

ZHEYUAN ZHANG

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EDUCATION

Ph.D. Student. School of Computer Science, Carnegie Mellon University. <i>Language Technology Institute. WInE Group. Advised by Prof. Sherry Tongshuang Wu.</i>	2025.8 - now 4.00/4 GPA
• Relevant Coursework: Advanced NLP (A+), Inference Algorithms for Language Modeling (A+)	
Master Student. Computer Science and Technology. Tsinghua University <i>Knowledge Engineering Group. Advised by Prof. Juanzi Li.</i>	2022.9 - 2025.6 3.95/4 GPA (Top 10%)

Bachelor Student. Xinya College. Tsinghua University <i>Bachelor of Law. Major in Philosophy, Politics, and Economy (PPE). Minor in Psychology.</i>	2018.9 - 2022.6 3.76/4 GPA (Top 10%)
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RESEARCH

My current research focus: Deep Research, Collaborative Literature Exploration, and Sensemaking. I believe agents should be fundamentally *user-centric*—assisting users to make sense of information and inspiring new ideas. I study how users make decisions (data) and how to sensemake collaboratively (model). Generally, I work on **Human-Centric AI** in two main directions:

Understanding and Improving Language Models from Human Perspective

Employing empirical methods and cognitive psychology approaches, I aim to: (1) Understand the capabilities and mechanisms of language models; (2) Examine the alignment of language models with human cognitive structures; (3) Investigate the potential applications of language models in mimicking human cognitive processes; and (4) Explore the effects of language models on human cognition and social behavior.

1. **Zhang, Z.***, Yu, J.*., Li, J., Hou, L. (2023). Exploring the Cognitive Knowledge Structure of Large Language Models: An Educational Diagnostic Assessment Approach. Findings of EMNLP 2023.
2. **Zhang, Z.**, Li, R., Kabir, T., Boyd-Graber J. (2024). NAVIG: Natural Language-guided Analysis with Vision Language Models for Image Geo-localization. In submission to ACL 2025.
3. Sabour, S., Liu, S., **Zhang, Z.**, Liu, J. M., Zhou, J., Sunaryo, A. S., ... Huang, M. (2024). EmoBench: Evaluating the Emotional Intelligence of Large Language Models. ACL 2024.
4. Zhang-Li, D., Lin, N., Yu, J., **Zhang, Z.**, Yao, Z., Zhang, X., ... Li, J. (2024). Reverse That Number! Decoding Order Matters in Arithmetic Learning. arXiv preprint arXiv:2403.05845.

Human-Agent Interaction

Leveraging state-of-the-art AI technologies, I design innovative applications and interaction paradigms for human benefit. For example, I work on challenges posed by AI in the educational domain, build AI systems to enhance learning experiences, and explore how the technologies affect learning behaviors and cognitive processes.

1. **Zhang, Z.***, Zhang-Li, D.*., Yu, J., Gong, L., Zhou, J., Liu, Z., Hou, L., Li, J. (2024). Simulating Classroom Education with LLM-Empowered Agents. NAACL 2025.
2. Tu, S.*., **Zhang, Z.***, Yu, J., Li, C., ... Li, J. (2023). LittleMu: Deploying an Online Virtual Teaching Assistant via Heterogeneous Sources Integration and Chain of Teach Prompts. CIKM 2023.
3. Zhang-Li, D.*., **Zhang, Z.***, Yu, J., Yin, J. L. J., Tu, S., ... Li, J. (2024). Awaking the Slides: A Tuning-free and Knowledge-regulated AI Tutoring System via Language Model Coordination. KDD 2025.
4. Yu, J., **Zhang, Z.**, Zhang-Li, D., Tu, S., Hao, Z., Li, R. M., ... Sun, M. (2024). From MOOC to MAIC: Reshaping Online Teaching and Learning through LLM-driven Agents. arXiv preprint arXiv:2409.03512.
5. Zhong, Q., Yu, J., **Zhang, Z.**, Mao, Y., Wang, Y., Lin, Y., ... Tang, J. (2022). Towards a General Pre-training Framework for Adaptive Learning in MOOCs. arXiv preprint arXiv:2208.04708.

* indicates equal contribution. Only the papers with which I'm deeply engaged are listed here. For a full list, please check my [Google Scholar](#).

Professional Services:

Conference Reviewer: CIKM 2024, ARR 2024/2025, AAAI 2025, KDD 2025/2026, WWW 2026

Journal Reviewer: npj Science of Learning.

PROJECTS

LittleMu: a Virtual Teaching Assistant on Chinese MOOC platform.

- LittleMu is a Virtual Teaching Assistant that instantly helps students with their learning and provides emotional support. LittleMu is deployed on xuetangx.com, one of the largest MOOC platform in China. By 2023, LittleMu has served **more than 80,000 users** with over 300,000 queries from over 500 courses.
- We trained a classifier to enable LittleMu to return the most appropriate responses with RAG. For instance, for knowledge-based questions, we utilize knowledge graphs to find the corresponding knowledge; for chit-chat, we leverage the capabilities of LLMs. We also made preliminary attempts to enhance the reasoning abilities of LLMs.
- We conduct experiments with LittleMu and this work was published in **CIKM 2023** (co-first author).

MAIC: Massive AI-powered Courses platform in Tsinghua University.

- We built a AI-powered Course platform called **MAIC**, where we simulate classrooms for student learners: the teachers and classmates are all LLM agents, and the lessons are automatically conducted where students can interrupt anytime.
- MAIC now has over **90,000 student users** across universities and high schools. Experimental results show that the classmate agents in the system can help enhance students' sense of **social and cognitive presence**. Students interact more with the system have better learning outcomes.
- Relevant works are accepted by **NAACL 2025** (first author) and **KDD 2025** (co-first author).

HONORS AND AWARDS

Outstanding Master's Thesis	2025
<i>Title: Intelligent Classrooms based on Large Language Model Agents</i>	
Outstanding Master's Graduates	2025
<i>Outstanding Graduates of Beijing, Outstanding Graduates of DCST</i>	
Siebel Scholar	2024
<i>Siebel Scholar Class 2025, Top 5 in Tsinghua University for outstanding academic performance and leadership</i>	
Huiyan Talent Comprehensive Scholarship	2024
<i>Comprehensive Scholarship for Graduate Students</i>	
Outstanding Graduates	2022
<i>Outstanding Graduates of Tsinghua University, Outstanding Graduates of Beijing</i>	
Toyota Scholarship of Tsinghua University	2021
<i>Comprehensive Scholarship</i>	
Excellent Comprehensive Scholarship of Tsinghua University	2019, 2020, 2021
<i>Comprehensive Scholarship</i>	
Excellent Scholarship of Tsinghua University	2019, 2020, 2021
<i>Academic (2019, 2020, 2021); Social Work (2020); Sports (2019, 2020, 2021)</i>	

EXPERIENCES

WInE Lab, Carnegie Mellon University	2025.7 - Now
<i>Ph.D. Student. Advised by Prof. Sherry Tongshuang Wu</i>	
CLIP Lab, University of Maryland	2024.6 - 2024.11
<i>Research Intern. Advised by Prof. Jordan Boyd-Graber</i>	
Foundation Model Research Center, Tsinghua University	2024.3 - 2025.6
<i>Research Intern. Advised by Prof. Zhiyuan Liu</i>	
THUNLP, Tsinghua University	2024.3 - 2025.6
<i>Research Intern. Advised by Prof. Zhiyuan Liu</i>	
THUKEG, Tsinghua University	2021.9 - 2022.6
<i>Research Intern. Advised by Prof. Juanzi Li</i>	