Xinming Hou

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Summary

Research Interests: My primary research and study lie in the area of **natural language processing** and **machine learning**. I am passionate about the **robust**, **reliable** design, self-improvement and evaluation of **AI systems**. Additionally, I am dedicated to **AI for creativity** and **personalized AI**.

Research Goal: My research goal is to develop AI systems that can sustainably and measurably unlock greater AI potential, **fully autonomously** tackle complex **real-world problems**, and **efficiently collaborate** with humans, thereby freeing up our time and creativity to pursue what truly ignites our souls and spread more love and joy.

Education

Gaoling School of Artificial Intelligence, Renmin University of China (RUC) *Beijing, China*

Bachelor's of Engineering (B.Eng.) in **Artificial Intelligence** with Honors *Sept. 2021-Jun. 2025(Expected)*

- Major GPA: 3.68/4; Average score: 87.2
- Relevant Courses: Machine Learning, Deep Learning, Natural language processing, Algorithm Design and Analysis, Data Structure and Algorithm, Python Programming, C & C++ Programming, Probability and Statistics, Advanced Algebra, Mathematical Analysis.

Publications

CoAct: A Global-Local Hierarchy for Autonomous Agent Collaboration

Xinming Hou, Mingming Yang, Wenxiang Jiao, Xing Wang, Zhaopeng Tu, Xin Zhao.

In submission, 2024 [Paper]

Research Experience

Renmin University of China *Beijing, China*

Research Assistant at RUC AI Box, advised by Prof. Wayne Xin Zhao *Jul. 2022 - Present*

- **Research Topics:** natural language processing, explainability
- Delved into topics related to knowledge discernment and memory management to enhance factuality control of language models.
- Builded a self-improvement framework in various complex cognitive and reasoning tasks, and explored the universal pipeline for building user-friendly prompts, incorporating various ICL methods.
- Exploring Transformer mechanisms at the neuronal level, inspired by the language networks' behaviors and characteristics in the human brain, aiming to investigate LLMs' multilingual capabilities and reasoning mechanisms.

Tencent AI Lab *Shenzhen, China*

Research Intern at NLP Reasearch Group , advised by Wenxiang Jiao and Xing Wang *Jul. 2023 - Jun. 2024*

- **Research Topics:** the self-organization and humanity of multi-agents system
- Explored the potential of transferring human societal work patterns to AI systems.
- Investigated efficient and flexible collaboration methods for LLM agents to enhance real-world complex task handling capabilities.

Project Portfolio (Selected)

Classical Chinese Poetry Creation Model *Beijing, China*

Founder & Developer, advised by Prof. Rui Yan and Prof. Danjun Cai / [Pre. Slides] *Feb. 2023 - Apr. 2024*

- Proposed a Chinese Tang Poetry creation pre-trained language model, which endows the model with vitality and a complete life cycle like Tang dynasty poets, and enables emotional interaction with users.
- Won the Best Creativity Award in The 14th Student Entrepreneurship Star Competition, JD Cup.

Survey of Large Language Models *Beijing, China*

Proofreader, advised by Prof. Wayne Xin Zhao / [Paper] / [Github] / [Book] *Mar. 2023 - May. 2023*

- Conducted overall and detailed review to translate the paper into a high-quality Chinese version.
- Corrected the inconsistencies and ambiguities in the text and provided feasible suggestions for improvement.

Implementation of a Basic Search Engine *Beijing, China*

FOUNDER & DEVELOPER, ADVISED BY PROF. JIAXIN MAO / [CODE] *Aug. 2022*

- Coursework for Artificial Intelligence Integrated Design, voted as the best system (1/14)
- Built A website that supports school community network search using HTML5, CSS, and JS languages.
- Applied the advanced methods of web crawler and classical algorithms of information retrieval (such as TF-IDF, PAGE-RANK, etc.)

Skills

Programming C/C++, Python, LaTeX , Linux, SQL, MATLAB, HTML5, CSS, JS, etc.

Frameworks PyTorch, Tensorflow, NumPy, DeepSpeed, Git, Anaconda, etc.

Honors and Awards (Selected)

2022 **National First Prize**, National College Student Mathematical Modeling Competition (top 0.60%)

2023 **Finalist**, Mathematical Contest in Modeling (top 2%)

2024 **First Prize**, Sa shixuan Elite Fund Scholarship

2023 **Best Creativity Award**, The 14th Student Entrepreneurship Star Competition, JD Cup(50,000 RMB prize)

2022 **Best System**, GSAI Artificial Intelligence Integrated Design

2022 **1st place**, RUC Group Competitive OJ Contest for Programming Course (Captain, 1/22)