

# Xiaogang XU

ALGORITHM SCIENTIST · AI SCIENTIST · RUNNER

ZJU, China

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“Cease to struggle and you cease to live.”

## Education

### Department of Computer Science and Engineering, The Chinese University of Hong Kong

Hong Kong SAR

PHD STUDENT IN COMPUTER VISION AND MACHINE LEARNING

Aug. 2018 - June.2022

- Supervised by Prof.Jiaya Jia.
- Awardee of Hong Kong PhD Fellowship Scheme(HKPFS).

### College of Information Science And Electronic Engineering, Zhejiang University

Hangzhou, China

B.S. IN INFORMATION ENGINEERING

Aug. 2014 - July. 2018

- GPA: 90/100. Ranking: 14/169. National Scholarship awardee.
- The award of outstanding undergraduates in Zhejiang University.
- Minor: Advanced Honor Class of Engineering Education, Chu Kochen Honors College, Zhejiang University. (40 students selected from 5600, receiving honors coursework training in Modern Engineering and cross-disciplinary sciences)

### Department of Computer Science and Engineering, Hong Kong University of Science and Technology

Hong Kong

EXCHANGE STUDENT

July. 2017 - Oct. 2017

- National exchange scholarship awardee.
- Supervised by Prof. Yangqiu Song on social network's data mining.

## Work Experience

### College of Computer Science, Zhejiang University

Hangzhou, China

ZJU YOUNG100 PROFESSOR

Jan. 2023 - Now

- In the team of Prof. Hujun Bao at State Key Lab of CAD&CG.

### Research Institute of Basic Theories, Zhejiang Lab

Hangzhou, China

RESEARCH SCIENTIST

Jan. 2023 - Mar. 2024

- We focus on the algorithm design for AIGC and multi-modality processing.

### Department of CSE, The Chinese University of Hong Kong

Hong Kong SAR

RESEARCH FELLOW

Aug. 2022 - Dec. 2022

- In the team of Prof.Jiaya Jia.
- The research topic is generative 3D model and NERF.

### SmartMore (Hong Kong)

Hong Kong SAR

SENIOR RESEARCHER

Aug. 2022 - Dec. 2022

- We focus on the product of image/video restoration and 3D computational photography

## Research Interests

My research interests focus on

- 1) Multi-modality AIGC
- 2) Multi-modality Large Models
- 3) Generative Computational photography
- 4) Alignment for AI safety

## Honors & Awards

2018	<b>Hong Kong PhD Fellowship</b> , about 230 awardees per year in Hong Kong.	Hong Kong
2018	<b>Outstanding Final-Year Project</b> , Top 10 % students in ISEE Department.	Hangzhou China
2018	<b>Outstanding Graduate</b> , Top 5% students in ISEE Department.	Hangzhou China
2015	<b>National Scholarship</b> , Top 1% students in ISEE Department.	Hangzhou China
2015/16/17	<b>Title of Outstanding Students</b> , Top 3% students for brilliant comprehensive development.	Hangzhou China
2016/17	<b>The scholarship for excellence in research and innovation</b> , Top 10% students who have great achievement in research.	Hangzhou China
2016	<b>Zhejiang Provincial Government Scholarship</b> , Provided by Zhejiang Provincial Government for outstanding students(only 5%).	Hangzhou, China
2016	<b>Mathematical Contest in Modeling (Honorable Mention)</b> , COMAP (U.S.A)	
2016	<b>China Undergraduate Mathematical Contest in Modeling</b> , National second prize.	China
2018	<b>Four-Star-Level Volunteer</b> , Award for students who do excellent voluntary activities.	Hangzhou, China
2018	<b>Large-scale Video Object Segmentation Challenge</b> , ECCV workshop (rank3).	Worldwide
2021	<b>White-box Adversarial Attacks on ML Defense Models</b> , Tianchi (rank6).	Worldwide
2023	<b>Zhejiang Lab Talent Fund for Young Professionals</b> , 200,000 CNY.	Hangzhou, China
2024	<b>Zhejiang Lab Elite Scientist Sponsorship Program</b> , 30 from 3000+ researchers in Zhejiang Lab.	Hangzhou, China

## Selected Activities

2022-now	<b>Conference PC Member</b> , AAAI	World-wide
2018-now	<b>Conference Reviewer</b> , CVPR, ICCV, ECCV, NeurIPS, AAAI, WACV, ACCV, ICLR, etc.	World-wide
2018-now	<b>Journal Reviewer</b> , TPAMI, TCSVT, TMM, TIM, IJCV, IJHC, PR, SPL, Neurocomputing, Neural Networks, etc.	World-wide

## Internship Experience

### Algorithms for Video Restoration

ADVISOR: DR.JIANGBO LU AND DR.NIANJUAN JIANG, SMARTMORE

Shenzhen, China

Feb.2020 - June.2022

- I worked as an intern to design algorithms for video denoising and illumination enhancement.

