Chengxu LIU
Ph.D. Student | Computer Vision

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I am a 3rd-year Ph.D. student at Xi'an Jiaotong University (XJTU) in China, My advisor is Prof. Xueming Qian. I am now a visiting Ph.D. student in the Vision and Learning Lab, University of California, Merced, supervised by Prof. Xiangyu Xu and Prof. Ming-Hsuan Yang. I worked as a research intern at the Multimedia Search and Mining (MSM) group of Microsoft Research Asia (MSRA) from Apr. 2021 to Apr. 2022, and at the Invictus Sense (IS) group of MEGVII Research from Dec. 2022 to Jan. 2024. I received the B.E. degree from XJTU in 2019. I'm interested in image/video restoration, low-quality/degraded detection, and fine-grained recognition.

🎓 EDUCATION

University of California at Merced, US   Jan 2024 – Present
Visiting Student in Vision and Learning Lab   *Advisor : Prof. Xiangyu Xu and Prof. Ming-Hsuan Yang*

Xi'an Jiaotong University, Xi'an, China   Aug 2019 – Aug 2021 – Present
Master and Ph.D. Student in Information and Communication Engineering   *Advisor : Prof. Xueming Qian*

MEGVII Research, Beijing, China   Dec 2022 – Jan 2024
Research Intern in Invictus Sense Group   *Advisor : Xuan Wang and Shuai Li*

Microsoft Research Asia, Beijing, China   Apr 2021 – Apr 2022
Research Intern in Multimedia Searching and Mining Group   *Advisor : Dr. Huan Yang and Dr. Jianlong Fu*

Xi'an Jiaotong University, Xi'an, China   Aug 2015 – Jun 2019
Bachelor of Engineering in Information Engineering

📋 RESEARCH EXPERIENCES

Present April 2021	**Image/video restoration**
	› Video super-resolution, video frame interpolation, image enhancement, UDC restoration

Present May 2022	**Low-quality/degraded detection**
	› Small object detection, rotated object detection, low-quality object detection

April 2021 September 2019	**Fine-grained recognition**
	› Fine-grained food recognition, product recognition

66 PUBLICATIONS

> [1] **Chengxu Liu**, Xuan Wang, Xiangyu Xu, Ruhao Tian, Shuai Li, Xueming Qian, Ming-Hsuan Yang "Motion-adaptive Separable Collaborative Filters for Blind Motion Deblurring[C]". **IEEE/CVF Conference on Computer Vision and Pattern Recognition**, 2024.

> [2] Nengzhong Yin*, **Chengxu Liu***, Ruhao Tian, Xueming Qian "MSDPDet : Learning Scale-Separated Dynamic Proposals for End-to-End Drone-View Detection[J]". **IEEE Transactions on Multimedia**, 2024.

> [3] **Chengxu Liu**, Xuan Wang, Yuanting Fan, Shuai Li, Yuzhi Wang, Xueming Qian "Decoupling Degradations with Recurrent Network for Video Restoration in Under-Display Camera[C]". **Association for the Advancement of Artificial Intelligence**, 2024.

> [4] **Chengxu Liu**, Xuan Wang, Shuai Li, Yuzhi Wang, Xueming Qian "FSI : Frequency and Spatial Interactive Learning for Image Restoration in Under-Display Cameras[C]". **International Conference on Computer Vision**, 2023.

> [5] Changlong Gao*, **Chengxu Liu***, Yujie Dun, Xueming Qian "CSDA : Learning Category-Scale Joint Feature for Domain Adaptive Object Detection[C]". **International Conference on Computer Vision**, 2023.

> [6] **Chengxu Liu**, Huan Yang, Jianlong Fu, Xueming Qian, "4D LUT : Learnable Context-Aware 4D Lookup Table for Image Enhancement[J]". **IEEE Transactions on Image Processing**, vol. 32, pp. 4742-4756, 2023, doi : 10.1109/TIP.2023.3290849.

