Guangrui Li

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Education

University of Technology Sydney Sydney, Australia
Ph.D. *in Computer Science* *July 2019 – May 2024*

Chongqing University Chongqing, China
B.E. *in Software Engineering* *Sep. 2014 – June 2018*

Research Interest

- **Agentic AI:**: Devising effective evolving orchestration strategy for Multi-Agent System (MAS) in real production. Building up scalable and robust orchestration system that can accommodation dynamic evolution within MAS.
- **Foundation Models:**: Investigating effective fine-tuning strategy for LLM/MLLM, in terms of OOD generalization, and reasoning capabilities.
- **3D Vision & Scene Understanding.** Perception and understanding with various visual structures, i.e., 2D/3D scene understanding (detection & segmentation), pose estimation, and sensor fusion.

Professional Experience

Amazon Rufus AI Palo Alto, CA
Applied Scientist II *06/02/2025 – Now*

- Architected a multi-agent routing system from the ground up for Rufus Conversational Layer, attaining 95%+ accuracy in directing customer queries to downstream agents.
- Investigating a key challenge in multi-agent system (MAS): scalability, i.e., how to coordinate and orchestrate agents in an auto-evolving manner with accommodating dynamic evolution within MAS.
- Innovate an Automatic Prompting Pipeline for multiple applications, including multi-agent router and Related Questions/Answer Generation in Search Result Page.

AWS AI Rekognition Seattle, WA
Research Intern on Vision Foundation Models *11/06/2023 – 02/09/2024*

- Worked on enhancing the content moderation services in AWS.
- Focused on improving the robustness and generalizabilities during the fine-tuning of vision foundation models (CLIP, DINOv2, etc), striking the balance between on in-distribution (ID) recognition and robustness to out-of-distribution (OOD) samples.
- Based on the internship project, first-authored a paper that latterly was accepted by ECCV 2024.

Sony AI Research Remote
Research Intern on Vision Foundation Models *08/21/2023 – 10/30/2023*

- Studied Federated Knowledge Distillation for visual foundation models, i.e., gathering and distilling detection knowledge from multiple distributed detectors.
- Collaborated with a team of researchers to develop and integrate a all-in-one vision foundation models.
- Implemented novel techniques for effective class aggregation in federated knowledge distillation.

Baidu Research Beijing, China
Research Intern on Multi-Modal Learning *Sep 2021 – Aug 2022*

- Developed novel methodologies for open-vocabulary detection to identify and localize novel/unseen objects based on language prompts.
- Achieved state-of-the-art results on COCO and LVIS benchmarks, first-authored a research paper.
- The developed approach has been examined and deployed in Baidu Services.

Publications

1. RAFT: Reasoning-Aware Fine-Tuning for MLLMs
   International Conference on Learning Representations (**ICLR**), 2026. [In submission]
   Jinhao Li, Guangrui Li, Riheng Zhu, Zhenbang Sun, Feng Liu.
2. Exploring the Role of Explicit Temporal Modeling in Multimodal Large Language Models for Video Understanding
   Yun Li, Zhe Liu, Yajing Kong, Guangrui Li, Jiyuan Zhang, Chao Bian, Feng Liu, Lina Yao, Zhenbang Sun
3. Robustness Preserving Fine-tuning using Neuron Importance
   European Conference on Computer Vision (**ECCV**), 2024.
   Guangrui Li, Rahul Duggal, Aaditya Singh, Kaustav Kundu, Bing Shuai, Jonathan Wu.
4. Construct to Associate: Cooperative Context Learning for Domain Adaptive Point Cloud Segmentation
   IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), 2024.
   Guangrui Li.
5. Decouple to Contrast: Orthogonalized Ambiguity Reduction for Open-Vocabulary Object Detection
   Guangrui Li, Yifan Sun, Zongxin Yang, Errui Ding, Yi Yang
6. Adversarially Masking Synthetic to Mimic Real: Adaptive Noise Injection for Point Cloud Segmentation Adaptation
   IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), 2023.
   Guangrui Li, Guoliang Kang, Xiaohan Wang, Yunchao Wei, and Yi Yang
7. Decompose to Generalize: Species-Generalized Animal Pose Estimation
   International Conference on Learning Representations (**ICLR**), 2023.
   Guangrui Li, Yifan Sun, Zongxin Yang, and Yi Yang
8. VSPW: A Large-scale Dataset for Video Scene Parsing in the Wild
   IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), 2021.
   Jiaxu Miao, Yunchao Wei, Yu Wu, Chen Liang, Guangrui Li, Yi Yang
9. Domain Consensus Clustering for Universal Domain Adaptation
   IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), 2021.
   Guangrui Li, Guoliang Kang, Yi Zhu, Yunchao Wei, and Yi Yang
10. Content-Consistent Matching for Domain Adaptive Semantic Segmentation
    European Conference on Computer Vision (**ECCV**), 2020.
    Guangrui Li, Guoliang Kang, Wu Liu, Yunchao Wei, and Yi Yang

Academic services and Awards

Google Travel Grant, 2023
ICLR financial assistance award, 2023
Semi-finalist in Valeo International Challenge [24/1376], 2017
Reviewer of IEEE TPAMI, TKDE, TIP, and TNNLS.
Programme Committee of CVPR, ECCV, ICCV, ICLR, ICML, and NeurIPS.

Skills

Programming: Python (Pytorch, vLLM, LangChain), C/C++, Shell, LaTeX.
Languages: Native in Chinese (Mandarin), Fluent in English.