


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. She is dedicated to advancing fundamental **Planning and Reasoning Capabilities in Language Models**, with a particular focus on developing systematic approaches for complex real-world challenges through self-improvement, strategic planning, and tool-augmented reasoning:

- **Self-Improvement Mechanisms:** Enhance the capabilities of language models on complex reasoning problems (such as Math, Puzzle and Interactive Planning Tasks) through self-improvement methods, such as *iterative self-reflection*, *evolutionary optimization*, and *automatic multi-agent collaboration*.
- **Complex Planning Exploration:** Investigate complex real-world planning in language models, including *multitask scheduling*, *social strategic planning* and *constrained language planning*.
- **Tool-Augmented Reasoning:** Improve real-world problem-solving by integrating *efficient tool utilization*, *analogical reasoning*, and *meta-action systems* for enhanced decision-making.

EDUCATION

Ph.D. in Statistics.

National Scholarship for Doctoral Students

Fudan University

2021-2026 (estimated)

B.S. in Data Science.

National Scholarship, Outstanding Graduate Student in Shanghai.

Fudan University

2017-2021

EXPERIENCE

ByteDance Seed-LLM-Horizon

September 2024 - Present

- 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](#)) [3] [4] [7]
- 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 [10].

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 ○ Fudan University	2023
Outstanding Graduate Student of Shanghai Colleges and University (Top 5%) ○ Fudan University	2021
Outstanding Student pacemaker of Fudan University ○ Fudan University	2021
China National Scholarship for Undergraduate ○ Fudan University	2018

PUBLICATIONS WITH TOPICS

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

Topic I: 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, Github Stars: 100+**
- [2] [ToolHop: A Query-Driven Benchmark for Evaluating Large Language Models in Multi-Hop Tool Use](#)
Junjie Ye, Zhengyin Du, Xuesong Yao, Weijian Lin, Yufei Xu, Zehui Chen, Zaiyuan Wang, Sining Zhu, Zhiheng Xi, Siyu Yuan, Tao Gui, Qi Zhang, Xuanjing Huang, Jiechao Chen
Long paper, Preprint, 2025.
- [3] [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**.
- [4] [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**)
- [5] [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**.
- [6] [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**.
- [7] [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**)
- [8] [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.
- [9] [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**.
- [10] [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%)**

Topic II: Cognitive Modeling

- [11] [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.
- [12] [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**.
- [13] [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**.
- [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**.

Topic III: Role-Playing Language Models.....

- [19] [DEEPER Insight into Your User: Directed Persona Refinement for Dynamic Persona Modeling](#)
Aili Chen, Chengyu Du, Jiangjie Chen, Jinghan Xu, Yikai Zhang, Siyu Yuan, Zulong Chen, Liangyue Li, Yanghua Xiao
Long paper, Preprint, 2025.
- [20] [CoSER: Coordinating LLM-Based Persona Simulation of Established Roles](#)
Xintao Wang, Heng Wang, Yifei Zhang, Xinfeng Yuan, Rui Xu, Jen-tse Huang, Siyu Yuan, Haoran Guo, Jiangjie Chen, Wei Wang, Yanghua Xiao, Shuchang Zhou
Long paper, Preprint, 2025.
- [21] [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.
- [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] [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**.
- [24] [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**.
- [25] [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**.

OTHER PUBLICATIONS

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

- [26] [MultiLingPoT: Enhancing Mathematical Reasoning with Multilingual Program Fine-tuning](#)
Nianqi Li, Zujie Liang, Siyu Yuan, Jiaqing Liang, Feng Wei, Yanghua Xiao
Long paper, Preprint, 2024.
- [27] [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.
- [28] [“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**.
- [29] [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).
- [30] [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**.

- [31] [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