

Zhenyu Li

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Research Interests

My primary research focuses on enhancing the **memory and reasoning capabilities of large language models**.

- Large language models interacting with **knowledge graph** to solve complex multi-hop questions.
- Extending the **long-context and memory** capabilities of LLMs to address long-document reasoning challenge.
- Currently, I am also interested in **reinforcement learning for reasoning and agents**.

Education

Tsinghua University, Ph.D. student in Computer Science and Technology Sept 2021 – Present

- Advisor: Professor Jianyong Wang

Tsinghua University, Bachelor of Computer Science and Technology Sept 2017 – July 2021

- Outstanding graduate of the department
- Second major: Business Administration

Research Experience

ByteDance Seed, Pretrain Group June 2025 – Present

- Research Intern.
- Project: Better understanding of the relationship between Pretrain and RL; Extending the boundaries of language models' reasoning ability

Microsoft Research Asia, NLC Group Aug 2024 – Apr 2025

- Research Intern. Mentor: Dr. Li Dong
- Project: Design of in-context updatable language model

Tsinghua University, THUNLP Group Sep 2023 – Feb 2024

- Research collaboration. Advisor: Prof. Zhiyuan Liu
- Project: Involved in an open-source agent project - **XAgent** (Led by Yujia Qin)
- Paper: UniMem: Towards a Unified View of Long-Context Large Language Models

Selected Publications

Efficient Attention Mechanisms for Large Language Models: A Survey
Yutao Sun*, **Zhenyu Li***, Yike Zhang*, Tengyu Pan*, Bowen Dong*, Yuyi Guo, Jianyong Wang
Under Review (Nature Machine Intelligence)

FocusLLM: Precise Understanding of Long Context by Dynamic Condensing
Zhenyu Li, Yike Zhang, Tengyu Pan, Yutao Sun, Zhichao Duan, Junjie Fang, Rong Han, Zixuan Wang, Jianyong Wang
Proceedings of the Annual Meeting of the Association for Computational Linguistics (ACL 2025 Main)

Negative Matters: Multi-Granularity Hard-Negative Synthesis and Anchor-Token-Aware Pooling for Enhanced Text Embeddings
Tengyu Pan, Zhichao Duan, **Zhenyu Li**, Bowen Dong, Ning Liu, Xiuxing Li, Jianyong Wang
Proceedings of the Annual Meeting of the Association for Computational Linguistics (ACL 2025 Main)

Maximum Score Routing For Mixture-of-Experts
Bowen Dong, Yilong Fan, Yutao Sun, **Zhenyu Li**, Tengyu Pan, Xun Zhou, Jianyong Wang
Proceedings of the Annual Meeting of the Association for Computational Linguistics (ACL 2025 Findings)

UniMem: Towards a Unified View of Long-Context Large Language Models

Junjie Fang, Likai Tang, Hongzhe Bi, Yujia Qin, Si Sun, **Zhenyu Li**, Haolun Li, Yongjian Li, Xin Cong, Yankai Lin, Yukun Yan, Xiaodong Shi, Sen Song, Zhiyuan Liu, Maosong Sun

The 1st Conference On Language Modeling (COLM 2024)

FlexKBQA: A flexible llm-powered framework for few-shot knowledge base question answering

Zhenyu Li, Sunqi Fan, Yu Gu, Xiuxing Li, Zhichao Duan, Bowen Dong, Ning Liu, Jianyong Wang

Proceedings of the AAAI Conference on Artificial Intelligence (AAAI 2024 Oral, Top 2%)

Optimization Techniques for Unsupervised Complex Table Reasoning via Self-Training Framework

Zhenyu Li, Xiuxing Li, Sunqi Fan, Jianyong Wang

IEEE Transactions on Knowledge and Data Engineering (TKDE, CCF A)

Toward a Unified Framework for Unsupervised Complex Tabular Reasoning

Zhenyu Li, Xiuxing Li, Zhichao Duan, Bowen Dong, Ning Liu, Jianyong Wang

IEEE 39th International Conference on Data Engineering (ICDE 2023, CCF A)

Effective Few-Shot Named Entity Linking by Meta-Learning

Xiuxing Li*, **Zhenyu Li***, Zhengyan Zhang, Ning Liu, Haitao Yuan, Wei Zhang, Zhiyuan Liu, Jianyong Wang

IEEE 38th International Conference on Data Engineering (ICDE 2022, CCF A)

Awards

- 2024 Comprehensive Excellence Scholarship, Tsinghua University
- 2023 Comprehensive Excellence Scholarship, Tsinghua University
- 2022 Comprehensive Excellence Scholarship, Tsinghua University
- 2021 Outstanding Graduate of the Department of Computer Science
- 2021 National Encouragement Scholarship
- 2020 First Prize of Hua Luogeng Mathematical Contest in Modeling, Tsinghua University (Top 3%)
- 2019 Academic & Social Work Excellence Scholarship, Tsinghua University
- 2018 Second prize of the physics competition for college students in parts of China

Teaching Experience

Undergraduate counselor, Tsinghua University Sep 2021 – Present

- Providing guidance for undergraduate students majoring in Computer Science, class of 2021
- 12·9 Counselor Scholarship of Tsinghua University

Teaching Assistant of Software Engineering, Tsinghua University Jan 2022 – Dec 2023

- Providing guidance regarding course projects and communicating with company client