Yunfan LU

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RESEARCH INTERESTS

My research focuses on reconstructing imaging systems to make them more efficient. Currently, I aim to develop a series of imaging algorithms that address challenges faced by traditional cameras, *e.g.*, ISP [1,2,3,4], HDR [9,11], low-light enhancement [8,10,12], deblurring [7,14], frame interpolation [5], rolling shutter correction [6], and super-resolution [13]. My broader goal is to create a fully integrated imaging system, starting with joint optimization at the sensor design and imaging pipeline.

EDUCATION

- **Hong Kong University of Science and Technology (Guangzhou)** — Guangzhou, China
  Ph.D., AI Thrust, supervised by Prof. Hui XIONG (Fellow of IEEE, AAAI and AAAS) — *01/2022 – 05/2026 (expected)*

- **Robotics and Perception Group, ETH Zurich INI & University of Zurich** — Zurich, Switzerland
  Visiting Researchers, supervised by Prof. Prof. Davide Scaramuzza — *05/2025 – now*

- **University of Chinese Academy of Sciences** — Beijing, China
  Master Degree, School of Artificial Intelligence, supervised by Prof. Jun XIAO — *09/2017 – 07/2020*

- **INRIA and Université Paris-Saclay** — Paris, France
  Summer School Student, Computer Science, supervised by Prof. Jing-Rebecca LI — *07/2019 – 08/2019*

- **Nanjing University of Science and Technology** — Nanjing, China
  Bachelor Degree, School of Computer Science — *09/2013 – 06/2017*

PUBLICATION LIST (GOOGLE SCHOLAR LINK)

A Spectral & RAW Domain

1. **Yunfan LU**, Nico Messikommer, Xiaogang Xu, Liming Chen, Yuhan Chen, Nikola Zubic, Davide Scaramuzza, Hui Xiong; **Hybrid Event Frame Sensors: Modeling, Calibration, and Simulation**, [Under Review]

2. **Yunfan LU**, Yanlin Qian, Ziyang Rao, Junren Xiao, Liming Chen, Hui Xiong; **RGB-Event ISP: The Dataset, Benchmark and Direction**, [ICLR 2025]

3. Shiyang Zhou, Haijin Zeng, **Yunfan LU**, Tong Shao, Ke Tang, Yongyong Chen, Jie Liu, Jingyong Su **Binarized Semantic Mamba-Transformer for Lightweight Quad Bayer HybridEVS Demosaicing**, [CVPR 2025]

4. **Yunfan LU**, Yijie Xu, Wenzong MA, Weiyu Guo, Hui Xiong; **Event Camera Demosaicing via Swin Transformer and Pixel-focus Loss**, [CVPRW 2024]

B Temporal Domain

5. **Yunfan LU**, Zipeng Wang, Yusheng Wang, Hui Xiong; **Continuous Space-Time Video Super-Resolution via Event Camera**, [IJCV 2025]

6. **Yunfan LU**, Guoqiang Liang, YiranShen, Lin Wang; **Self-supervised learning of event-guided video frame interpolation for rolling shutter frames**, [IEEE TVCG 2025]

7. **Yunfan LU**, Guoqiang Liang, Yusheng Wang, Lin Wang, Hui Xiong; **UniINR: Unifying Spatial-Temporal INR for RS Video Correction, Deblur, and Interpolation with an Event Camera**, [ECCV 2024]

C Dynamic Range

8. Ling Wang*, **Yunfan LU***, Wenzong Ma, Huizai Yao, Pengteng Li, Hui Xiong; **From Events to Clarity: The Event-Guided Diffusion Framework for Dehazing**, [Under Review]

9. **Yunfan LU**, Xiaogang Xu, Hao LU, Yanlin Qian, Bin Yang, Junyi Li, Qianyi Cai, Weiyu Guo, Hui Xiong; **SEE: See Everything Every Time - Adaptive Brightness Adjustment for Broad Light Range Images via Events**, [IJCV 2025]

10. Kanghao Chen*, Guoqiang Liang*, **Yunfan LU***, Hangyu Li, Lin Wang; **Evlight++: Low-light Video Enhancement with an Event Camera: A Large-scale Real-world Dataset, Novel Method, and More**, [IEEE T-PAMI 2025] * These authors contributed equally.

