Siyu Yuan

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RESEARCH INTEREST

Siyu Yuan（员司雨） is a four-year Ph.D. student at Fudan University in the School of Data Science. Her interested research topics are mostly around **cognitive science with generative agents**, including (but are not limited to):

○ **Planning and Reasoning**: Focus on equipping generative agents with human-level planning and reasoning capabilities, including *agent planning*, *tool invocation* and *multi-agent collaboration*.

○ **Cognitive Modeling**: Explore cognitive knowledge in generative agents to enable them to generate responses that align better with human cognition, including *analogical reasoning*, *role-playing* and *belief exploration*.

○ **Knowledge Acquisition**: Excavate cognitive knowledge based on generative agents to construct rich knowledge resources that can be effectively utilized, including *concept acquisition*, *analogy making*, *idiom construction* and *pun generation*.

EDUCATION

Ph.D. in Statistics. **Fudan University**
National Scholarship for Doctoral Students *2021-2026 (estimated)*
B.S. in Data Science. **Fudan University**
National Scholarship, Outstanding Graduate Student in Shanghai. *2017-2021*

EXPERIENCE

ByteDance Seed-LLM-Horizon *September 2024 - December 2024*
○ Role: Research Intern
○ Advisor: Dr. Jiangjie Chen and Dr. Jiecao Chen
○ Topics: Revision Capabilities of Autonomous Agents [1]

Microsoft Research Asia *September 2023 - Jun 2024*
○ Role: Research Intern
○ Advisor: Dr. Kaitao Song
○ Topics: Autonomous Agents with Planning and Tool Use
○ Project: Participate in the JARVIS project (**Github Stars: 23.6K**) [2] [3] [4]
○ Honor: Stars of Tomorrow (Top 50%)

ByteDance AI-Lab *January 2023 - May 2023*
○ Role: Research Intern
○ Advisor: Dr. Changzhi Sun and Jiaze Chen
○ Topics: Evaluation and Improvement on the analogical reasoning abilities of LLMs [14].

Brain Technologies *June 2022 - September 2022*
○ Role: Research Intern
○ Advisor: Dr. Charles Jankowski
○ Topics: Symbolic Knowledge Distillation for Language Planning and LLM Prompt Engineering [7].

Knowledge Works Lab at Fudan University *March 2019 - Present*
○ Role: Student Researcher
○ Advisor: Prof. Yanghua Xiao and Dr. Jiangjie Chen
○ Topics: Knowledge Acquisition, e.g, Analogy-making [15], Entity Typing [17], and Concept Extraction [18] [16].

AWARDS AND ACHIEVEMENTS

China National Scholarship for Doctoral Students 2024
○ Fudan University

ACL 2023 Outstanding Paper Award (Top 1%) 2023
○ Association of Computational Linguistics

Huatai Securities Scholarship 2023
○ Fudan University

Outstanding Graduate Student of Shanghai Colleges and University (Top 5%) 2021
○ Fudan University

Outstanding Student pacemaker of Fudan University *2021*
- Fudan University

China National Scholarship for Undergraduate *2018*
- Fudan University

SELECTED PUBLICATIONS

[*: Equal Contribution; ♠: Student I Mentored; †: Project Leader;]

Planning and Reasoning

[1] Agent-R: Training Language Model Agents to Reflect via Iterative Self-Training
Siyu Yuan, Zehui Chen, Zhiheng Xi, Junjie Ye, Zhengyin Du, Jiecao Chen
Long paper, Preprint, 2025. **Huggingface Daily Paper Top-1**

[2] EvoAgent: Towards Multi-Agent Generation via Evolutionary Algorithms
Siyu Yuan*, Kaitao Song*, Jiangjie Chen, Xu Tan, Dongsheng Li, Deqing Yang
Long paper, in: **NAACL 2025**.

