


# Siyu Yuan

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## RESEARCH INTEREST

Siyu Yuan (员司雨) is a fourth-year Ph.D. candidate at Fudan University's School of Data Science. Her research focuses on advancing fundamental **Planning and Reasoning Capabilities in Language Models**, with a particular focus on building reasoning models and autonomous agents:

- **Reasoning Models:** Exploring and advancing research on incentivizing and understanding complex reasoning and planning capabilities in large language models. Key approaches include *reinforcement learning*, *iterative self-reflection*, *evolutionary optimization*, and *automated multi-agent collaboration*.
- **Autonomous Agents:** Innovating methods for creating autonomous, trustworthy, and personalized language agents. This encompasses investigating their interactions within multi-agent systems and real-world environments, with applications in areas such as *efficient tool utilization*, *multi-task scheduling* and *social strategic planning*.

## EDUCATION

**Ph.D. in Statistics**

*National Scholarship for Doctoral Students*

**Fudan University**  
2021-2026 (expected)

**B.S. in Data Science**

*National Scholarship, Outstanding Graduate of Shanghai*

**Fudan University**  
2017-2021

## EXPERIENCE

**ByteDance Seed-LLM-Horizon**

September 2024 - Present

- Role: Research Intern
- Advisor: Dr. Jiangjie Chen and Dr. Jiecao Chen
- Focus: Enhancing complex reasoning capabilities in LLMs [1] [2] [3]
- Projects: [Seed1.5-Thinking](#) (**Github Star: 700+**), [Doubao-1.5-pro-AS1-Preview](#)

**Microsoft Research Asia**

September 2023 - Jun 2024

- Role: Research Intern
- Advisor: Dr. Kaitao Song
- Topics: Autonomous Agents with Planning and Tool Use [4] [5] [7].
- Project: Participate in the [JARVIS](#) project (**Github Stars: 23.6K**).
- 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 [23].

**Brain Technologies**

June 2022 - September 2022

- Role: Research Intern
- Advisor: Dr. Charles Jankowski
- Topics: Symbolic Knowledge Distillation for Language Planning and LLM Prompt Engineering [8].

**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 [26], Entity Typing [28], and Concept Extraction [30] [27].

## SELECTED AWARDS

**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

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

## SELECTED WORK

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

- [1] [Enigmata: Scaling Logical Reasoning in Large Language Models with Synthetic Verifiable Puzzles](#)  
Jiangjie Chen\*, Qianyu He\*, **Siyu Yuan\***, Aili Chen\*, Zhicheng Cai, Weinan Dai, Hongli Yu, Jiaze Chen, Xuefeng Li, Qiying Yu, Hao Zhou, Mingxuan Wang  
Technical Report, Preprint, 2025. **Core Contributor**, this project contributes to the Logical Reasoning Capabilities for **Seed1.5-Thinking**.
- [2] [Seed1.5-Thinking: Advancing Superb Reasoning Models with Reinforcement Learning](#)  
**Siyu Yuan** (Contributor), contributed to **Logic Reasoning Capabilities for Seed1.5-Thinking**  
Technical Report, Preprint, 2025.
- [3] [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+**
- [4] [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**. **Github Stars: 100+**
- [5] [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**)
- [6] [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**.
- [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] [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%)**

## MORE WORK

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

### Topic I: Planning and Reasoning

- [9] [ARIA: Training Language Agents with Intention-driven Reward Aggregation](#)  
Ruihan Yang\*♠, Yikai Zhang\*♠, Aili Chen, Xintao Wang, Jiangjie Chen, **Siyu Yuan**, Deqing Yang, Yanghua Xiao  
Long paper, UnderReview.
- [10] [Implicit reasoning in transformers is reasoning through shortcuts](#)  
Tianhe Lin♠, Jian Xie, **Siyu Yuan**, Deqing Yang  
Long paper, in: **ACL 2025 Findings**.
- [11] [The lighthouse of language: Enhancing llm agents via critique-guided improvement](#)  
Ruihan Yang♠, Fanghua Ye, Jian Li, **Siyu Yuan**, Yikai Zhang♠, Zhaopeng Tu, Xiaolong Li, Deqing Yang  
Long paper, Preprint, 2025.
- [12] [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, in: **ACL 2025**.