### Universal Vision System

Remote Cooperation

ADVISOR: DR.VIBHAV VINEET, MICROSOFT RESEARCH, REDMOND, WA

Sep.2021 - Mar.2022

- I remotely work with Dr.Vibhav Vineet in Microsoft Research to design the universal vision system that utilize transformer structure to complete multi-task learning.
- This work is also completed with Ser-Nam Lim from Meta AI and Prof. Antonio Torralba from MIT.

### Universal Adaptive Data Augmentation

Remote Cooperation

ADVISOR: PROF.PHILIP TORR AND PROF.HENGSHUANG ZHAO, UNIVERSITY OF OXFORD

May.2021 - Oct.2021

- I remotely work with Prof.Philip Torr and Prof.Hengshuang Zhao in University of Oxford to design automatic data augmentation strategy for image classification and semantic segmentation.
- One paper about this work is submitted to CVPR2022.

### Scene-graph-based Image Creation

Remote Cooperation

ADVISOR: DR.NING XU, ADOBE

Aug.2020 - May.2021

- I remotely work with Dr.Ning Xu in Adobe to design deep neural networks that can synthesize high-resolution images from scene-graphs.
- One paper about this work is submitted to AAAI2022.

### Tools for Image Processing

ADVISOR: DR.XIN TAO AND DR.XIAOYONG SHEN, TENCENT

Shenzhen, China

Dec.2018 - Feb.2020

- I worked as an intern to develop software for image processing, such as image colorization.

### High-quality Semantic Map

ADVISOR: MR.JUN LIU AND MR.SANYUAN GAO, KUANDENG TECH.

Beijing, China

June.2018 - July.2018

- I worked as an intern. The target of our team is to construct high-quality map of different cities through image segmentation models.

## Tmall Genie System

ADVISOR: DR.KAI SUN, ALIBABA

Hangzhou, China

Apr.2018 – May.2018

- I worked as an algorithm engineer(intern) in the X Lab and took part in the researching of Tmall Genie.
- Our project is to recognize the children books and medicine box automatically. Our system has high accuracy and fast speed.

## Deep Multi-view Stereo System for Video's Depth Prediction

ADVISOR: PROF.GUOFENG ZHANG AND DR.HANQING JIANG, SENSETIME

Hangzhou, China

Sep.2017 - Mar.2018

- I worked as an algorithm researcher(intern) in the 3D vision group.
- Our project is to estimate the depth information for each frame in a video. Combined with the information of neighboring frames, our system can construct cost volume tensor and predicte depth map through a deep neural network.

