

Xihui Liu

Assistant Professor, The University of Hong Kong

✉ xihui@eee.hku.hk • 📄 xh-liu.github.io • 📄 Google Scholar Link

Professional Experience

The University of Hong Kong Assistant Professor, Department of Electronic and Electrical Engineering and Institute of Data Science.	06/2022 - present
UC Berkeley Postdoc, EECS Department and Berkeley Artificial Intelligence Research (BAIR) Advisor: Professor Trevor Darrell	08/2021 - 06/2022
NVIDIA Research Research Intern. Mentors: Dr. Ming-Yu Liu, Dr. Ting-Chun Wang.	Summer 2020
Adobe Research Research Intern. Mentors: Dr. Zhe Lin.	Summer 2019
The Chinese University of Hong Kong Research Assistant. Advisor: Professor Xiaogang Wang.	Summer 2016

Education

The Chinese University of Hong Kong Ph.D., Department of Electronic Engineering. Advisors: Professor Xiaogang Wang, Professor Hongsheng Li.	08/2017 - 07/2021
Tsinghua University B.Eng., Department of Electronic Engineering.	08/2013 - 07/2017

Awards and Honors

World Artificial Intelligence Conference (WAIC) Rising Star Award.	2022
Rising Stars in EECS (by MIT).	2021
CVPR Doctoral Consortium (mentored by Prof. Antonio Torralba at MIT).	2021
ICLR Outstanding Reviewer Award.	2021
Adobe Research Fellowship.	2020
CVPR Outstanding Reviewer Award.	2019
Outstanding Graduate in Tsinghua University.	2017
Champion of ImageNet ILSRCR Task 3c (as a member of CUVideo team)	2016

Publications

(* denotes equal contribution)

- Empowering 3D Visual Grounding with Reasoning Capabilities
Chenming Zhu, Tai Wang, Wenwei Zhang, Kai Chen, **Xihui Liu**
European Conference on Computer Vision (ECCV), 2024.
- TC4D: Trajectory-Conditioned Text-to-4D Generation
Sherwin Bahmani*, Xian Liu*, Yifan Wang*, Ivan Skorokhodov, Victor Rong, Ziwei Liu, **Xihui Liu**, Jeong Joon Park, Sergey Tulyakov, Gordon Wetzstein, Andrea Tagliasacchi, David B. Lindell
European Conference on Computer Vision (ECCV), 2024.
- PredBench: Benchmarking Spatio-Temporal Prediction across Diverse Disciplines

- ZiDong Wang, Zeyu Lu, Di Huang, Tong He, **Xihui Liu**, Wanli Ouyang, Lei Bai
European Conference on Computer Vision (ECCV), 2024.
4. FiT: Flexible Vision Transformer for Diffusion Model
Zeyu Lu, Zidong Wang, Di Huang, Chengyue Wu, **Xihui Liu**, Wanli Ouyang, Lei Bai
International Conference on Machine Learning (ICML), 2024.
 5. DreamComposer: Controllable 3D Object Generation via Multi-View Conditions
Yunhan Yang*, Yukun Huang*, Xiaoyang Wu, Yuan-Chen Guo, Song-Hai Zhang, Hengshuang Zhao, Tong He, **Xihui Liu**
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2024.
 6. HumanGaussian: Text-driven 3d Human Generation with Gaussian Splatting
Xian Liu, Xiaohang Zhan, Jiayang Tang, Ying Shan, Gang Zeng, Dahua Lin, **Xihui Liu**, Ziwei Liu
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2024 (highlight).
 7. EmbodiedScan: A Holistic Multi-Modal 3D Perception Suite Towards Embodied AI
Tai Wang*, Xiaohan Mao*, Chenming Zhu*, Runsen Xu, Ruiyuan Lyu, Peisen Li, Xiao Chen, Wenwei Zhang, Kai Chen, Tianfan Xue, **Xihui Liu**, Cewu Lu, Dahua Lin, Jiangmiao Pang
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2024.
 8. Point Transformer V3: Simpler, Faster, Stronger
Xiaoyang Wu, Li Jiang, Peng-Shuai Wang, Zhijian Liu, **Xihui Liu**, Yu Qiao, Wanli Ouyang, Tong He, Hengshuang Zhao
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2024 (Oral).
 9. Towards Large-scale 3D Representation Learning with Multi-dataset Point Prompt Training
Xiaoyang Wu, Zhuotao Tian, Xin Wen, Bohao Peng, **Xihui Liu**, Kaicheng Yu, Hengshuang Zhao
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2024.
 10. HyperHuman: Hyper-Realistic Human Generation with Latent Structural Diffusion
Xian Liu, Jian Ren, Aliaksandr Siarohin, Ivan Skorokhodov, Yanyu Li, Dahua Lin, **Xihui Liu**, Ziwei Liu, Sergey Tulyakov
International Conference on Learning Representations (ICLR), 2024.
 11. Hierarchical Diffusion Autoencoders and Disentangled Image Manipulation
Zeyu Lu, Chengyue Wu, Xinyuan Chen, Yaohui Wang, Yu Qiao, **Xihui Liu**
IEEE/CVF Winter Conference on Applications of Computer Vision (WACV), 2024.
 12. Shape-Guided Diffusion with Inside-Outside Attention
Dong Huk Park*, Grace Luo*, Clayton Andrew Toste, Samaneh Azadi, **Xihui Liu**, Makrine Karalashvili, Anna Rohrbach, Trevor Darrell
IEEE/CVF Winter Conference on Applications of Computer Vision (WACV), 2024.
 13. T2I-CompBench: A Comprehensive Benchmark for Open-world Compositional Text-to-image Generation
Kaiyi Huang, Kaiyue Sun, Enze Xie, Zhenguo Li, **Xihui Liu**
Conference on Neural Information Processing Systems (NeurIPS), 2023.
 14. OV-PARTS: Towards Open-Vocabulary Part Segmentation
Meng Wei, Xiaoyu Yue, Wenwei Zhang, Shu Kong, **Xihui Liu**, Jiangmiao Pang
Conference on Neural Information Processing Systems (NeurIPS), 2023.
 15. CorresNeRF: Image Correspondence Priors for Neural Radiance Fields
Yixing Lao, Xiaogang Xu, zhipeng cai, **Xihui Liu**, Hengshuang Zhao
Conference on Neural Information Processing Systems (NeurIPS), 2023.
 16. Seeing is not always believing: A Quantitative Study on Human Perception of AI-Generated Images
Zeyu Lu*, Di Huang*, Lei Bai*, Jingjing Qu, **Xihui Liu**, Wanli Ouyang
Conference on Neural Information Processing Systems (NeurIPS), 2023.
 17. DDP: Diffusion model for dense visual prediction
Yuanfeng Ji*, Zhe Chen*, Enze Xie, Lanqing Hong, **Xihui Liu**, Zhaoqiang Liu, Tong Lu, Zhenguo Li, Ping Luo
IEEE International Conference on Computer Vision (ICCV), 2023.
 18. SAM3D: Segment Anything in 3D Scenes, Yunhan Yang, Xiaoyang Wu, Tong He, Hengshuang Zhao, **Xihui Liu**
IEEE International Conference on Computer Vision (ICCV) Workshop, 2023.
 19. Back to the Source: Diffusion-Driven Test-Time Adaptation

