Zhancun Mu

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EDUCATION

- **Artificial Intelligence (Tong Class) | Yuanpei College, Peking University | China** **Sep 2021 - Jul 2025**
  - GPA: 3.69/4.00
  - Selected Core Courses: Trustworthy Machine Learning (96),Cognitive Reasoning (95.5), Natural Language Processing with Deep Learning (96), Directed Research in AI System (98), Mathematical Foundation for AI (93)

RESEARCH INTERESTS

Emboddied Agent, Long-Horizon Planning, Human-Level Controller, Reinforcement Learning, AI4Science

PUBLICATION

[1]. **Pre-Training Goal-based Models for Sample-Efficient Reinforcement Learning**
Haoqi Yuan, **Zhancun Mu**, Feiyang Xie, Zongqing Lu.
The Eighth International Conference on Learning Representations (ICLR 2024), (Acceptance Rate: 1.2%, oral).

[2]. **A Contextual Combinatorial Bandits Approach to Negotiation**
Yexin Li, **Zhancun Mu**, Siyuan Qi.
The Forty-first International Conference on Machine Learning (ICML 2024).

MANUSCRIPTS UNDER REVIEW

[1]. **OmniJARVIS: Unified Vision-Language-Action Tokenization Enables Open-World Instruction Following Agents**
Zihao Wang, Shaofei Cai, **Zhancun Mu**, Haowei Lin, Ceyao Zhang, Xuejie Liu, Qing Li, Anji Liu, Xiaojian Ma, Yitao Liang.
The Thirty-eighth Annual Conference on Neural Information Processing Systems (NeurIPS 2024), (Under review).
Proposed a unified vision-language-behavior sequence model to enable open-world instruction following agents. Accepted at *ICML 2024 NGSM and MFM-EAI workshops*.

[2]. **GlobalTomo: A global dataset for physics-ML seismic wavefield modeling and FWI**
Shiqian Li, Zhi Li, **Zhancun Mu**, Shiji Xin, Zhixiang Dai, Kuangdai Leng, Ruihua Zhang, Xiaodong Song, Yixin Zhu
The Thirty-eighth Annual Conference on Neural Information Processing Systems (NeurIPS 2024), (Under review).
Proposed the first 3D global synthetic dataset tailored for seismic wavefield modeling and full-waveform tomography.

PROJECT

- **Earth Inversion through Physics-Informed Operator Learning | Research** **Jan 2024 - Jun 2024**
  - Advisor: Prof. Yixin Zhu (assistant professor of artificial intelligence, Peking University)
  - Aim to build a fast and differentiable simulator for seismology and do earch structure inversion with deep learning as the fundamental solution.
- **Modeling Ownership Computationally | Research** **Oct 2023 - Jul 2024**
  - Advisor: Prof. Yixin Zhu (assistant professor of artificial intelligence, Peking University) and Dr. Lifeng Fan (research scientist at BIGAI)
  - Proposed research directions for modeling ownership computationally from various perspectives, including computer vision (collect an ownership video dataset), perception (properties as communicative objects), and social norms (how ownership emerges and evolves).

- **Studying the Potential of Energy-Based Models in Artificial Intelligence | Research Jul 2022 - Sep 2022**
  - Advisor: Prof. Zong Sun (assistant professor of Institute for Artificial Intelligence and School of Integrated Circuits, Peking University)
  - Investigating Hopfield networks based on physical law in resistive switch circuits.
  - Inspired to propose a new generative model framework with energy-based model to model the prior distribution of latent vector. A manuscript can be found here.
- **Modeling Theory of Mind in Multi-Agent Systems | Course Project Nov 2023 - Jan 2024**
  - Introduced the multi-agent decision transformer (MADT) for modeling agents' theory of mind in multi-agent systems. A manuscript be found here.
  - Evaluated agents' performance in the Overcooked-AI environment and demonstrated the model's generalization ability.

PROFESSIONAL EXPERIENCE

- **Research Intern | Beijing Academy of Artificial Intelligence Jul 2023 - Sep 2023**
  - Conducted research on reinforcement learning in Multimodal Interaction Research Center, BAAI.
- **Research Intern | Cognitive Reasoning Lab Oct 2023 - now**
  - Conducted research on ownership and AI for geophysics.
- **Teaching Assistant**
  - Spring 2024, Mathematical Foundation for AI, Peking University.

LEADERSHIP

- **Assistant Class Monitor | Tong Class, Yuanpei College, Peking University Sep 2021 - now**
  - Host class activities for the Tong Class.

SKILLS AND INTERESTS

- **Programming Languages**: Python, C/C++, LaTeX, Shell
- **Frameworks & Tools**: PyTorch, TensorFlow, Linux, (Neo)Vim, Emacs
- **Languages**: English (Proficient, CET-6 level), Chinese (Native)
- **Interests**: Pingpong, Soccer, Calligraphy, Reading