machine Learning

RESEARCH INTERESTS

Large Language Model, Retrieval Enhancement Generation, Information Retrieval
My research centers on building reliable and efficient LLM systems, while remaining open to broader directions where language models contribute to socially beneficial applications.

PUBLICATIONS

Zhou, Y[*], Yan, M., Xu, G., & Yao, J[†]. (2025). **ProRAG: Towards reliable and proficient AIGC-based digital avatar**. *In Proceedings of the International Conference on Database Systems for Advanced Applications (DASFAA)*.
May 2025, Singapore **Oral Presentation**

- Proposed ProRAG, a RAG framework with hierarchical retrieval and multimodal grounding for reliable digital avatars.
- Presented at DASFAA 2025, received constructive feedback and engaged with researchers in the database community.

MANUSCRIPTS UNDER REVIEW

Zhou, Y[*], Quan, X., Hou, Y., Xu, G., Wang, J., & Yao, J[†]. (2026). **GEAR: Graph-efficient augmented retrieval via adaptive knowledge-path fusion**. *Submitted to the IEEE International Conference on Data Engineering (ICDE)*. Under review.

- Developed GEAR, a multi-head graph retrieval framework that improves accuracy and efficiency by fusing diverse pattern spaces and subgraph structures.

Quan, X., **Zhou, Y**, & Yao, J[†]. (2025). **ThoughtForest-KGQA: A multi-chain tree search for knowledge graph reasoning**. *Submitted to the ACM International Conference on Information and Knowledge Management (CIKM)*. Under review.

- Developed ThoughtForest-KGQA, a hierarchical reinforcement learning framework using multi-chain tree search for multi-hop question answering over knowledge graphs.

MANUSCRIPTS IN PROGRESS

Zhou, Y[*], Quan, X., Hou, Y., & Yao, J[†] **Graph-based source confidence estimation for multi-source retrieval-augmented generation**. (in preparation)

- Proposed a novel GNN-based confidence estimation framework to assess and optimize source reliability in multi-source RAG settings. The method integrates source-aware graph construction and LLM-supervised optimization for enhanced factual consistency.

RESEARCH PROJECTS

Knowledge-Augmented Role-Playing Dialogue System Shanghai, China
Research Assistant | Advisor: Prof. Junjie Yao Oct 2023 — May 2024

- Designed RAG pipelines integrating structured knowledge and semantic retrieval.
- Implemented LangChain-based persona dialogue agent with modular architecture.
- Explored LLM fine-tuning and prompt strategies for knowledge-grounded generation.

Evaluation research of representation models for small molecule drugs Shanghai, China
Research Assistant | Advisor: Prof. Junjie Yao Dec 2022 — June 2023

- Evaluated Graphormer with centrality, spatial, and edge encodings for graph representation learning.
- Built an evaluation system with Flask and Elasticsearch for model testing and visualization.
- Benchmarked models on OGB and ZINC datasets, outperforming GNN baselines in property prediction.

Low-Value Item Borrowing and Returning System Shanghai, China
Research and Development Jul 2021 — Sep 2022

- Built a web-based management system with RFID/QR tracking and access control to improve item traceability and automation.
- Designed a modular database structure and implemented system logic using Laravel and DHTMLX to ensure scalability and reliability.

TEACHING EXPERIENCE

Database System Design and Practice Shanghai, China
Teaching Assistant Sep 2023 — Jan 2024

- Guided over 50 students in relational modeling and query design, while encouraging exploration of emerging topics such as Large Language Models.
- Designed and maintained modular course assignments and experiments to reinforce key concepts in database theory and practice.
- Provided ongoing technical and conceptual support through office hours and online Q&A, fostering an inclusive and research-aware learning environment.

WORK EXPERIENCE

Grit World Shanghai, China
Research and Development Intern Dec 2022 — May 2023

- Developed AR systems using C++/.NET, and resolved 10+ critical bugs to improve robustness.
- Integrated ML models for POI recognition and navigation in AR, enhancing spatial understanding.
- Contributed to documentation and research workflows to support reproducibility and collaboration.

AWARDS

- Third Prize in Shanghai University Student Computer Technology Application Skills Competition Aug 2022
- School-level Innovation Project, Campus Innovation and Entrepreneurship Competition Jun 2022
- Honorable Mention in Mathematical Contest in Modeling (MCM) Dec 2022

SKILLS

- **Languages:** Mandarin Chinese, English , German (elementary)
- **Programming Languages:** Python, C++, Shell
- **Framework and Tools:** Pytorch, Git, Linux, Docker, LaTex, Markdown

VOLUNTEERING

Campus Sunshine Animal Protection Organization Shanghai, China
Volunteer Member Sep 2019 — Jul 2024

- Coordinated the rescue, care, and adoption of over 300 stray animals while leading public awareness campaigns through the design of charity shelters and promotional content, fostering community engagement and advocacy for animal welfare.

Student Union – Technology Innovation Association Shanghai, China
Executive Member Sep 2019 — Nov 2020

- Organized and promoted campus tech events through program planning, on-site coordination, and WeChat-based outreach.