

HAIWEN DIAO

Three-year Doctoral Candidate

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Research Interests

My primary research interests are *Vision-and-Language*, *Transfer Learning* and *Multimodal Large Language Model*. Specifically, my research in the vision-and-language domain strives to build an efficient and powerful system that recognizes visual-semantic perception and contextualizes fine-grained correspondence across multiple modalities:

1. **Vision-Language Retrieval:** [SGRAF \(AAAI'21\)](#), [RCAR \(TIP'23\)](#), [DBL \(TIP'24\)](#), [GSSF \(TIP'24\)](#)
2. **Parameter-Efficient Tuning:** [UniPT \(CVPR'24\)](#), [SHERL \(ECCV'24\)](#), [KARST \(2024\)](#)
3. **Large Multi-Modality Model:** [EVE \(NIPS'24\)](#), [DenseFusion \(NIPS'24\)](#), [PathWeave \(NIPS'24\)](#)
4. **AI Generated Content:** [MoTrans \(ACMMM'24\)](#), [NOVA \(2024\)](#)

Experience

Beijing Academy of Artificial Intelligence, *Beijing* **Sep.2023 — Present**
Research Internship

- Director: [Dr. Xinlong Wang](#) (Large Multimodal Model Center)

Hong Kong University of Science and Technology, *Hongkong* **Jan.2023 — Aug.2023**
Remote Cooperation

- Director: [Dr. Long Chen](#) (Computer Science and Engineering)

Tencent AI Lab, *Shenzhen* **Jun.2020 — Mar.2021**
2020 Tencent AI Lab Rhino-Bird Focused Research Program

- Director: [Dr. Ying Zhang](#), [Dr. Lin Ma](#) (Computer Vision Center)

Education

Dalian University of Technology (DUT), *Dalian* **Sep. 2021 — Present**
Ph.D. in Information and Communication Engineering

- Thesis: Parameter-efficient Transfer Learning, Multi-modal Large Language Model
- Advisor: [Prof. Huchuan Lu](#)

Dalian University of Technology (DUT), *Dalian* **Sep. 2018 — Jun. 2021**
M.E. in Information and Communication Engineering

- Thesis: Person Re-Identification, Vision-and-Language Domain
- Advisor: [Prof. Huchuan Lu](#)

Dalian University of Technology (DUT), *Dalian* **Sep. 2014 — Jun. 2018**
B.E. in Electronic Information Engineering

- GPA: Top3% (School of Information and Communication Engineering)

Awards & Honors

Awards

- Silver Award of the 9th China International College Students' 'Internet+' Innovation and Entrepreneurship Competition (Industrial Track) (Project Leader) (Top 120/421M) *Ministry of Education, 2023*
- Excellence Award of 2020 Tencent AI Lab Rhino-Bird Focused Research Program (9/27) *Tencent AI Lab, 2021*

Honors

- Excellent Graduate of Dalian City (Bachelor's degree) *Dalian City, 2018*
- Lingshui Scholarship (First Prize) (Top 5%) *Dalian City, 2016*

- China National Scholarship (Top 1%)
- Awarded Learning Excellence Award (First Prize) (Top 5%)

