Jiaju Lin

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Google Scholar

Education

- **Pennsylvania State University** — PA, USA
  PhD - Educational Psychology; — *Aug2023 - Now*
  Research Direction: *Interdiscipline project in AI + Learning Science*
- **East China Normal University** — Shanghai, China
  Master of Engineering - Computer Science; — *Jul 2020 - March 2023*
  Research Direction: *Information Extraction, Knowledge Computing*
- **Shanghai Ocean University** — Shanghai, China
  Bachelor of Engineering - Computer Science; — *Jul 2016 - Jun 2020*
  Double Major: Bachelor of Agriculture - Aquaculture

Projects

- **Multi-Agent Environment for Social Emotional Learning (LLM Agents, Multi Agent Cooperation, AI4Edu)**: The Multi-Agent System (MAS) has emerged as a popular paradigm for designing efficient LLM-based systems to streamline various workflows. However, its application in the field of education remains largely unexplored. In this project, we introduce multiple AI agents to simulate realistic social scenarios, providing students with an interactive environment to practice and enhance their social skills. As the Principal Investigator (PI) of this project, I spearhead the entire development lifecycle, from concept ideation, market research, and user needs analysis to product design, development, testing, and optimization. My role involves ensuring seamless integration of multi-agent technology into educational contexts, enhancing both engagement and learning outcomes. (March 2024 - Now)
- **Multi-Agent Sandbox for LLM Evaluation and Artificial Society (LLM Agents, Multi Agent Cooperation)**: Inspired by Generative Agents by Stanford, we reproduce our own sandbox and release our code two days before Stanford. Our contribution includes two parts: 1) Besides memory, reflection and plan system introduced in Generative Agents, we develop a tool-use system to let agents learn from interactions with physical equipment, making the learning process more similar to reinforce learning. 2) We build a highly-customised front end to enable researchers from all fields to design tasks with specific background and purpose, evaluating LLM's abilities generally. (March 2023 - March 2024)
- **Large Language Model For Education (Large Language Model tuning, data-centric AI)**: We are one of the earliest attempts to build a domain specific LLM for Chinese education. We compared several popular LLM backbones like Llama, GLM, and Bloom in different scales, including 7B, 13B and 65B. Also, we build instruction datasets to finetune LLM for domain specific purpose. Plenty of engineering-relevant experience like model-parallel training, data cleaning and instruction augmentation, is accumulated during the process. (March 2023 - July 2023)
- **Unified Model for Audio-Text Computation (Multi-Modal, Multi-Task Learning)**: We try to develop a new transformer-based multi-task model for audio-text computation. It is an ambitious plan to unite all audio-relevant tasks into one paradigm. We built datasets for music-text pairs and transfered efficient vision-language training paradigm to audio field. Our models achieved sota performance in zero-shot music understanding tasks. (July 2022 - April 2023)
- **Debiased Prompt-Based Information Extraction (Backdoor Adjustment, Robust NLP)**: We thoroughly investigated the potential risk resulting from manual prompts in information extraction, and proposed a backdoor adjustment based method to build a more robust and unbiased information extraction architecture. It achieves better performance than current state-of-the-art performance models. (Mar 2022 - Feb 2023)
- **Prompt-based Methods for Event Extraction(Information extraction, NLP)**: We are one of the earliest attempts to introduce prompt methods into event extraction. For sentence level event argument extraction, we incorporated span-selection with prompt tuning. Regarding documental extraction, we utilized curriculum-learning method to make up poor performance in long-term dependency resolving of prompt-based method. Both two methods achieved state-of-the-art performance. (July 2021 - Jan 2022)

Publications

- **Joint Music and Language Attention Models for Zero-shot Music Tagging**
  X Du, Z Yu, ***Lin Jiaju****, B Zhu, Q Kong et al.* — *ICASSP 2024*
- **AgentSims: An Open-Source Sandbox for Large Language Model Evaluation**
  Lin, Jiaju *et al.* — *ArXiv 2023*
- **RWKV: Reinventing RNNs for the Transformer Era**
  one of the Authors — *EMNLP 2023 Findings*
- **EduChat: A Large-Scale Language Model-based Chatbot System for Intelligent Education**
  one of the Authors — *ArXiv 2023*
- **Causal Intervention-based Prompt Debiasing for Event Argument Extraction**
  Jiaju, Lin *and Zhou, Jie and Chen, Qin* — *ArXiv 2022*
- **CUP: Curriculum Learning based Prompt Tuning for Implicit Event Argument Extraction**
  Jiaju Lin *, Qin Chen, Jie Zhou, Jian Jin and Liang He* — *IJCAI 2022*

- **PoKE: A Prompt-based Knowledge Eliciting Approach for Event Argument Extraction**
  ***Jiaju Lin**, Qin Chen* *Arxiv 2021*
- **ECNUICA at SemEval-2021 Task 11: Schema based Information Extraction**
  ***Jiaju Lin**, Jing Ling, Zhiwei Wang, Jiawei Liu, Qin Chen, Liang He* *ACL-IJCNLP 2021 Workshop*

Honors and Awards

- **National Scholarship.** 6/440 - Oct 2022
- **Semeval-2021 Task 11: NLPContributionGraph**, Top 2 - Jan 2021
- **National Post-Graduate Mathematical Contest in Modeling 2020**, The Second Price - September, 2020

Internships

- **AI Research Intern at ByteDance** Shanghai, China
  Multimodal Model development *Jul 2022 - May 2023*

Skills Summary

- **High Proficiency in Pytorch, DeepSpeed** : coding almost without AI assistance
- **Full Stack Developer**: with AI's help

Teaching

- **Experiments in Computer Organization and Design** East China Normal University, China
  Teaching Assistant *Sep 2021 - Jan 2022*

Language

- **English** : IELTS 7.0, TOEFL 99
- **Chinese**: native speaker