Yake WEI/卫雅珂

Ph.D candidate (**will graduate in 2026**)
Gaoling School of Artificial Intelligence
Renmin University of China

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Homepage

Education

Renmin University of China — Beijing, China
Ph.D Candidate in Artificial Intelligence — Sep. 2021 - Present
Advisor: *Prof.* Di Hu

Carnegie Mellon University — Pittsburgh, USA
Visiting Scholar — Dec. 2023 - Aug. 2024
Advisor: *Prof.* Fernando De la Torre Frade

University of Electronic Science and Technology of China — Chengdu, China
B.E. in Computer Science and Technology — Sep. 2017 - Jun. 2021

Slected Awards and Scholarships

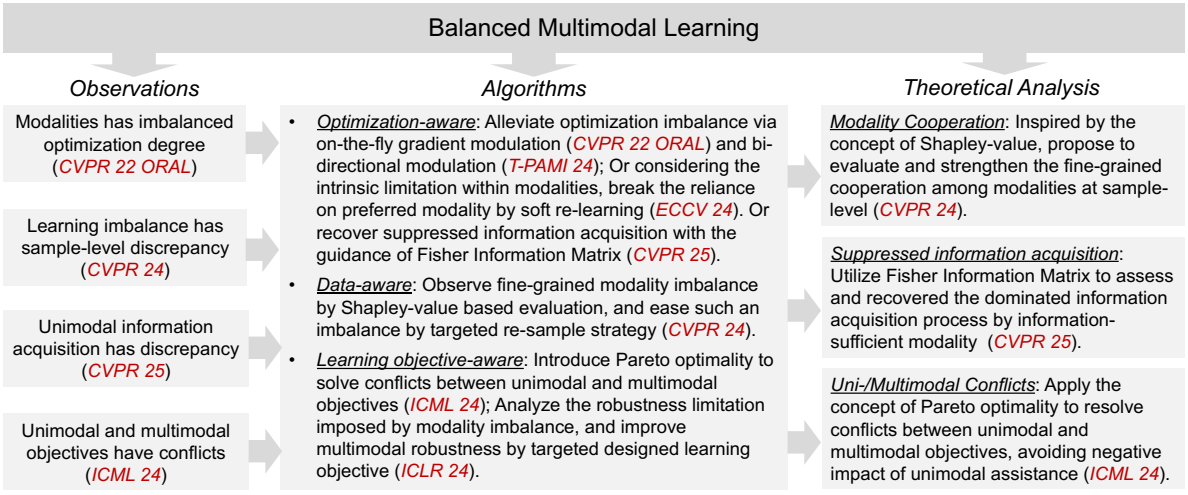
- **Baidu Scholarship** (10 Ph.D students worldwide), 2024.
- **China National Scholarship for Ph.D student** (highest student honor in China), 2024.
- Outstanding Graduate Award (highest honor for graduates set by Sichuan province), 2021.
- Outstanding Graduate of University of Electronic Science and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

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, covering empirical observations, algorithms, and theoretical analysis.



Publications

[1] **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.

[2] **Yake Wei** and Di Hu. Mmpareto: boosting multimodal learning with innocent unimodal assistance. In *International Conference on Machine Learning **(ICML)***, 2024.

[3] **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.

[4] **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.

[5] 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**).

[6] 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**).

[7] 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**).

[8] 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**).

[9] 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.

[10] 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.

[11] 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

[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

- "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

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
- European Conference on Computer Vision (ECCV), 2022/2024
- The AAAI Conference on Artificial Intelligence (AAAI), 2023-2025