> [7] **Chengxu Liu**, Huan Yang, Jianlong Fu, Xueming Qian, "TTVFI : Learning Trajectory-Aware Transformer for Video Frame Interpolation[J]". **IEEE Transactions on Image Processing**, vol. 32, pp. 4728-4741, 2023, doi : 10.1109/TIP.2023.3302990.

> [8] **Chengxu Liu**, Zongyang Da, Yuanzhi Liang, Yao Xue, Xueming Qian, "Split-Check : Boosting Product Recognition via Instance-level Retrieval[J]". **IEEE Transactions on Industrial Informatics**, 2023, doi:10.1109/TII.2023.3308771.

> [9] **Chengxu Liu**, Yaru Zhang, Yao Xue, Xueming Qian, "AJENet : Adaptive Joints Enhancement Network for Abnormal Behavior Detection in Office Scenario[J]". **IEEE Transactions on Circuits and Systems for Video Technology**, 2023, doi : 10.1109/TCSVT.2023.3295432.

> [10] Zongyang Da, Yujie Dun, **Chengxu Liu**, Yuanzhi Liang, Yao Xue, Xueming Qian, "Anomaly detection framework for unmanned vending machines[J]". **Knowledge-Based Systems**, 2023, 262, 110251.doi : 10.1016/j.knosys.2023.110251.

> [11] **Chengxu Liu**, Huan Yang, Jianlong Fu, Xueming Qian, "Learning Trajectory-Aware Transformer for Video Super-Resolution[C]". **IEEE/CVF Conference on Computer Vision and Pattern Recognition** (Oral presentation). 2022 : 5687-5696, doi : 10.1109/CVPR 52688.2022.00560.

> [12] **Chengxu Liu**, Zongyang Da, Yuanzhi Liang, Yao Xue, Guoshuai Zhao, Xueming Qian, "Product Recognition for Unmanned Vending Machines[J]". **IEEE Transactions on Neural Networks and Learning Systems**, vol. 35, no. 2, pp. 1584-1597, Feb 2024, doi : 10.1109/TNNLS.2022. 3184075.

> [13] **Chengxu Liu**, Yuanzhi Liang, Yao Xue, Xueming Qian, Jianlong Fu, "Food and ingredient joint learning for fine-grained recognition[J]". **IEEE Transactions on Circuits and Systems for Video Technology**, vol. 31, no. 6, pp. 2480-2493, June 2021, doi : 10.1109/TCSVT.2020.3020079.

⌨ COMPETITION

1st Prize in Northwest, Postgraduate Electronics Design Contest *Ministry of Education of China*	2023
National Most Commercially Valuable Award, Postgraduate Electronics Design Contest *Chinese Institute of Electronics (8/5700+, 0.14% award rate)*	2022
National 1st Prize, Postgraduate Electronics Design Contest *Chinese Institute of Electronics (32/5700+, 0.56% award rate)*	2022
1st Prize in Northwest, Postgraduate Electronics Design Contest *Ministry of Education of China*	2022
2nd Prize in the Postgraduate Internet+ Contest *Ministry of Education of Shannxi*	2022
2nd Prize in the 34th "Tengfei Cup" Innovation and Entrepreneurship Competition *Xi'an Jiaotong University*	2022
3rd Prize in the 34th "Tengfei Cup" Innovation and Entrepreneurship Competition *Xi'an Jiaotong University*	2022

🌐 AWARDS & HONORS

Baidu Scholarship Top 20 in the World. *Baidu*	2024
The postgraduate "Academic Star" (10 per year) *Xi'an Jiaotong University*	2023
Excellent Graduate Student *Xi'an Jiaotong University*	2020,2023
Principal Scholarship of Postgraduates *Xi'an Jiaotong University*	2020,2023
Pacesetter for Postgraduate Student (The highest honor in XJTU, 16 Ph.D. per year) *Xi'an Jiaotong University*	2022
National Scholarship *Ministry of Education of China*	2022
Stars of Tomorrow Internship Program *Microsoft Research Asia*	2022
Excellent Graduate Student *Xi'an Jiaotong University*	2020