

Yuyuan Liu

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SUMMARY

Postdoctoral researcher at the University of Oxford working on multimodal large language models (MLLMs). My research focuses on RL-based post-training, reasoning, and grounding, including multi-turn refinement, and training signal recovery from failed grounding cases. My work aims to improve the reliability and reasoning capabilities of MLLMs in complex real-world environments. I also have prior research experience in audio-visual learning and robust learning under weak or noisy supervision.

TECHNICAL SKILLS

Models: LLaVA-style MLLMs, CLIP/SigLIP, SAM

Training: Supervised Fine-Tuning, RL-based Post-Training, LoRA, Learning with Limited or Noisy Labels

Frameworks & Infrastructure: PyTorch, DeepSpeed, vLLM

Tasks: Multimodal Reasoning, Grounding, Segmentation, Detection.

EXPERIENCE

Postdoctoral Research Associate

Department of Engineering Science, University of Oxford

Nov. 2024 – Present

Oxford, UK

- Developed RL-based post-training pipelines to improve training signal recovery under failed grounding cases.
- Conducted supervised fine-tuning research for multimodal reasoning, object detection, and segmentation tasks.
- Contributed to an agent-based LLM system with tool use, memory, and reasoning orchestration.

PhD Researcher

Australian Institute for Machine Learning, Adelaide University

Jan. 2021 – Aug. 2024

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 a group-wise revision mechanism to recover training signals from failed grounding attempts.
- Improved overall performance across multimodal tasks including segmentation, detection, grounding, and VQA.

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)

- Studied robust learning under noisy labels and weak supervision.
- Improved model generalisation under distribution shifts and open-world settings.

PUBLICATIONS

- 8+ first-author publications at top-tier venues including CVPR, ICCV, ECCV, and IEEE TMI.
- 1600+ citations on [Google Scholar](#)

AWARDS & HONORS

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

EDUCATION

Adelaide University

PhD in Computer Vision and Machine Learning

Australia

2020 – 2024

Adelaide University

BSc (Hons) in Computer Science

Australia

2014 – 2019