- Jin Gao*, Jialing Zhang*, **Xihui Liu**, Trevor Darrell, Evan Shelhamer, Dequan Wang
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2023.
20. Learning Transferable Spatiotemporal Representations from Natural Script Knowledge
Ziyun Zeng*, Yuying Ge*, **Xihui Liu**, Bin Chen, Ping Luo, Shu-Tao Xia, Yixiao Ge
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2023.
 21. Masked Scene Contrast: A Scalable Framework for Unsupervised 3D Representation Learning
Xiaoyang Wu, Xin Wen, **Xihui Liu**, Hengshuang Zhao
IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2023.
 22. GLeaD: Improving GANs with A Generator-Leading Task
Qingyan Bai, Ceyuan Yang, Yinghao Xu, **Xihui Liu**, Yujiu Yang, Yujun Shen
IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2023.
 23. RIFormer: Keep Your Vision Backbone Effective But Removing Token Mixer
Jiahao Wang, Songyang Zhang, Yong Liu, Taiqiang Wu, Yujiu Yang, **Xihui Liu**, Kai Chen, Ping Luo, Dahua Lin
IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2023.
 24. More Control for Free! Image Synthesis with Semantic Diffusion Guidance
Xihui Liu, Dong Huk Park, Samaneh Azadi, Gong Zhang, Arman Chopikyan, Yuxiao Hu, Humphrey Shi, Anna Rohrbach, Trevor Darrell
IEEE/CVF Winter Conference on Applications of Computer Vision (WACV) 2023.
 25. Point Transformer V2: Grouped Vector Attention and Partition-based Pooling
Xiaoyang Wu, Yixing Lao, Li Jiang, **Xihui Liu**, Hengshuang Zhao
Conference on Neural Information Processing Systems (NeurIPS) 2022.
 26. MILES: Visual BERT Pre-training with Injected Language Semantics for Video-text Retrieval
Yuying Ge, Yixiao Ge, **Xihui Liu**, Alex Jinpeng Wang, Jianping Wu, Ying Shan, Xiaohu Qie, Ping Luo
European Conference on Computer Vision (ECCV) 2022.
 27. Bridging Video-text Retrieval with Multiple Choice Questions
Yuying Ge, Yixiao Ge, **Xihui Liu**, Dian Li, Ying Shan, Xiaohu Qie, Ping Luo
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2022 (Oral).
 28. Benchmark for Compositional Text-to-Image Synthesis
Dong Huk Park*, Samaneh Azadi*, **Xihui Liu**, Trevor Darrell, Anna Rohrbach
Conference on Neural Information Processing Systems (NeurIPS) Dataset and Benchmark Track, 2021.
 29. Open-Edit: Open-Domain Image Manipulation with Open-Vocabulary Instructions
Xihui Liu, Zhe Lin, Jianming Zhang, Handong Zhao, Quan Tran, Xiaogang Wang, Hongsheng Li
European Conference on Computer Vision (ECCV), 2020.
 30. Learning to Predict Layout-to-image Conditional Convolutions for Semantic Image Synthesis
Xihui Liu, Guojun Yin, Jing Shao, Xiaogang Wang, Hongsheng Li
Conference on Neural Information Processing Systems (NeurIPS), 2019.
 31. CAMP: Cross-Modal Adaptive Message Passing for Text-Image Retrieval
Zihao Wang*, **Xihui Liu***, Hongsheng Li, Lu Sheng, Junjie Yan, Xiaogang Wang, Jing Shao
IEEE International Conference on Computer Vision (ICCV), 2019.
 32. Improving Referring Expression Grounding with Cross-modal Attention-guided Erasing
Xihui Liu, Zihao Wang, Hongsheng Li, Jing Shao, Xiaogang Wang
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2019.
 33. Show, Tell and Discriminate: Image Captioning by Self-Retrieval with Partially Labeled Data
Xihui Liu, Hongsheng Li, Jing Shao, Dapeng Chen, Xiaogang Wang
European Conference on Computer Vision (ECCV), 2018.
 34. Improving Deep Visual Representation for Person Re-identification by Global and Local Image-Language Association
Dapeng Chen, Hongsheng Li, **Xihui Liu**, Yantao Shen, Jing Shao, Zejian Yuan, Xiaogang Wang
IEEE International Conference on Computer Vision (ICCV), 2018.
 35. Localization Guided Learning for Pedestrian Attribute Recognition
Pengze Liu, **Xihui Liu**, Junjie Yan, Jing Shao
British Machine Vision Conference (BMVC), 2018.

