Yonggang Jin

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Research Interests

- Large Language Model
- Reinforcement Learning
- Multimodal Model
- Retrieval Augmented Model

Educations

Beijing University of Posts and Telecommunications 2022.09 - now
Master of Computer Science and Technology *GPA: 3.96/4 (92/100)*

Zhejiang University 2018.09 - 2022.06
Bachelor of Biomedical Engineering, Outstanding Graduate Award *GPA: 3.71/4 (84/100)*

Papers

1. **Read to Play (R2-Play): Decision Transformer with Multimodal Game Instruction**
Yonggang Jin*, Ge Zhang*, Hao Zhao*, Tianyu Zheng, Jiawei Guo, Liuyu Xiang, Shawn Yue, Stephen W Huang, Wenhu Chen, Zhaofeng He, Jie Fu. ***(Under Review)***
[arXiv] [Website] [Code and Data] [Twitter]
2. **Deep Reinforcement Learning with Task-Adaptive Retrieval via Hypernetwork**
Yonggang Jin, Chenxu Wang, Tianyu Zheng, Liuyu Xiang, Yaodong Yang, Junge Zhang, Jie Fu, Zhaofeng He. ***(Under Review)***
[arXiv] [Code]
3. **Jarvis-1: Open-world Multi-task Agents with Memory-Augmented Multimodal Language Models**
Zihao Wang, Shaofei Cai, Anji Liu, **Yonggang Jin**, Jinbing Hou, Bowei Zhang, Haowei Lin, Zhaofeng He, Zilong Zheng, Yaodong Yang, Xiaojian Ma, Yitao Liang. ***(Under Review)***
[arXiv] [Website] [Code] [Twitter]

Research Projects

1. **Diversified Fine-Grained LLM Value Alignment** | *leader* 2024.02-now
   - We develop a dialogue dataset tailored to diverse identities, designed to establish a sophisticated benchmark for diversified value alignment. This benchmark assesses the ability of LLMs to remain aligned with the values of users from various identities.
2. **Multimodal Long Sequence Composition Generalization** | *Core Developer* 2023.09-2024.02
   - We construct a set of multimodal long-sequence offline datasets, aimed at establishing a compositional generalization benchmark in the sequence control domain. I am responsible for building control scripts for constructing multitask offline datasets and developing the evaluation platform, among other tasks.
   - Expected to produce a co-first-author paper.
3. **Decision Transformer with Multimodal Game Instruction** | *leader* 2023.05-2023.09
   - We construct a set of multimodal Atari game instructions containing thousands of instructions for decision control, aiming to stimulate the 'ready to play' ability of agents.
   - Experimental results show that the introduction of multimodal game instructions significantly improves the generalization ability of agents, far exceeding the results obtained from text and vision guidance.
   - Produce one paper (PAPERS.1).
4. **Task-Adaptive Retrieval Augmented Reinforcement Learning** | *independent developer* 2022.09-2023.05
   - We propose a task-adaptive retrieval-augmented RL algorithm based on hypernetwork, aiming to enable agents to retrieve different relevant information for different tasks in multitask memory.
   - We train and evaluate this algorithm on the MiniGrid environment, and it significantly outperforms the baseline in multitask scenarios.
   - Produce one paper (PAPERS.2).
5. **Video Summarization Generation Based on Natural Language Guidance** | *independent developer* 2022.01-2022.06
   - We propose a language guided video summarization algorithm, which generates video summaries based on the correlation between video summary text and video frames.
   - We train and evaluate this algorithm on the SumMe dataset, and natural language guidance improves the model performance, increasing the F1-score by 3%.
   - Produce one Chinese invention patent (number: 202210652477.2)

[0]It was updated in February 2024

Internships

- **Beijing Institute for General Artificial Intelligence(BIGAI)**
  Advisor: *Prof.Yitao Liang* | LLM Agent & Open-World Agent 2023.09-2024.02
  - During my internship, I Contribute to the Jarvis-1 project, focused on constructing an open-world agent. I am responsible for developing the crafting component of the agent, which entailed utilizing scripts to control the agent to synthesize items in the Minecraft and engaged in the development of an Agent based on LLMs, mastering the "controller+planner" framework of LLM Agent. I co-lead the Crafting Benchmark project (see Research Projects, Project 2), aimed at establishing a compositional generalization benchmark in the domain of sequential control.
- **Beijing Academy of Artificial Intelligence(BAAI)**
  Advisor: *Researcher.Jie Fu* | Reinforcement Learning & Multimodal 2022.09-2023.09
  - During my internship, I dedicate myself to in-depth research in the fields of reinforcement learning and multimodal areas. I focus on integrating knowledge into reinforcement learning algorithms and proposed a "open-source and thrift" style knowledge-enhanced reinforcement learning framework. "Open-source" refers to the injection of external knowledge to enable the agent to rapidly learn new tasks (see Research Projects, Project 3); "Thrift" refers to leveraging the agent's past experiences to assist current decision-making (see Research Projects, Project 4).

Technical Skills

- **Program Languages**: C/C++, Python, MATLAB, LaTeX, Bash, Vim
- **Frameworks**: PyTorch, TensorFlow, NumPy, Ray, Lightning
- **Tools**: Git/GitHub, ChatGPT, Notion, Zotero, VsCode, Overleaf, Wandb

Honors and Awards

- Beijing University of Posts and Telecommunications First Award 2023.11
- Zhejiang University Outstanding Graduate Award 2022.05
- Chinese CASC Scholarship 2021.11
- First Prize in 14th Chinese College Student Energy Conservation Science and Technology Competition 2021.08
- Zhejiang University Excellent Student 2020.10
- Second Prize in 12th Chinese College Student Mathematics Competition 2020.12