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I am a research scientist at AI Research Lab (AIRL), Intel Labs, where I work on Enhanced Visual AI (EVAI). I am also a visiting scholar at HMI Lab, PKUCS supervised by Prof. Zhang Shanghang. I did my Ph.D focused on computer graphics and 3D vision at Tsinghua University, where I was advised by Prof. Zhang Li.

I'm especially interested in 1) Neural Field Simulators (robot navigation/robot manipulation/autonomous driving/digital human/thermal/underwater/etc.), 2) Large Vision-Language Models (training-free/efficient algorithms for the post-training of SAM/Diffusion Model/LLaVA/Qwen-VL/VLA/VLN/etc.), 3) EVAI for Chips (vision ISP/pre and post processing for Codec/rendering acceleration for GPU/etc.), and 4) EVAI for Sciences (neural field for medical data compression/etc.).

I have published over 50 papers on top-tier journals and conference proceedings. I also have about 30 PCT/US/EP patents approved for filing. Some of my works have been used in Intel GPU/CPU, Chris Lee's MV, and the opening ceremony of the Winter Olympic Games 2022.

Education

2009-2013 **Bachelor of Electronic Information Engineering**, *Tianjin University*, China, Rank: 1/107

2013-2019 **Ph.D Candidate of Information and Communication Engineering**, *Tsinghua University*, China,
Research Topics: 3D Vision and Computer Graphics

Work Experience

2013/06-2013/09 **Summer Intern**, INSTITUTE OF AUTOMATION, CHINESE ACADEMY OF SCIENCES, Beijing
Research topic: 3D reconstruction based on high-resolution light field images

2014/07-2014/12 **Summer Intern**, NEC RESEARCH, CHINA, Beijing
Research topic: Image classification and object detection based on Deep Convolutional Neural Network

2015/01-2019/10 **Intern**, INTEL LAB, CHINA, Beijing
Research topic: 3D face reconstruction and tracking, image processing based on Deep Convolutional Neural Network

2019/10-2023/06 **Senior Researcher**, INTEL LAB, CHINA, Beijing
Research topic: Enhanced Visual AI

2023/06-2025/06 **Staff Researcher**, INTEL LAB, CHINA, Beijing
Research topic: Enhanced Visual AI

Skills

Basic JAVA, WEBGL

Intermediate PYTHON, LUA
Advanced C,C++,CUDA,OPENGL,TORCH, PYTORCH

— Languages

Chinese Mothertongue
English Intermediate

Conversationally fluent

— Publication

— Neural Field Simulators

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[4] SliceOcc: Indoor 3D Semantic Occupancy Prediction with Vertical Slice Representation, Jianing Li, Ming Lu, Hao Wang, Chenyang Gu, Wenzhao Zheng, Li Du, Shanghang Zhang, International Conference on Robotics and Automation (ICRA), 2025

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[1] NTO3D: Neural Target Object 3D Reconstruction with Segment Anything, Xiaobao Wei, Renrui Zhang, Jiarui Wu, Jiaming Liu, Ming Lu, Yandong Guo, Shanghang Zhang, Conference on Computer Vision and Pattern Recognition (CVPR), 2024

Large Vision-Language Models

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- [7] Concept-as-Tree: Synthetic Data is All You Need for VLM Personalization, Ruichuan An, Kai Zeng, Ming Lu, Sihan Yang, Renrui Zhang, Huitong Ji, Qizhe Zhang, Yulin Luo, Hao Liang, Wentao Zhang, arXiv, 2025
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- [5] AutoV: Learning to Retrieve Visual Prompt for Large Vision-Language Models, Yuan Zhang, Chun-Kai Fan, Tao Huang, Ming Lu, Sicheng Yu, Junwen Pan, Kuan Cheng, Qi She, Shanghang Zhang, arXiv, 2025
- [4] FastInit: Fast Noise Initialization for Temporally Consistent Video Generation, Chengyu Bai, Yuming Li, Zhongyu Zhao, Jintao Chen, Peidong Jia, Qi She, Ming Lu, Shanghang Zhang, arXiv, 2025
- [3] Beyond Attention or Similarity: Maximizing Conditional Diversity for Token Pruning in MLLMs, Qizhe Zhang, Mengzhen Liu, Lichen Li, Ming Lu, Yuan Zhang, Junwen Pan, Qi She, Shanghang Zhang, arXiv, 2025
- [2] Beyond Text-Visual Attention: Exploiting Visual Cues for Effective Token Pruning in VLMs, Qizhe Zhang, Aosong Cheng, Ming Lu, Zhiyong Zhuo, Minqi Wang, Jiajun Cao, Shaobo Guo, Qi She, Shanghang Zhang, International Conference on Computer Vision (ICCV), 2025
- [1] MoVE-KD: Knowledge Distillation for VLMs with Mixture of Visual Encoders, Jiajun Cao, Yuan Zhang, Tao Huang, Ming Lu, Qizhe Zhang, Ruichuan An, Ningning Ma, Shanghang Zhang, Conference on Computer Vision and Pattern Recognition (CVPR), 2025

EVAI for Chips

- [7] CABM: Content-Aware Bit Mapping for Single Image Super-Resolution Network with Large Input, Senmao Tian, Ming Lu, Jiaming Liu, Yandong Guo, Yurong Chen, Shunli Zhang, Conference on Computer Vision and Pattern Recognition (CVPR), 2023
- [6] Adaptive Patch Exiting for Scalable Single Image Super-Resolution, Shizun Wang, Jiaming Liu, Kaixin Chen, Xiaoqi Li, Ming Lu, Yandong Guo European Conference on Computer Vision (ECCV Oral), 2022
- [5] Efficient Meta-Tuning for Content-Aware Neural Video Delivery, Xiaoqi Li, Jiaming Liu, Shizun Wang, Cheng Lyu, Ming Lu, Yurong Chen, Anbang Yao, Yandong Guo, Shanghang Zhang, European Conference on Computer Vision (ECCV), 2022

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[3] Deep Likelihood Network for Image Restoration With Multiple Degradation Levels, Yiwen Guo, Ming Lu, Wangmeng Zuo, Changshui Zhang, Yurong Chen, Transactions on Image Processing (TIP), 2021

[2] Overfitting the Data: Compact Neural Video Delivery via Content-aware Feature Modulation, Jiaming Liu, Ming Lu, Kaixin Chen, Xiaoqi Li, Shizun Wang, Zhaoqing Wang, Enhua Wu, Yurong Chen, Chuang Zhang, Ming Wu, International Conference on Computer Vision (ICCV), 2021

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■ EVAI for Sciences

[3] Implicit Neural Image Field for Biological Microscopy Image Compression, Gaole Dai, Cheng-Ching Tseng, Qingpo Wuwu, Rongyu Zhang, Shaokang Wang, Ming Lu,..., Jianxu Chen, Shanghang Zhang, Nature Computational Science (NCS), 2025

[2] A Generalist Foundation Model and Database for Open-World Medical Image Segmentation, Siqu Zhang, Qizhe Zhang, Shanghang Zhang, Xiaohong Liu, Jingkun Yue, Ming Lu, ..., Guangyu Wang, Nature Biomedical Engineering (NBE), 2025

[1] I-MedSAM: Implicit Medical Image Segmentation with Segment Anything, Xiaobao Wei, Jiajun Cao, Yizhu Jin, Ming Lu, Guangyu Wang, Shanghang Zhang, European Conference on Computer Vision (ECCV), 2024