

Weijia Fan

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Education

Exchange Student

Research Stay

Topic: Panoramic Scene Understanding

Supported by Shenzhen University Overseas Exchange Study Scholarship

Karlsruhe Institute of Technology

Jun. 2025 - Nov. 2025

Master's degree in Computer Technology

Master of Engineering

Final GPA: 3.65/4.0

Thesis: Tripartite Synergistic Learning on Class-imbalanced Scenario

Shenzhen University

Sep. 2023 - Jun. 2026

Bachelor's degree in IOT, minor in Economics

Bachelor of Engineering (major) and Economics (minor)

Final GPA: 3.67/4.0, Rank: 1/118

Harbin University of Commerce

Sep. 2019 - Jun. 2023

Thesis: Research on River Floating Debris Detection Based on Deep Learning ([link](#))

Experience

Panorama-Language Model

Visiting Researcher

Jun. 2025 - Nov. 2025

CV:HCI@KIT, Karlsruhe, Germany

- Curated a robust benchmark for panoramic vision across diverse scenarios, including normal, occlusions, and accident scenarios, to ensure thorough model training and evaluation.
- Developed the Panorama-Language Model (PLM), a well-designed model, filling the gap of existing VLMs in panoramic scene understanding and surpassing existing VLMs (10%).

Micro-Expression Recognition Competition

Algorithm Developer

May. 2025 - Aug. 2025

Computer Vision Institute, Shenzhen, China

- We proposed a simple yet effective algorithm, bidirectional optical flow, which effectively suppresses minute noise caused by head movements.
- To compensate for detail loss during downsampling caused by maxpooling. We proposed a wavelet-based downsampling module, surpassing the SOTA. The method achieved a final Rank of 3.

Fisheye Calibration Project

Engineer

May 2022 - Jul. 2022

IOT laboratory, Harbin, China

- Developed a fisheye correction algorithm using latitude/longitude coordinates combined with edge-adaptive thresholds for curvature restoration and accurate rectification.
- Implemented and optimized the algorithm on an FPGA, achieving real-time processing (67 FPS) while maintaining high-fidelity image restoration.

Publications & Manuscripts

- Weijia Fan**, Ruiping Liu, Jiale Wei, Yufan Chen, Zichao Zeng, Jiaming Zhang*, Qiufu Li, Linlin Shen, Rainer Stiefelhagen. More than the Sum: Panorama-Language Modeling for Adverse Omni-Scenes. (Submitted to CVPR-26, 2026).
- Weijia Fan**, Qiufu Li*, Jiajun Wen, Xiaoyang Peng. BCE3S: Binary Cross-Entropy-Based Tripartite Synergistic Learning for Long-Tailed Recognition. Proceedings of the 40th AAAI Conference on Artificial Intelligence (**AAAI-26**), 2026.

- **Weijia Fan**, Jiajun Wen, Xi Jia, Linlin Shen, Jiancan Zhou, Qiufu Li*. AEPL: Adaptive Empirical Prototype Learning with Dynamic Margins for Deep Face Recognition. *Pattern Analysis and Applications*, 2026.
- Weicheng Jie, Hang Xiao, **Weijia Fan**, Zihan Wang, Zitong Yu, and Linlin Shen. “Micro-expression Recognition Based on Bidirectional Optical Flow and Wavelet Attention Mechanism.” *Chinese Journal of Computers*, 2025.
- **Weijia Fan**, Ru Zhang*, Hao He, Siyu Hou, Yongbo Tan. A Short-Term Price Prediction-Based Trading Strategy. *PLOS ONE*, 2023.
- Shizhen Bai, Hao He, Chunjia Han*, Mu Yang, Dingyao Yu, Xinrui Bi, Brij B. Gupta, **Weijia Fan**, and Prabin Kumar Panigrahi. Exploring Thematic Influences on Theme Park Visitors’ Satisfaction: An Empirical Study on Disneyland China. *Journal of Consumer Behaviour*, 2023.

Research Statement & Interests

My research centers on **visual recognition tasks** and **label-efficient learning**. I have developed several techniques ranging from contrastive learning for sample discrimination to uniform learning for balanced classifiers’ separability. Currently, I investigate the capabilities of Vision-Language Models (VLMs) within complex, 360-degree panoramic environments.

Moving forward, I aim to advance multi-modal learning for autonomous driving, scene understanding, and document analysis by:

1. **Optimizing Learning Paradigms:** Designing novel loss functions and training strategies that enhance efficiency and stability in both visual recognition and multi-modal learning.
2. **Scaling AI Applications:** Extending the capabilities of VLMs, VLA, and Agents in high-complexity domains—specifically panoramic perception and document intelligence—to address critical performance bottlenecks.

Technical Skills

Programming Languages	Shell, Python, C/C++, MatLab, Java, L ^A T _E X
Frameworks & Libraries	PyTorch, TensorFlow, Transformers, vLLM.
Tools & Technologies	Git, Slurm, Linux Server Maintenance (Ubuntu, CentOS).

Language Proficiencies

Mandarin	Native
English	IELTS: 6.5 (R:6.5, L:5.5, W:6.5, S:6.5)

Selected Award

2025	Shenzhen University Overseas Exchange Study Scholarship ($\leq 0.05\%$)
2024	Academic Scholarship
2024	2nd place in the Micro-Expression Recognition Competition at the CCAC
2023	Chinese National Scholarship ($\leq 0.02\%$)
2023	Harbin University of Commerce, School Scholarship
2023	Merit Student
2023	Outstanding Undergraduate Student