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)*

Advisor: Researcher.Jie Fu and Prof.Zhaofeng He

Zhejiang University 2018.09 - 2022.06

Bachelor of Biomedical Engineering, Outstanding Graduate Award *GPA: 3.71/4 (84/100)*

Advisor: Prof.Jing Zheng

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. **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]
3. **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]

Projects

- **Decision Transformer with Multimodal Game Instruction** 2023.06-2024.02
  leader | output one paper (PAPERS.1)
  - 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.
- **Task-Adaptive Retrieval Augmented Reinforcement Learning** 2022.09-2023.05
  independent developer | output one paper (PAPERS.3)
  - 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.
- **Video Summarization Generation Based on Natural Language Guidance** 2022.01-2022.06
  independent developer | output one Chinese invention patent (number: 202210652477.2)
  - 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%.

Internships

- **BIGAI** (Advisor: Prof.Yitao Liang) | LLM Agent & Open-World Agent 2023.09-2024.01
  - 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, aimed at establishing a compositional generalization benchmark in the domain of sequential control. I am responsible for multitask offline dataset construction and the setup of evaluation platform.

Technical Skills

- **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

- Second Prize in 12th Chinese College Student Mathematics Competition 2020.12