Jize Wang | PhD Student at SJTU

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Education

Shanghai Jiao Tong University **Ph.D.**
Automation, advised by Prof. Cailian Chen *2024 – 2028*
Research area: LLM-based agents, multi-agent systems, information extraction.

Shanghai Jiao Tong University **M.Eng.**
Automation, advised by Prof. Xinyi Le *2022 – 2024*
Rank: 16/52, GPA: 3.76/4.0

Shanghai Jiao Tong University **B.Eng.**
Automation *2018 – 2022*
Rank: 20/115, GPA: 3.73/4.0, CET-4: 627, CET-6: 550

Publications

GTA: A Benchmark for General Tool Agents
Advances in Neural Information Processing Systems (NeurIPS 2024) *R01*
Jize Wang, Zerun Ma, Yining Li, Songyang Zhang, Cailian Chen, Kai Chen, Xinyi Le.

Adaptive Hinge Balance Loss for Document-Level Relation Extraction
The 2023 Conference on Empirical Methods in Natural Language Processing (EMNLP 2023) *R02*
Jize Wang, Xinyi Le, Xiaodi Peng, Cailian Chen.

Code Generation from Natural Language Using Two-Way Pre-Training
The 15th Conference on Advanced Computational Intelligence (ICACI 2023) *R03*
Jize Wang, Yunfeng Peng, Xinyi Le, Cailian Chen, Xinping Guan.

Research Experience

Tool-Use Evaluation for LLM-based Agents
Shanghai Jiao Tong University, Shanghai AI Laboratory *Oct 2023 – Jun 2024*
To address the evident gaps between existing tool evaluations and real-world scenarios, we propose a benchmark to evaluate the tool-use capabilities for LLM-based agents in complex real-world scenarios. The work is accepted by NeurIPS 2024 Dataset & Benchmark Track (first author)[R01].
- Evaluations match real-world scenarios with multimodal inputs, necessitating the use of multiple tools across perception, operation, logic, and creativity for multi-step problem-solving.
- A total of 229 tasks are designed to evaluate 16 LLMs, revealing the bottlenecks in the tool-use capabilities of current LLMs in real-world scenarios.

Document-level Relation Extraction
Shanghai Jiao Tong University *Oct 2022 – Jun 2023*
Utilize transformer to predict relations between entities in documents. Tackle the issue of sparse positive samples in document-level extraction with a hinge-based adaptive threshold. The work is accepted by EMNLP 2023 (first author)[R02].
- Design Separate Adaptive Threshold (SAT) for multi-label classification of relations with adaptive threshold.
- Propose the adaptive hinge balance loss to address the issue of imbalance between positive and negative samples in document-level relation extraction.

Code Generation Algorithm Based on Pre-trained Models
Shanghai Jiao Tong University *Oct 2021 – Jun 2022*
Utilizing the Seq2seq architecture, with BERT as the encoder, generate Python code from natural language descriptions. The work is accepted by ICACI 2023 (first author)[R03]. .
- Design a Seq2Seq-based model architecture, using pre-trained BERT as the encoder to enhance the model's natural language understanding capabilities.
- Propose a bidirectional pre-training method to mine knowledge from natural language-code corpora, reducing the requirements for data scale and computational resources.

Industry Experience

Research Intern, Shanghai AI Laboratory

Research on LLM applications. *Oct 2023 – Now*

Research on LLM algorithms and related applications, including LLM agents, instruction tuning, etc.

- Develop an evaluation framework for tool agents, encompassing dataset construction, agent architecture design, tool deployment, and evaluation procedure design for popular LLMs[R01].
- Research on data construction algorithms for instruction fine-tuning.

Key Member, National Key R&D Program

Rapid construction of intelligent manufacturing management software. *Oct 2021 – Dec 2023*

Develop information extraction algorithms for industrial scenarios, and tool kits for software development using LLMs.

- Develop a code generation algorithm using natural language understanding to automate the process from requirements to code, boosting efficiency and cutting costs.
- Design a software that automatically splits unstructured documents by directory hierarchy, extracts text, tables, and images, and integrates them into JSON files for rapid software construction.
- Design an intelligent knowledge extraction software for requirement documents, automatically converting unstructured documents into UML class diagrams for rapid software construction.

Research Intern, Hikvision Shanghai

Research on visual algorithms for license plate recognition. *Jul 2021*

Focuses on data cleansing for new license plate recognition datasets, implementing and evaluating data cleaning methodologies.

Selected Honors and Awards

Agilent Special Scholarship

Agilent Technologies Inc., Shanghai Jiao Tong University *2023*

Outstanding Graduate Student

Shanghai Jiao Tong University *2022*

Zhiyuan Honor Scholarship

Shanghai Jiao Tong University *2018 – 2021*