

Xiaogang XU

ALGORITHM SCIENTIST · AI SCIENTIST · TOP MINDS · RUNNER

Huawei 2012, 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(HKPFPS).

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

2012 Lab, Huawei

Hangzhou, China

AI ALGORITHM SCIENTIST, TOP MINDS

Mar. 2024 - Now

- We focus on the algorithm design for AI-based Computational photography, AIGC, and Multi-Modality AI.

College of Computer Science, Zhejiang University

Hangzhou, China

ZJU100 YOUNG PROFESSOR

Jan. 2023 - Mar. 2024

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

Selected Activities

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

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

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

Remote Cooperation

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

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

Remote Cooperation

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

ADVISOR: DR.NING XU, ADOBE

Remote Cooperation

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