

# 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)

## 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, Wenhui 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*)

[\[arXiv\]](#) [\[Code\]](#)

## RESEARCH PROJECTS

### • Decision Transformer with Multimodal Game Instruction

2023.06-2023.12

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

### • Beijing Institute for General Artificial Intelligence(BIGAI)

Advisor: [Prof.Yitao Liang](#) | LLM Agent & Open-World Agent

2023.09-2024.02

- 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.

<sup>0</sup>It was updated in February 2024

## TECHNICAL SKILLS

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- **Program Languages:** C/C++, Python, MATLAB, LaTeX, Bash, Vim
- **Frameworks:** PyTorch, TensorFlow, NumPy, Ray, Lightning
- **Tools:** Git/GitHub, ChatGPT, Notion, Zotero, VsCode, Overleaf, Wandb
- **English:** CET-6 500

## HONORS AND AWARDS

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| • 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 |