[3] EasyTool: Enhancing LLM-based Agents with Concise Tool Instruction
Siyu Yuan*, Kaitao Song*, Jiangjie Chen, Xu Tan, Yongliang Shen, Ren Kan, Dongsheng Li, Deqing Yang
Long paper, in: **NAACL 2025**. In the JARVIS project (**Github Stars: 23.6K**)

[4] TaskBench: Benchmarking Large Language Models for Task Automation
Yongliang Shen*, Kaitao Song*, Xu Tan, Wenqi Zhang, Kan Ren, **Siyu Yuan**, Weiming Lu, Dongsheng Li, Yueting Zhuang
Long paper, in: **Neurips 2024**. In the JARVIS project (**Github Stars: 23.6K**)

[5] Put Your Money Where Your Mouth Is: Evaluating Strategic Planning and Execution of LLM Agents in an Auction Arena
Jiangjie Chen, **Siyu Yuan**, Rong Ye, Bodhisattwa Prasad Majumder, Kyle Richardson
Long paper, Preprint, 2024.

[6] TIMEARENA: Shaping Efficient Multitasking Language Agents in a Time-Aware Simulation
Yikai Zhang♠, **Siyu Yuan**†, Caiyu Hu, Kyle Richardson, Yanghua Xiao, Jiangjie Chen
Long paper, in: **ACL 2024**.

[7] Distilling Script Knowledge from Large Language Models for Constrained Language Planning
Siyu Yuan, Jiangjie Chen, Ziquan Fu, Xuyang Ge♠, Soham Shah, Charles Robert Jankowski, Yanghua Xiao, Deqing Yang
Long paper, in: **ACL 2023**. **Outstanding Paper Award** (Top 1%)

Cognitive Modeling

[8] Unlocking Scientific Concepts: How Effective Are LLM-Generated Analogies for Student Understanding and Classroom Practice?
Zekai Shao*, **Siyu Yuan***, Lin Gao, Yixuan He, Deqing Yang, Siming Chen
Long paper, in: **CHI 2025**.

[9] Past Meets Present: Creating Historical Analogy with Large Language Models
Nianqi Li♠, **Siyu Yuan**, Jiangjie Chen, Jiaqing Liang, Feng Wei, Zujie Liang, Deqing Yang, Yanghua Xiao
Long paper, Preprint 2024.

[10] From Persona to Personalization: A Survey on Role-Playing Language Agents
Jiangjie Chen*, Xintao Wang*, Rui Xu*, **Siyu Yuan***, Yikai Zhang*♠, Wei Shi*, Jian Xie*, Shuang Li♠, Ruihan Yang♠, Tinghui Zhu, Aili Chen, Nianqi Li♠, Lida Chen, Caiyu Hu, Siye Wu, Scott Ren, Ziquan Fu, Yanghua Xiao
Long paper, in: **TMLR**.

[11] Boosting Scientific Concepts Understanding: Can Analogy from Teacher Models Empower Student Models?
Siyu Yuan*, Jiayang Cheng*, Lin Qiu, Deqing Yang
Short paper, in: **EMNLP 2024**.

[12] Evaluating Character Understanding of Large Language Models via Character Profiling from Fictional Works
Xinfeng Yuan♠, **Siyu Yuan**†, Yuhan Cui*♠, Tianhe Lin♠, Xintao Wang, Rui Xu, Jiangjie Chen, Deqing Yang
Long paper, in: **EMNLP 2024**.

[13] "A good pun is its own reword": Can Large Language Models Understand Puns?
Zhijun Xu♠, **Siyu Yuan**†, Lingjie Chen♠, Deqing Yang
Long paper, in: **EMNLP 2024**.

Knowledge Acquisition

[14] AnalogyKB: Unlocking Analogical Reasoning of Language Models with A Million-scale Knowledge Base
Siyu Yuan*, Jiangjie Chen*, Jiaqing Liang, Changzhi Sun, Yanghua Xiao, Deqing Yang
Long paper, in: **ACL 2024**.

[15] Beneath Surface Similarity: Large Language Models Make Reasonable Scientific Analogies after Structure Abduction
Siyu Yuan, Jiangjie Chen, Xuyang Ge♠, Yanghua Xiao, Deqing Yang

Long paper, in: **EMNLP 2023** (Findings).

