

# Haoyu Chen

*haoyuchen.com*

☎ (+86) 138 5867 7033  
☎ +1 (408) 313 9508  
✉ [hchen794@connect.hkust-gz.edu.cn](mailto:hchen794@connect.hkust-gz.edu.cn)  
🔑 KWbcBucAAAAJ  
WeChat: haoyuc98

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## Education

- 2022–2026 **The Hong Kong University of Science and Technology (Guangzhou)**  
Ph.D. in Robotics and Autonomous Systems  
Advisors: Prof. Lei Zhu and Prof. Ping Tan
- 2017–2021 **The Chinese University of Hong Kong, Shenzhen**  
B.ENG. in Computer Science and Engineering  
Advisor: Prof. Xiaoguang Han

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## Publications

### First Author Publications

- CVPR 2025 **POSTA: A Go-to Framework for Customized Artistic Poster Generation**  
**Haoyu Chen\***, Xiaojie Xu\*, Wenbo Li, Jingjing Ren, Tian Ye, Songhua Liu, Ying-Cong Chen, Lei Zhu, Xinchao Wang
- Under Review **PhotoArtAgent: Intelligent Photo Retouching with Language Model-based Artist Agents**  
**Haoyu Chen**, Keda Tao, Yizao Wang, Xinlei Wang, Lei Zhu, Jinjin Gu
- CVPR 2025 **JarvisIR: Elevating Autonomous Driving Perception with Intelligent Image Restoration**  
Yunlong Lin\*, Zixu Lin\*, **Haoyu Chen\***, Panwang Pan\*, Chenxin Li, Sixiang Chen, Kairun Wen, Yeying Jin, Wenbo Li, Xinghao Ding
- NeurIPS 2024 **RestoreAgent: Autonomous Image Restoration Agent via Multimodal Large Language Models**  
**Haoyu Chen**, Wenbo Li, Jinjin Gu, Jingjing Ren, Sixiang Chen, Tian Ye, Renjing Pei, Kaiwen Zhou, Fenglong Song, Lei Zhu
- CVPR 2024 **Low-Res Leads the Way: Improving Generalization for Super-Resolution by Self-Supervised Learning**  
**Haoyu Chen**, Wenbo Li, Jinjin Gu, Jingjing Ren, Haoze Sun, Xueyi Zou, Youliang Yan, Zhensong Zhang, Lei Zhu
- Under Review **Density-Aware Video Desnowing with Robust Alignment on a Large-Scale Dataset**  
**Haoyu Chen**, Jingjing Ren, Jiaying Shen, Sixiang Chen, Jinjin Gu, Ping Tan, and Lei Zhu
- ICCV 2023 **Snow Removal in Video: A New Dataset and A Novel Method**  
**Haoyu Chen**, Jingjing Ren, Jinjin Gu, Hongtao Wu, Xuequan Lu, Haoming Cai, Lei Zhu
- CVPR 2023 **Masked Image Training for Generalizable Deep Image Denoising**  
**Haoyu Chen\***, Jinjin Gu\*, Yihao Liu, Salma Abdel Magid, Chao Dong, Qiong Wang, Hanspeter Pfister, Lei Zhu
- arXiv 2021 **Attention in attention network for image super-resolution**  
**Haoyu Chen\***, Jinjin Gu, Zhi Zhang

