

# Yake WEI/卫雅珂

Ph.D candidate (will graduate in 2026)

Gaoling School of Artificial Intelligence

Renmin University of China

[yakewei@ruc.edu.cn](mailto:yakewei@ruc.edu.cn)

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## EDUCATION



**Renmin University of China**

Ph.D Candidate in Artificial Intelligence

Advisor: *Prof. Di Hu*

Beijing, China

Sep. 2021 - Present



**Carnegie Mellon University**

Visiting Scholar

Advisor: *Prof. Fernando De la Torre Frade*

Pittsburgh, USA

Dec. 2023 - Aug. 2024



**University of Electronic Science and Technology of China**

B.E. in Computer Science and Technology

Chengdu, China

Sep. 2017 - Jun. 2021

## SELECTED AWARDS AND SCHOLARSHIPS

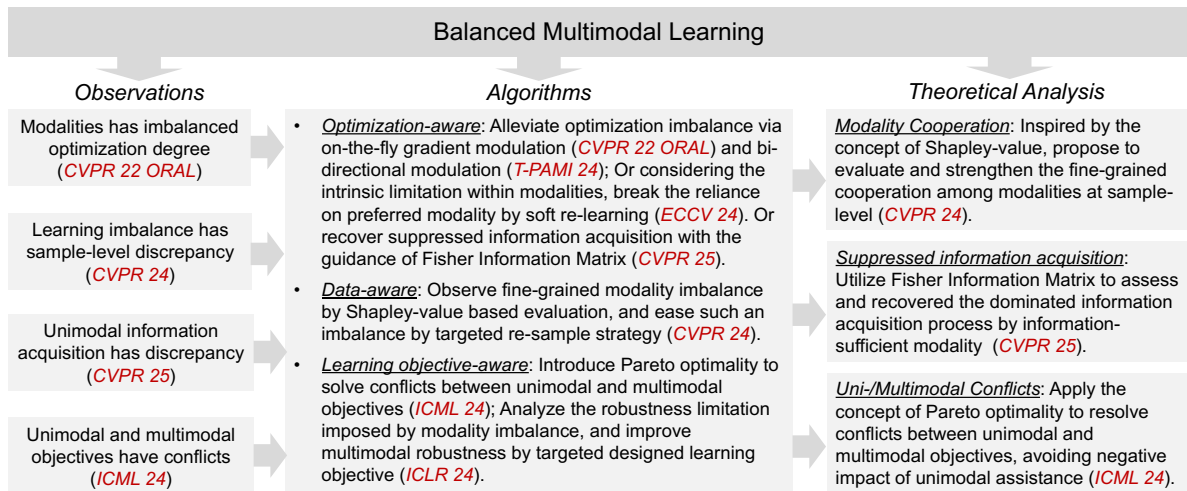
- **Baidu Scholarship** (10 Ph.D students worldwide), 2024.
- **China National Scholarship for Ph.D student** (highest student honor in China), 2024.
- Outstanding Graduate Award (highest honor for graduates set by Sichuan province), 2021.
- Outstanding Graduate of University of Electronic Science and Technology of China, 2021.

## RESEARCH INTERESTS

Interested in the inherent learning mechanism of perceiving, formulating, and understanding the environment with heterogeneous information from multiple modalities, *e.g.*, *vision*, *sound*, *text*.

**Part 1.** Focus on providing **better solutions for building Multimodal LLMs, caring for modality-specific characteristics**. For now, we provide a new PEFT pipeline for MLLMs, ensuring both unimodal and cross-modal adaptation.

**Part 2.** In the paper presented at CVPR 2022 (ORAL), **introduce the research topic of “Balanced Multimodal Learning” for the first time**. Highlight a pervasive issue in multimodal learning, where information utilization of certain modality can be undesirably suppressed by others. Then conduct a series of systematic studies to alleviate this issue.



