

YUNFEI XIE

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RESEARCH INTERESTS

LLM Post-training, LLM Pre-training, Vision-Language Models

EDUCATION

Rice University, Houston, TX

09/2025-

Ph.D. in Computer Science, Advisor: Prof. Chen Wei

Awards: Lambda Research Grant (\$10,000)

Huazhong University of Science and Technology, Wuhan, China

09/2021-06/2025

Bachelor of Engineering in Artificial Intelligence

Awards: Science and Technology Scholarship (Top 2% in school)

PUBLICATIONS

First Author Publications:

1. Play to Generalize: Learning to Reason Through Game Play

Yunfei Xie, Yinsong Ma, Shiyi Lan, Alan Yuille, Junfei Xiao, Chen Wei

Under review, 2025. [link] [Post-training]

2. MedTrinity-25M: A Large-scale Multimodal Dataset with Multigranular Annotations for Medicine

Yunfei Xie, Ce Zhou, Lang Gao, Juncheng Wu, Xianhang Li, Hong-Yu Zhou, Sheng Liu, Lei Xing, James Zou, Cihang Xie, Yuyin Zhou

ICLR 2025. (350+ GitHub stars) [link] [Pre-training] [Vision-Language Models]

3. COPER: Agentic Context Significantly Improves and Stabilizes LLM in Multi-Player Game

Yunfei Xie, Kevin Wang, Bobby Cheng, Jianzhu Yao, Zhizhou Sha, Alexander Duffy, Yihan Xi, Chen Wei, Pramod Viswanath, Zhangyang Wang

Under review, 2025. [link] [Agent]

4. From Pixels to Objects: A Hierarchical Approach for Part and Object Segmentation Using Local and Global Aggregation

Yunfei Xie, Cihang Xie, Alan Yuille, Jieru Mei

ECCV 2024. [link] [Computer Vision]

5. Brain Tumor Segmentation Through Supervoxel Transformer

Yunfei Xie, Ce Zhou, Jieru Mei, Xianhang Li, Cihang Xie, Yuyin Zhou

IEEE ISBI 2024. [link] [Computer Vision]

6. A Preliminary Study of o1 in Medicine: Are We Closer to an AI Doctor?

Yunfei Xie, Juncheng Wu, Haoqin Tu, Siwei Yang, Bingchen Zhao, Yongshuo Zong, Qiao Jin, Cihang Xie, Yuyin Zhou

Under review, 2025. [link] [LLM evaluation]

7. Few-Shot Medical Image Segmentation via Supervoxel Transformer

Yunfei Xie, Alan Yuille, Cihang Xie, Yuyin Zhou, Jieru Mei

Under review, 2025. [link] [Computer Vision]

Co-author Publications:

8. Story-Adapter: A Training-free Iterative Framework for Long Story Visualization

Jiawei Mao, Xiaoke Huang, **Yunfei Xie**, Yuanqi Chang, Mude Hui, Yuyin Zhou

Under review, 2025. (900+ GitHub stars) [link] [Computer Vision]

RESEARCH EXPERIENCE

Rice University, Houston, TX

02/2025-

Research Assistant, Advisor: Prof. Chen Wei

- Proposed Visual Game Learning, showing that on post-training multimodal language models on simple arcade games such as Snake improves performance on math and broader reasoning benchmarks, without any exposure to worked solutions, equations, or diagrams during training.
- Proposed a self-evolving agent framework that continuously optimizes context and memory via retrieval, updating, and deletion.

VLAA Lab, University of California, Santa Cruz, Santa Cruz, CA

02/2024-02/2025

Research Assistant, Advisor: Prof. Yuyin Zhou and Prof. Cihang Xie

- Developed a RAG-enhanced automated data synthesis pipeline that generates 25 million high-quality multi-modal medical samples with multigranular annotations for vision-language model pretraining.
- Proposed a long story generation framework that iteratively refines images using all prior-iteration frames via training-free global reference cross-attention for consistent semantics.
- Constructed a comprehensive medical benchmark for holistic evaluation of OpenAI o1's medical capabilities.

CCVL Lab, Johns Hopkins University, Baltimore, MD

08/2023-02/2024

Research Assistant, Advisor: Prof. Alan Yuille

- Integrated differentiable superpixels into vision transformers to enhance fine-grained segmentation.

SKILLS

Programming Languages: Python, Shell, LaTeX, HTML

ML Frameworks: PyTorch, TensorFlow, JAX, Hugging Face Transformers, OpenRLHF, Verl, Ray, vLLM, Megatron-LM, DeepSpeed

Tools & Infrastructure: Git, Docker, Slurm, Linux, Vim, Triton

Research Fields: Reinforcement Learning, LLM Pre-training, LLM Post-training, Segmentation

ACADEMIC SERVICE

Reviewer:

2026: CVPR, ICLR

2025: ICCV, ICLR, CVPR, ICML, TMM, NeurIPS, TPAMI

2024: CVPR, ICML, IEEE ISBI