[16] Causality-aware Concept Extraction based on Knowledge-guided Prompting
Siyu Yuan, Deqing Yang, Jinxi Liu, Shuyu Tian, Jiaqing Liang, Yanghua Xiao, Rui Xie
Long paper, in: **ACL 2023**.

[17] Generative Entity Typing with Curriculum Learning
Siyu Yuan, Deqing Yang, Jiaqing Liang, Zhixu Li, Jinxi Liu, Jingyue Huang, Yanghua Xiao
Long paper, in: **EMNLP 2022**.

[18] Large-Scale Multi-granular Concept Extraction Based on Machine Reading Comprehension
Siyu Yuan, Deqing Yang, Jiaqing Liang, Jilun Sun, Jingyue Huang, Kaiyan Cao, Yanghua Xiao, Rui Xie.
Long paper, in: **ISWC 2021**.

OTHER PUBLICATIONS

[*: Equal Contribution; ♠: Student I Mentored; †: Project Leader;]

[19] Revealing the Barriers of Language Agents in Planning
Jian Xie, Kexun Zhang, Jiangjie Chen, **Siyu Yuan**, Kai Zhang, Yikai Zhang, Lei Li, Yanghua Xiao
Long paper, in: **NAACL 2025**.

[20] WAPITI: A Watermark for Finetuned Open-Source LLMs
Lingjie Chen♠, Ruizhong Qiu, **Siyu Yuan**, Zhining Liu, Tianxin Wei, Hyunsik Yoo, Zhichen Zeng, Deqing Yang, Hanghang Tong
Long paper, Preprint, 2024.

[21] SELFGOAL: Your Language Agents Already Know How to Achieve High-level Goals
Ruihan Yang♠, Jiangjie Chen, Yikai Zhang♠, **Siyu Yuan**, Kyle Richardson, Yanghua Xiao, Deqing Yang
Long paper, in: **NAACL 2025**.

[22] MINDECHO: Role-Playing Language Agents for Key Opinion Leaders
Rui Xu, Dakuan Lu, Xiaoyu Tan, Xintao Wang, **Siyu Yuan**, Jiangjie Chen, Wei Chu, Xu Yinghui
Long paper, Under Review, 2024.

[23] Character is Destiny: Can Large Language Models Simulate Persona-Driven Decisions in Role-Playing?
Rui Xu, Xintao Wang, Jiangjie Chen, **Siyu Yuan**, Xinfeng Yuan♠, Jiaqing Liang, Zulong Chen, xiaoqingdong, Yanghua Xiao
Long paper, Preprint, 2024.

[24] InCharacter: Evaluating Personality Fidelity in Role-Playing Agents through Psychological Interviews
Xintao Wang, Yunze Xiao, Jen-tse Huang, **Siyu Yuan**, Rui Xu, Haoran Guo, Quan Tu, Yaying Fei, Ziang Leng, Wei Wang, Jiangjie Chen, Cheng Li, Yanghua Xiao
Long paper, in: **ACL 2024**.

[25] Light Up the Shadows: Enhance Long-Tail Entity Grounding with Concept-Guided Vision-Language Models
Yikai Zhang♠, Qianyu He, Xintao Wang, **Siyu Yuan**, Jiaqing Liang, Yanghua Xiao
Long paper, in: **ACL 2024** (Findings).

[26] Translate Meanings, Not Just Words: IdiomKB's Role in Optimizing Idiomatic Translation with Language Models
Shuang Li♠, Jiangjie Chen, **Siyu Yuan**, Xinyi Wu, Hao Yang, Shimin Tao, Yanghua Xiao
Long paper, in: **AAAI 2024**.

[27] Contextual Information and Commonsense Based Prompt for Emotion Recognition in Conversation
Jingjie Yi, Deqing Yang, **Siyu Yuan**, Kaiyan Cao, Zhiyao Zhang and Yanghua Xiao
Long paper, in: **ECML PKDD 2022**.

Academic Service

○ Program Committee/Reviewer of EMNLP (2022-), APIN (2022-), ACL ARR (2023-), ICLR (2024), COLM (2024), and some corresponding workshops