- [13] [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**.
- [14] [SELFGOAL: Your Language Agents Already Know How to Achieve High-level Goals](#)  
Ruihan Yang<sup>♣</sup>, Jiangjie Chen, Yikai Zhang<sup>♣</sup>, Siyu Yuan, Kyle Richardson, Yanghua Xiao, Deqing Yang  
Long paper, in: **NAACL 2025**.
- [15] [WAPITI: A Watermark for Finetuned Open-Source LLMs](#)  
Lingjie Chen<sup>♣</sup>, Ruizhong Qiu, Siyu Yuan, Zhining Liu, Tianxin Wei, Hyunsik Yoo, Zhichen Zeng, Deqing Yang, Hang-hang Tong  
Long paper, Preprint, 2024.
- [16] [MultiLingPoT: Enhancing Mathematical Reasoning with Multilingual Program Fine-tuning](#)  
Nianqi Li<sup>♣</sup>, Zujie Liang, Siyu Yuan, Jiaqing Liang, Feng Wei, Yanghua Xiao  
Long paper, Preprint, 2024.
- [17] [TIMEARENA: Shaping Efficient Multitasking Language Agents in a Time-Aware Simulation](#)  
Yikai Zhang<sup>♣</sup>, Siyu Yuan<sup>†</sup>, Caiyu Hu, Kyle Richardson, Yanghua Xiao, Jiangjie Chen  
Long paper, in: **ACL 2024**.
- [18] [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.

## Topic II: Cognitive Modeling.....

- [19] [Past Meets Present: Creating Historical Analogy with Large Language Models](#)  
Nianqi Li<sup>♣</sup>, Siyu Yuan, Jiangjie Chen, Jiaqing Liang, Feng Wei, Zujie Liang, Deqing Yang, Yanghua Xiao  
Long paper, in: **ACL 2025**.
- [20] [Unlocking Scientific Concepts: How Effective Are LLM-Generated Analogies for Student Understanding and Classroom Practice?](#)  
Zekai Shao<sup>\*</sup>, Siyu Yuan<sup>\*</sup>, Lin Gao, Yixuan He, Deqing Yang, Siming Chen  
Long paper, in: **CHI 2025**.
- [21] [“A good pun is its own reward”: Can Large Language Models Understand Puns?](#)  
Zhijun Xu<sup>♣</sup>, Siyu Yuan<sup>†</sup>, Lingjie Chen<sup>♣</sup>, Deqing Yang  
Long paper, in: **EMNLP 2024**.
- [22] [Boosting Scientific Concepts Understanding: Can Analogy from Teacher Models Empower Student Models?](#)  
Siyu Yuan<sup>\*</sup>, Jiayang Cheng<sup>\*</sup>, Lin Qiu, Deqing Yang  
Short paper, in: **EMNLP 2024**.
- [23] [AnalogyKB: Unlocking Analogical Reasoning of Language Models with A Million-scale Knowledge Base](#)  
Siyu Yuan<sup>\*</sup>, Jiangjie Chen<sup>\*</sup>, Jiaqing Liang, Changzhi Sun, Yanghua Xiao, Deqing Yang  
Long paper, in: **ACL 2024**.
- [24] [Translate Meanings, Not Just Words: IdiomKB’s Role in Optimizing Idiomatic Translation with Language Models](#)  
Shuang Li<sup>♣</sup>, Jiangjie Chen, Siyu Yuan, Xinyi Wu, Hao Yang, Shimin Tao, Yanghua Xiao  
Long paper, in: **AAAI 2024**.
- [25] [Light Up the Shadows: Enhance Long-Tail Entity Grounding with Concept-Guided Vision-Language Models](#)  
Yikai Zhang<sup>♣</sup>, Qianyu He, Xintao Wang, Siyu Yuan, Jiaqing Liang, Yanghua Xiao  
Long paper, in: **ACL 2024** (Findings).
- [26] [Beneath Surface Similarity: Large Language Models Make Reasonable Scientific Analogies after Structure Abduction](#)  
Siyu Yuan, Jiangjie Chen, Xuyang Ge<sup>♣</sup>, Yanghua Xiao, Deqing Yang  
Long paper, in: **EMNLP 2023** (Findings).
- [27] [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**.
- [28] [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**.
- [29] [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**.

- [30] [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 Agents.....

- [31] [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, in: **ICML 2025**.
- [32] [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, in: **ACL 2025**.
- [33] [Character is Destiny: Can Large Language Models Simulate Persona-Driven Decisions in Role-Playing?](#)  
Rui Xu, Xintao Wang, Jiangjie Chen, **Siyu Yuan**, Xinfeng Yuan<sup>♣</sup>, Jiaqing Liang, Zulong Chen, xiaoqingdong, Yanghua Xiao  
Long paper, Preprint, 2024.
- [34] [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.
- [35] [Evaluating Character Understanding of Large Language Models via Character Profiling from Fictional Works](#)  
Xinfeng Yuan<sup>♣</sup>, **Siyu Yuan**<sup>†</sup>, Yuhao Cui<sup>♣</sup>, Tianhe Lin<sup>♣</sup>, Xintao Wang, Rui Xu, Jiangjie Chen, Deqing Yang  
Long paper, in: **EMNLP 2024**.
- [36] [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**.

### Academic Service

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- Program Committee/Reviewer for leading conferences including ACL ARR (2022-), ICLR (2024), COLM (2024-), and related workshops