

Yuyuan Liu

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SUMMARY

Postdoctoral researcher at the University of Oxford working on multimodal large language models (MLLMs) and vision-language reasoning. Focus on grounding, segmentation, and reasoning with large-scale models. Experienced in integrating perception and language for real-world applications. My work aims to improve the reliability of MLLMs real-world applications by enabling models to integrate language (or audio) with visual perception for robust decision making.

TECHNICAL SKILLS

Models: Multimodal LLMs (LLaVA-style), CLIP, SAM, ViT
Training: RL-based post-training, Supervised Finetuning, LoRA, Training with Limited (or Noisy) Labels
System: PyTorch, Distributed Training (DeepSpeed), vLLM (for scalable LLM inference)
Tasks: Reasoning, Grounding, Multimodal Learning, Robust Training

EXPERIENCE

Postdoctoral Associate Nov. 2024 – Present
Department of Engineering Science, University of Oxford Oxford, UK

- Designed RL-based post-training pipeline for multimodal LLMs, improving grounding and reasoning performance
- Contributed to an agent-based LLM system with tool use, memory, and reasoning orchestration.
- Developed multimodal system integrating detection, segmentation, and language reasoning for complex visual tasks.

PhD Researcher Jan. 2021 – Aug. 2024
Australian Institute for Machine Learning, Adelaide University Adelaide, Australia

- Developed training methods for learning under noisy labels and limited supervision.
- Improved model robustness under distribution shift and out-of-distribution data.
- Developed multimodal models integrating audio, visual, and language signals for cross-modal understanding.

SELECTED PROJECTS

Group Revision for GRPO-based Reasoning and Grounding (CVPR'26)

- Designed a GRPO-based RL refinement pipeline for grounding tasks, improving performance on hard cases.
- Introduced group-wise revision mechanism enabling supervision without explicit reward models.
- Trained multimodal models on large-scale datasets using distributed training

Enhancing LLM Reasoning with Agentic Tools (ACL'25)

- Contributed to an agent-based reasoning framework integrating web search, code execution, and structured memory.
- Enabled dynamic tool usage for complex multi-step reasoning tasks.

Audio-Visual-Language Multimodal Learning (CVPRF'26, CVPR'24)

- Developed methods for integrating audio and visual signals for multimodal perception.
- Improved cross-modal alignment and robustness through audio-guided visual understanding.

Robust Learning under Noisy Data and Limited Supervision (CVPR'22, ECCV'22, ICCV'23, ECCV'24)

- Developed training methods for learning under noisy labels and limited supervision.
- Improved generalisation in out-of-distribution and open-world scenarios.

PUBLICATIONS

8+ first-author publications at top-tier venues including CVPR, ICCV, ECCV, and IEEE TMI.
1600+ citations.
Full list: Google Scholar

AWARDS & HONORS

Dean's Commendation for Doctoral Thesis Excellence (2024)
ECCV 2022 Oral Presentation (Top 2%)
South Australia Minister's Research and Innovation Award (2019)

EDUCATION

Adelaide University Australia
PhD in Computer Vision and Machine Learning 2021 – 2024

Adelaide University Australia
BSc (Hons) in Computer Science 2014 – 2019