## Co-author Publications

- NeurIPS 2024 **UltraPixel: Advancing Ultra-High-Resolution Image Synthesis to New Peaks**  
Jingjing Ren\*, Wenbo Li\*, **Haoyu Chen**, Renjing Pei, Bin Shao, Yong Guo, Long Peng, Lei Zhu
- CVPR 2024 **CoSeR: Bridging Image and Language for Cognitive Super-Resolution**  
Haoze Sun, Wenbo Li, Jianzhuang Liu, **Haoyu Chen**, Renjing Pei, Xueyi Zou, Youliang Yan, Yujiu Yang
- IJCV 2024 **Triplane-Smoothed Video Dehazing with CLIP-Enhanced Generalization**  
Jingjing Ren, **Haoyu Chen**, Tian Ye, Hongtao Wu, Lei Zhu
- arXiv 2024 **Towards Flexible, Scalable, and Adaptive Multi-Modal Conditioned Face Synthesis**  
Jingjing Ren, Cheng Xu, **Haoyu Chen**, Xinran Qin, Chongyi Li, Lei Zhu
- ICML 2023 **Crafting Training Degradation Distribution for the Accuracy-Generalization Trade-off in Real-World Super-Resolution**  
Ruofan Zhang, Jinjin Gu, **Haoyu Chen**, Chao Dong, Yulun Zhang, Wenming Yang
- MM 2023 **Cross-scale Prototype Learning Transformer for Image Snow Removal**  
Sixiang Chen\*, Tian Ye\*, Yun Liu, Jinbin Bai, **Haoyu Chen**, Yunlong Lin, Jun Shi, Erkang Chen
- MM 2023 **Mask-Guided Progressive Network for Joint Raindrop and Rain Streak Removal in Videos**  
Hongtao Wu, Yijun Yang, **Haoyu Chen**, Jingjing Ren, Lei Zhu
- MM 2023 **Uncertainty-Driven Dynamic Degradation Perceiving and Background Modeling for Efficient Single Image Desnowing**  
Sixiang Chen\*, Tian Ye\*, Chenghao Xue, **Haoyu Chen**, Yun Liu, Erkang Chen, Lei Zhu
- arXiv 2018 **Super Resolution Perception for Industrial Sensor Data**  
Jinjin Gu, **Haoyu Chen**, Guolong Liu, Gaoqi Liang, Xinlei Wang, Junhua Zhao
- ECCV 2020 **PIPAL: a Large-Scale Image Quality Assessment Dataset for Perceptual Image Restoration**  
Jinjin Gu, Haoming Cai, **Haoyu Chen**, Xiaoxin Ye, Jimmy S. Ren, Chao Dong

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## Research Experience

- 2025 **Adobe**, *San Jose, US*
- Research Intern, Supervisor: Zhe Lin and Qing Liu
  - A Unified Autoregressive Multimodal Framework for Interleaved Image-Text Generation
- 2021–2022 **Xiaobing.AI**, *Shanghai, China*
- Research Intern, Supervisor: Baoyuan Wang
  - Audio-driven Talking Face Generation
- 2020 **Amazon Web Services (AWS) Shanghai AI Lab**, *Shanghai, China*
- Research Intern, Supervisor: Zhi Zhang
  - Image and Video Super-Resolution

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## Research Interests

My research initially focused on **low-level vision**, particularly in **image and video processing and restoration**. More recently, I have been exploring **generative models** and **multi-modal large language models**, with experience in building **agent-based systems**. Currently, I am actively working on a **Unified Autoregressive Multimodal Framework for Interleaved Image-Text Generation**.

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## Awards & Competitions

- 2018 **Winner (1st Place)**, *IEEE ICDM 2018 Global AI Challenge on Meteorology*  
2020 **4th Place**, *ECCV 2020 Workshop AIM 2020: Video Extreme Super-Resolution*

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## Research Service

### Conference Reviewer

Conference on Computer Vision and Pattern Recognition (CVPR), 2024, 2025

European Conference on Computer Vision (ECCV), 2024

The Neural Information Processing Systems (NeurIPS), 2024, 2025

The International Conference on Learning Representations (ICLR), 2025

International Conference on Artificial Intelligence and Statistics (AISTATS), 2025

ACM Multimedia (ACM MM), 2023, 2024

ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD), 2023

SIAM International Conference on Data Mining (SDM), 2024

Winter Conference on Applications of Computer Vision (WACV), 2023, 2024

### Journal Reviewer

IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)

IEEE Transactions on Mobile Computing (TMC)