## PAPER LIST

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- [1] **Yake Wei**, Yu Miao, Dongzhan Zhou, and Di Hu. Moka: Multimodal low-rank adaptation for mllms, 2025.
- [2] **Yake Wei**, Di Hu, Henghui Du, and Ji-Rong Wen. On-the-fly modulation for balanced multimodal learning. *IEEE Transactions on Pattern Analysis and Machine Intelligence (T-PAMI)*, 2024.
- [3] **Yake Wei** and Di Hu. Mmpareto: boosting multimodal learning with innocent unimodal assistance. In *International Conference on Machine Learning (ICML)*, 2024.
- [4] **Yake Wei**, Ruoxuan Feng, Zihe Wang, and Di Hu. Enhancing multimodal cooperation via sample-level modality valuation. In *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2024.
- [5] **Yake Wei**, Siwei Li, Ruoxuan Feng, and Di Hu. Diagnosing and re-learning for balanced multimodal learning. In *European Conference on Computer Vision (ECCV)*, 2024.
- [6] Xiaokang Peng\*, **Yake Wei\***, Andong Deng, Dong Wang, and Di Hu. Balanced multimodal learning via on-the-fly gradient modulation. In *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2022. (\* equal contribution, **ORAL**).
- [7] Chengxiang Huang\*, **Yake Wei\***, Zequn Yang, and Di Hu. Adaptive unimodal regulation for balanced multimodal information acquisition. In *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2025. (\* equal contribution).
- [8] Guangyao Li\*, **Yake Wei\***, Yapeng Tian\*, Chenliang Xu, Ji-Rong Wen, and Di Hu. Learning to answer questions in dynamic audio-visual scenarios. In *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2022. (\* equal contribution, **ORAL**).
- [9] Di Hu, **Yake Wei**, Rui Qian, Weiyao Lin, Ruihua Song, and Ji-Rong Wen. Class-aware sounding objects localization via audiovisual correspondence. *IEEE Transactions on Pattern Analysis and Machine Intelligence (T-PAMI)*, 2021. (**First student author**).
- [10] Zequn Yang, **Yake Wei**, Ce Liang, and Di Hu. Quantifying and enhancing multi-modal robustness with modality preference. In *The Twelfth International Conference on Learning Representations (ICLR)*, 2024.
- [11] Ruotian Peng, Haiying He, **Yake Wei**, Yandong Wen, and Di Hu. Patch matters: training-free fine-grained image caption enhancement via local perception. In *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2025.
- [12] Haotian Ni, **Yake Wei**, Hang Liu, Gong Chen, Chong Peng, Hao Lin, and Di Hu. Reviving the cooperation dynamics in multimodal transformer. In *International Conference on Machine Learning (ICML)*, 2025.
- [13] Zequn Yang, Han Zhang, **Yake Wei**, Zheng Wang, Feiping Nie, and Di Hu. Geometric-inspired graph-based incomplete multi-view clustering. *Pattern Recognition (PR)*, 2024.

## SURVEYS

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- [1] **Yake Wei**, Di Hu, Yapeng Tian, and Xuelong Li. Learning in audio-visual context: A review, analysis, and new perspective. *arXiv preprint arXiv:2208.09579*, 2022.
- [2] Qingyang Zhang, **Yake Wei**, Zongbo Han, Huazhu Fu, Xi Peng, Cheng Deng, Qinghua Hu, Cai Xu, Jie Wen, Di Hu, et al. Multimodal fusion on low-quality data: A comprehensive survey. *arXiv preprint arXiv:2404.18947*, 2024.

## INVITED PRESENTATIONS

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- “Balanced Multimodal Learning”  
Invited talk at *Global PhD Gathering, Pujiang AI Conference*, 2024.
- “Balanced Multimodal Learning”  
Invited talk at *Virginia Tech*, 2024.
- “Balanced Multimodal Learning”  
Invited talk by *TechBeat*, 2024.
- “Exploration of Audio-visual Scene Understanding and Multimodal Learning Mechanisms”  
Invited talk at *BAAI Conference*, 2022.

## PROFESSIONAL SERVICE

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### **Journal Reviewer:**

- IEEE Transactions on Pattern Analysis and Machine Intelligence (T-PAMI)
- IEEE Transactions on Circuits and Systems for Video Technology (T-CSVT)
- IEEE Transactions on Multimedia (T-MM)

### **Conference Reviewer:**

- IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2022-2025
- IEEE International Conference on Computer Vision (ICCV), 2023/2025
- European Conference on Computer Vision (ECCV), 2022/2024
- The AAAI Conference on Artificial Intelligence (AAAI), 2023-2025