## Publications

### Published

- 1 **X. Xu**, K. Shu, T. Hu, Z. Liu, and H. Bao. "Boosting Image Restoration via Priors from Pre-trained Models." CVPR 2024
- 2 **X. Xu**, Y.Wang, L. Wang, B. Yu, and J. Jia. "Conditional Temporal Variational AutoEncoder for Action Video Prediction." IJCV 2023
- 3 **X. Xu**, R.Wang, and J. Lu. "Low-light Image Enhancement via Structure Modeling and Guidance." CVPR 2023
- 4 **X. Xu**, R. Wang, C. Fu, and J. Jia. "Deep Parametric 3D Filters for Joint Video Denoising and Illumination Enhancement in Video Super Resolution." AAAI 2023
- 5 **X. Xu**, and H. Zhao. "Universal Adaptive Data Augmentation." IJCAI 2023
- 6 **X. Xu**, H. Zhao, V. Vineet, S. Lim, and A. Torralba. "MTFormer: Multi-Task Learning via Transformer and Cross-Task Reasoning." ECCV 2022
- 7 **X. Xu**, and N. Xu. "Hierarchical Image Generation via Transformer-based Sequential Patch Selection." AAAI 2022
- 8 **X. Xu**, R. Wang, C. Fu, and J. Jia. "SNR-Aware Low-light Image Enhancement." CVPR 2022
- 9 **X. Xu**, H. Zhao, and Jiaya Jia. "Dynamic divide-and-conquer adversarial training for robust semantic segmentation." ICCV 2021
- 10 **X. Xu**, Y. Chen, X. Tao, and J. Jia. "Text-Guided Human Image Manipulation via Image-Text Shared Space." TPAMI, 2021
- 11 **X. Xu**, Y. Chen, and J. Jia. "View Independent Generative Adversarial Network for Novel View Synthesis." ICCV, 2019, oral
- 12 **X. Xu**, Y. Zhao, Y. Ding, et al. "No-reference stereoscopic image quality assessment based on saliency-guided binocular feature consolidation." Electronics Letters 2017
- 13 T. Hu\*, **X. Xu\***, R. Chu, and J. Jia. "TriVol: Point Cloud Rendering Via Triple Volumes." CVPR 2023, \* means equal contribution
- 14 R. Wang\*, **X. Xu\***, C. Fu, J. Lu, B. Yu, and J. Jia. "Seeing Dynamic Scene in the Dark: A High-Quality Video Dataset with Mechatronic Alignment." ICCV, 2021, \* means equal contribution
- 15 H. Zhao\*, **X. Xu\***, Y. Song, et al. "Ranking Users in Social Networks with Motif-based PageRank." IEEE Transactions on Knowledge and Data Engineering 2019, \* indicates equal contribution
- 16 H. Zhao\*, **X. Xu\***, Y. Song, et al. "Ranking Users in Social Networks with Higher-Order Structures." AAAI 2018, \* indicates equal contribution
- 17 Z. Li, **X. Xu** (corresponding author), S. Lim, and H. Zhao. "UniMODE: Universal Monocular 3D Object Detection." CVPR 2024
- 18 C. Zhang, **X. Xu** (corresponding author), L. Wang, Z. Dai, and J. Yang. "S2WAT: Image Style Transfer via Hierarchical Vision Transformer using Strips Window Attention." AAAI 2024
- 19 L. Yang, **X. Xu**, B. Kang, Y. Shi, and H. Zhao. "Densely Annotated Synthetic Images Make Stronger Semantic Segmentation Models." NeurIPS 2023
- 20 Y. Lao, **X. Xu**, X. Liu, and H. Zhao. "CorresNeRF: Image Correspondence Priors for Neural Radiance Fields." NeurIPS 2023
- 21 H. Wang, **X. Xu**, K. Xu, and R. Lau. "Lighting up NeRF via Unsupervised Decomposition and Enhancement." ICCV 2023
- 22 X. Yang, **X. Xu** (corresponding author), and Y. Chen. "Out-of-domain GAN inversion via Invertibility Decomposition for Photo-Realistic Human Face Manipulation." ICCV 2023
- 23 T. Hu, **X. Xu** (corresponding author), R. Chu, and J. Jia. "Point2Pix: Photo-Realistic Point Cloud Rendering via Neural Radiance Fields." CVPR 2023
- 24 J. Tang, **X. Xu**, S. Hu, and Y. Chen. "High Dynamic Range Image Reconstruction via Deep Explicit Polynomial Curve Estimation." ECAI 2023
- 25 C. Shi, **X. Xu**, S. Ji, K. Bu, J. Chen, R. Beyah, and T. Wang. "Adversarial captchas." IEEE Transactions on Cybernetics 2021
- 26 Y. Chen, **X. Xu**, and J. Jia. "Domain Adaptive Image-to-image Translation." CVPR, 2020
- 27 Y. Chen, **X. Xu**, and J. Jia. "Homomorphic Latent Space Interpolation for Unpaired Image-to-image Translation." CVPR 2019, oral
- 28 J. Tang, R. Wu, **X. Xu**, S. Hu, and Y. Chen. "Learning to Remove Wrinkled Transparent Film with Polarized Prior." CVPR 2024

- 29** X. Lai, Z. Tian, **X. Xu**, Y. Chen, S. Liu, H. Zhao, L. Wang, and J. Jia. "DecoupleNet: Decoupled Network for Domain Adaptive Semantic Segmentation." ECCV 2022
- 30** T. Hu, L. Wang, **X. Xu**, S. Liu, and J. Jia. "Self-Supervised 3D Mesh Reconstruction From Single Images." CVPR 2021
- 31** Y. Liu, X. Zhang, and **X. Xu**. "Semantic-Aware Video Color Style Transfer based on Temporal Consistent Sparse Patch Constraint." ICME 2021
- 32** Y. Liu, X. Zhang, and **X. Xu**. "Reference-based Video Colorization with Multi-scale Semantic Fusion and Temporal Augmentation." ICIP 2021
- 33** L. Yang, B. Kang, Z. Huang, **X. Xu**, J. Feng, and H. Zhao. "Depth Anything: Unleashing the Power of Large-Scale Unlabeled Data." CVPR 2024
- 34** Y. Liang, X. Yang, J. Lin, H. Li, **X. Xu**, and Y. Chen. "LucidDreamer: Towards High-Fidelity Text-to-3D Generation via Interval Score Matching." CVPR 2024