Yingming Zhou

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Education

Capital Normal University *2021 - Present*

Bachelor of Information Management and Information System, *GPA: 92.1/100 (Rank: 1/20)*

Research Interests

I am deeply interested in GCNs and LLMs, with a particular focus on LLM-based agent.

Publications

(* stands for equal contribution)

Manuscripts

[1] Think-on-Process: Dynamic Process Generation for Collaborative Development of Multi-Agent System.
Leilei Lin*, Yingming Zhou* , Wenlong Chen and Chen Qian.
(AAAI-2025) In submission. [PDF]

[2] MAO: A Framework for Process Model Generation with Multi-Agent Orchestration.
Leilei Lin, Yumeng Jin, Yingming Zhou, Wenlong Chen and Chen Qian.
(AAAI-2025) In submission. [PDF]

Conference Publications

[3] Individual Behavior Clustering with Sensors Using Graph Convolutional Networks.
Xingchi Peng, Yunuo Cao, Leilei Lin, Yingming Zhou and Wenlong Chen.
IEEE Wireless Communications and Networking Conference, 2024. [PDF]

Research Experiences

MAO: Multi-Agent Collaboration Orchestration for Process Model Generation
Research Assistant, advised by Prof. Leilei Lin & Prof. Chen Qian *Apr 2024 - June 2024*

- Proposed a novel framework that allows multi-agent to collaborate to automatically generate process models from textual process requirements without human involvement.
- Used multi-round interaction mechanisms and integration of external tools to alleviate hallucination phenomena.
- Verified the accuracy and efficiency of the framework Mao for automatic process modeling by public datasets.

ToP: Dynamic Process Generation Guides Multi-Agent Software Development
Research Assistant, advised by Prof. Leilei Lin & Prof. Chen Qian *Nov 2023 - Jan 2024*

- Explored how LLMs can dynamically generate processes to facilitate software development and proposed the ToP framework. The framework enables the generation of processes based on varying user requirements, followed by the use of multi-agent systems to collaboratively execute software development tasks
- Used external compilation tools and heuristic filtering to reduce the process hallucination of LLMs
- Applied process mining algorithm to extract software development process, and use it to enhance LLMs' dynamic instance generation capability.

Individual Behavior Clustering Using Graph Convolutional Networks
Research Assistant, advised by Prof. Leilei Lin *Aug 2023 - Oct 2023*

- Preprocessed sensor-collected human location data and converted it into directed graphs, then extracted graph features using Graph Convolutional Networks.
- Classified various directed graphs using the K-means algorithm and visualized them on a calendar, which allows users to easily and intuitively spot anomalies.

Project Experiences

Research on Process Automation Modeling Techniques for Multimodal Data
Advisor: Prof. Leilei Lin, Capital Normal University *Sep 2024 - Present*

- Proposed an automated process modeling approach for multimodal data, eliminating the dependency on expert-driven rules in traditional modeling methods.
- Transformed time-series logs into adjacency graphs and utilized GCNs to capture relationships between nodes. Applied gating mechanisms and frequency features to classify activity relationships, and constructed process models based on these classifications.
- Introduced a multi-agent system driven by LLMs that enhances process generation efficiency and accuracy through multi-role collaboration. Incorporated memory streams and self-reflection mechanisms in agent dialogues to further optimize the modeling process.

ChatDev: Communicative Agents for Software Development
Advisor: Prof. Chen Qian, Tsinghua University *Sep 2023 - Nov 2023*

- ChatDev is a virtual software company that uses multi agents to play different roles and implement different needs of users through programming, which has been open sourced on Github and has accumulated over 25k stars. [link]
- Achieved the automation of development process and the architecture construction of multi-agent collaboration.
- Tested the ChatDev framework for fulfilling diverse user requirements and optimized agent prompts based on feedback results.

Recommendation of Business Process Models based on Graph Convolutional Networks
Advisor: Prof. Leilei Lin, Capital Normal University *Mar 2023 - Jul 2023*

- Applied the bpstruct tool to convert unstructured BPMN models into a structured format, achieving unified BPMN representation.
- Utilized GCNs to capture features of the BPMN models. Then, calculated Euclidean distances to measure differences between models and provided recommendations based on these comparisons.

Awards and Scholarships

- **First-class Scholarship** *2023/2024*
- **Academic Excellent Award** *2023/2024*
- **Merit student** *2023/2024*
- **The third prize of Enterprise Competition Simulation Competition** *2023*

Skills

- **Programming:** Python, C++, Java, Latex, etc.
- **Multi-Agent Framework:** ChatDev, AutoGen, Camel, etc.