36. Hydraplus-Net: Attentive Deep Features for Pedestrian Analysis
Xihui Liu*, Haiyu Zhao*, Maoqing Tian, Lu Sheng, Jing Shao, Shuai Yi, Junjie Yan, Xiaogang Wang
IEEE International Conference on Computer Vision (ICCV), 2017.
37. Orientation Invariant Feature Embedding and Spatial Temporal Regularization for Vehicle Re-identification
 Zhongdao Wang, Luming Tang, **Xihui Liu**, Zhuliang Yao, Shuai Yi, Jing Shao, Junjie Yan, Shengjin Wang, Hongsheng Li, Xiaogang Wang
IEEE International Conference on Computer Vision (ICCV), 2017.
38. Object Detection in Videos with Tubelet Proposal Networks
 Kai Kang, Hongsheng Li, Tong Xiao, Wanli Ouyang, Junjie Yan, **Xihui Liu**, Xiaogang Wang
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2017.

Selected Patents

1. **Xihui Liu**, Jing Shao, Zihao Wang, Hongsheng Li, Xiaogang Wang, "Method and apparatus for positioning description statement in image, electronic device, and storage medium", US Patent, US11455788B2, 2022/09/27.
2. **Xihui Liu**, Ming-Yu Liu, Ting-Chun Wang, "Motion generation using one or more neural networks", US Patent Application, US20230274472A1, 2023/08/31.
3. Zhe Lin, **Xihui Liu**, Quan Tran, Jianming Zhang, Handong Zhao, "Joint visual-semantic embedding and grounding via multi-task training for image searching", US Patent, US11809822B2, 2023/11/07.
4. Zhe Lin, **Xihui Liu**, Quan Hung Tran, Jianming Zhang, Handong Zhao, "Semantic image manipulation using visual-semantic joint embeddings", US Patent, US11574142B2, 2023/02/07.
5. Zihao Wang, **Xihui Liu**, Jing Shao, Hongsheng Li, Lv Sheng, Junjie Yan, Xiaogang Wang, "Cross-modal information retrieval method and device and storage medium", CN Patent Application, CN109816039B, 2021/04/20.
6. Ming-Yu Liu, Ting-Chun Wang, **Xihui Liu**, "Generation of moving three dimensional models using motion transfer", US Patent Application, US20220207770A1, 2022/06/30.

Professional Services

Area Chairs:

IEEE Conference on Computer Vision and Pattern Recognition (CVPR)	2024
ACM International Conference on Multimedia (ACM MM)	2024

Selected Conference Reviews:

IEEE Conference on Computer Vision and Pattern Recognition (CVPR)	2019-2023
IEEE International Conference on Computer Vision (ICCV)	2019-2023
European Conference on Computer Vision (ECCV)	2020-2024
Conference on Neural Information Processing Systems (NeurIPS)	2019-2024
International Conference on Learning Representations (ICLR)	2020-2023
International Conference on Machine Learning (ICML)	2020-2023
AAAI Conference on Artificial Intelligence (AAAI)	2020-2023

Selected Journal Reviews:

IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)
International Journal of Computer Vision (IJCV)
IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)
IEEE Transactions on Multimedia (TMM)
Neurocomputing