Ministry of Education, 2015
DUT, 2015/16

Publications

Conference Publications

- **Unveiling Encoder-Free Vision-Language Models**
Haiwen Diao^{*}, Yufeng Cui^{*}, Xiaotong Li, Yueze Wang, Huchuan Lu ✉, Xinlong Wang ✉
Neural Information Processing Systems (NeurIPS), 2024. (Spotlight) [Code]
- **DenseFusion-1M: Merging Vision Experts for Comprehensive Multimodal Perception**
Xiaotong Li^{*}, Fan Zhang^{*}, Haiwen Diao^{*}, Yueze Wang, Xinlong Wang ✉, Lingyu Duan ✉
Neural Information Processing Systems (NeurIPS), 2024. [Code]
- **LLMs Can Evolve Continually on Modality for X-Modal Reasoning**
Jiazuo Yu, Haomiao Xiong, Lu Zhang ✉, Haiwen Diao, Yunzhi Zhuge, Lanqing Hong, Dong Wang, Huchuan Lu, You He, Long Chen
Neural Information Processing Systems (NeurIPS), 2024. [Code]
- **MoTrans: Customized Motion Transfer with Text-driven Video Diffusion Models**
Xiaomin Li, Xu Jia ✉, Qinghe Wang, Haiwen Diao, Mengmeng Ge, Pengxiang Li, You He, Huchuan Lu
ACM International Conference on Multimedia (ACMMM), 2024.
- **SHERL: Synthesizing High Accuracy and Efficient Memory for Resource-Limited Transfer Learning**
Haiwen Diao, Bo Wan, Xu Jia, Yunzhi Zhuge, Ying Zhang, Huchuan Lu ✉, Long Chen
European Conference on Computer Vision (ECCV), 2024. [Code]
- **UniPT: Universal Parallel Tuning for Transfer Learning with Efficient Parameter and Memory**
Haiwen Diao, Bo Wan, Ying Zhang, Xu Jia, Huchuan Lu ✉, Long Chen
IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2024. [Code]
- **Similarity Reasoning and Filtration for Image-Text Matching**
Haiwen Diao, Ying Zhang, Lin Ma, Huchuan Lu ✉
AAAI Conference on Artificial Intelligence (AAAI), 2021. (Google citations: 300+) [Code]

Journal Publications

- **GSSF: Generalized Structural Sparse Function for Deep Cross-modal Metric Learning**
Haiwen Diao, Ying Zhang, Shang Gao, Jiawen Zhu, Long Chen, Huchuan Lu ✉
IEEE Transactions on Image Processing (TIP), 2024. [Code]
- **Deep Boosting Learning: A Brand-new Cooperative Approach for Image-Text Matching**
Haiwen Diao, Ying Zhang, Shang Gao, Xiang Ruan, Huchuan Lu ✉
IEEE Transactions on Image Processing (TIP), 2024. [Code]
- **Plug-and-Play Regulators for Image-Text Matching**
Haiwen Diao, Ying Zhang, Wei Liu, Xiang Ruan, Huchuan Lu ✉
IEEE Transactions on Image Processing (TIP), 2023. [Code]

Preprints (Under Review)

- **Autoregressive Video Generation without Vector Quantization**
Haoge Deng^{*}, Ting Pan^{*}, Haiwen Diao^{*}, Zhengxiong Luo^{*}, Yufeng Cui, Huchuan Lu, Shiguang Shan, Yonggang Qi, Xinlong Wang ✉
Under Review.
- **KARST: Multi-Kernel Kronecker Adaptation with Re-Scaling Transmission for Visual Classification**
Yue Zhu^{*}, Haiwen Diao^{*}, Shang Gao, Long Chen, Huchuan Lu ✉
Under Review.
- **Exploring Dynamic Transformer for Efficient Object Tracking**
Jiawen Zhu, Xin Chen, Haiwen Diao, Shuai Li, Jun-Yan He, Chenyang Li, Bin Luo, Dong Wang, Huchuan Lu ✉
Under Review.

Patents Declaration

- **An Image Retrieval Method and Related Device**
Huchuan Lu, Haiwen Diao, Ying Zhang, Lin Ma

CN111914113A, China, 2020.

Professional Services

Journal Reviewer:

IEEE TPAMI, IEEE TIP, IEEE TNNLS

Conference Reviewer:

CVPR (2022 - 2024), ICCV (2023), ECCV (2022 - 2024), AAAI (2023 - 2025), ACMMM (2024)

References

- **Prof. Huchuan Lu (Ph.D. Advisor)**
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- **Dr. Ying Zhang (Industrial Director)**
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Shenzhen, Guangdong 518000, China
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- **Asst. Prof. Long Chen (Remote Director)**
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Clear Water Bay, Kowloon, Hong Kong, 999077, China
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- **Dr. Xinlong Wang (Industrial Director)**
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