

# 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, ACL 2023 Outstanding Paper Award (Top 1%)*

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
- Topics: 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 [5] [6] [8].
- Project: Participate in the [JARVIS](#) project ([Github Stars: 23.6K](#)).

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 [24].

## 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** as a contributor 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] [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, in: [ACL 2025](#). **Oral (8%)**

- [5] [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+**
- [6] [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**)
- [7] [From Persona to Personalization: A Survey on Role-Playing Language Agents](#)  
 Jiangjie Chen\*, Xintao Wang\*, Rui Xu\*, **Siyu Yuan\***, Yikai Zhang\*<sup>♣</sup>, Wei Shi\*, Jian Xie\*, Shuang Li<sup>♣</sup>, Ruihan Yang<sup>♣</sup>,  
 Tinghui Zhu, Aili Chen, Nianqi Li<sup>♣</sup>, Lida Chen, Caiyu Hu, Siye Wu, Scott Ren, Ziquan Fu, Yanghua Xiao  
 Long paper, in: **TMLR**.
- [8] [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**)
- [9] [Distilling Script Knowledge from Large Language Models for Constrained Language Planning](#)  
**Siyu Yuan**, Jiangjie Chen, Ziquan Fu, Xuyang Ge<sup>♣</sup>, Soham Shah, Charles Robert Jankowski, Yanghua Xiao, Deqing Yang  
 Long paper, in: **ACL 2023**. **Outstanding Paper Award (Top 1%)**

## MORE WORK

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[\*: Equal Contribution; <sup>♣</sup>: Student I Mentored; <sup>†</sup>: Project Leader; ]

### Topic I: Planning and Reasoning.....

- [10] [KORGym: A Dynamic Game Platform for LLM Reasoning Evaluation](#)  
**Siyu Yuan** as a contributor to Logic Reasoning Data Collection.  
 Long paper, Preprint, 2025.
- [11] [ARIA: Training Language Agents with Intention-driven Reward Aggregation](#)  
 Ruihan Yang\*<sup>♣</sup>, Yikai Zhang\*<sup>♣</sup>, Aili Chen, Xintao Wang, Jiangjie Chen, **Siyu Yuan**, Deqing Yang, Yanghua Xiao  
 Long paper, Preprint, 2025.
- [12] [Implicit reasoning in transformers is reasoning through shortcuts](#)  
 Tianhe Lin<sup>♣</sup>, Jian Xie, **Siyu Yuan**, Deqing Yang  
 Long paper, in: **ACL 2025 Findings**.
- [13] [The lighthouse of language: Enhancing llm agents via critique-guided improvement](#)  
 Ruihan Yang<sup>♣</sup>, Fanghua Ye, Jian Li, **Siyu Yuan**, Yikai Zhang<sup>♣</sup>, Zhaopeng Tu, Xiaolong Li, Deqing Yang  
 Long paper, Preprint, 2025.
- [14] [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**.
- [15] [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**.
- [16] [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**.
- [17] [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.
- [18] [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**.
- [19] [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.....

- [20] [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**.

- [21] [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, Hanghang Tong  
Long paper, Preprint, 2024.
- [22] [“A good pun is its own reword”: 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**.
- [23] [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**.
- [24] [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**.
- [25] [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**.
- [26] [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).
- [27] [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).
- [28] [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**.
- [29] [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**.
- [30] [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**.
- [31] [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.....

- [33] [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**.
- [34] [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**.
- [35] [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.
- [36] [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.
- [37] [Evaluating Character Understanding of Large Language Models via Character Profiling from Fictional Works](#)  
Xinfeng Yuan<sup>♣</sup>, **Siyu Yuan**<sup>†</sup>, Yuhan Cui<sup>♣</sup>, Tianhe Lin<sup>♣</sup>, Xintao Wang, Rui Xu, Jiangjie Chen, Deqing Yang  
Long paper, in: **EMNLP 2024**.

[38] [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**.

**SELECTED AWARDS**

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<b>China National Scholarship for Doctoral Students</b>	2024
○ Fudan University	
<b>ACL 2023 Outstanding Paper Award (Top 1%)</b>	2023
○ Association of Computational Linguistics	
<b>Huatai Securities Scholarship</b>	2023
○ Fudan University	
<b>Outstanding Graduate Student of Shanghai Colleges and University (Top 5%)</b>	2021
○ Fudan University	
<b>Outstanding Student pacemaker of Fudan University</b>	2021
○ Fudan University	
<b>China National Scholarship for Undergraduate</b>	2018
○ Fudan University	

**Academic Service**

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- Program Committee/Reviewer for leading conferences including ACL ARR (2022-), ICLR (2024), COLM (2024-), NeurIPS (2025) and related workshops