11. Zipeng Wang, **Yunfan LU**, Lin Wang; **Revisit Event Generation Model: Self-Supervised Learning of Event-to-Video Reconstruction with Implicit Neural Representations**, [ECCV 2024]

12. Guoqiang Liang, Kanghao Chen, Hangyu Li, **Yunfan LU**, Lin Wang; **Towards Robust Event-guided Low-Light Image Enhancement: A Large-Scale Real-World Event-Image Dataset and Novel Approach**,[CVPR 2024]

D   Spatial Domain

13. **Yunfan LU**, Zipeng Wang, Minjie Liu, Hongjian Wang, Lin Wang; **Learning Spatial-Temporal Implicit Neural Representations for Event-Guided Video Super-Resolution**, [CVPR 2023]

14. Yusheng Wang, **Yunfan LU**, Ye Gao, Lin Wang, Zhihang Zhong, Yinqiang Zheng, Atsushi Yamashita; **Efficient video deblurring guided by motion magnitude**, [ECCV 2022]

E   Survey

15. **Yunfan LU**, Xiaogang Xu, Pengteng Li, Yusheng Wang, Yi Cui, Huizai Yao, Hui Xiong; **From Events to Enhancement: A Survey on Event-Based Imaging Technologies**

16. **Yunfan LU**, Yiqi Lin, Hao Wu, Yunhao Luo, Xu Zheng, Hui Xiong, Lin Wang; **Priors in Deep Image Restoration and Enhancement: A Survey**

17. Pengyuan Zhou, Jinjing Zhu, Yiting Wang, **Yunfan LU**, Zixiang Wei, Haolin Shi, Yuchen Ding, Yu Gao, Qinglong Huang, Yan Shi, Ahmad Alhilal, Lik-Hang Lee, Tristan Braud, Pan Hui, Lin Wang; **Vetaverse: Technologies, applications, and visions toward the intersection of metaverse, vehicles, and transportation systems**

F   Early Work

18. **Yunfan LU**, Yifan Hu, Jun Xiao, Lupeng Liu, Long Zhang, Ying Wang; **Three-Dimensional Model of the Moon with Semantic Information of Craters Based on Chang' e Data**, [Sensors 2021]

19. **Yunfan LU**, Yifan Hu, Jun Xiao; **Help LabelMe: A fast auxiliary method for labeling image and using it in ChangE' s CCD data**, [ICIG 2019]

PATENTS

PCT/CN 2025/098652 Video Processing Method, Apparatus, Device, Storage Medium and Computer Program Product

PCT/CN 2025/098672 Image Processing Method, Apparatus, Device, Storage Medium and Computer Program Product

PCT/CN 2025/098685 Image Reconstruction Method, Apparatus, Device, Medium and Product

CN 119540108 A Event Camera-Based Image Processing Method, Apparatus, Device and Medium

CN 118674643 A Spatiotemporal Video Super-Resolution via Event Cameras

CN 118590780 A Event Camera-Based Deblurring and Jelly Effect Removal Method

CN 118537213 A Demosaicing Method for RAW-Domain Images Captured by Event Cameras

CN 116489524 A Event-Guided Video Frame Interpolation Method, Apparatus, Device and Storage Medium

CN 115908131 A Super-Resolution Image Reconstruction Method, Apparatus, Device and Storage Medium

CN 110135329 B Method and Apparatus for Pose Extraction from Video

Scholarships and Honours

1. Scholarship of Summer School by INRIA and Institut Français in 2019
2. **National Scholarship** for 2018 academic year (**Top 0.8%**)
3. **Silver Medal**, The ACM-ICPC Asia Regional Contest 2017 Beijing Site (rank: 34/168)
4. **Bronze Medal**, The CCF-CCPC China Contest 2017 Qianhuangdao Site (rank: 51/276)
5. **First Prize**, LanQiao Cup JiangSu Province 2016 Contest (rank: 8/467)
6. **Bronze Medal**, The Programming World Cup Final by SaiKr (rank: 31/201)

Work Experience

- **HKUST GZ, Teaching Assistant** — GuangZhou, China
  Assisted in courses, **Data Mining** and **Autonomous AI**. — *09/2023 - 12/2024*

- **HONOR, Senior Algorithm Engineer** — Beijing, China
  Sensor and Algorithm Solutions Department, Led by Dr. Ye GAO — *04/2021 - 01/2022*

- **DJI, Algorithm Engineer** — ShenZhen, China
  Machine Learning Department, Led by Dr. MengLong ZHU — *07/2020 - 04/2021*

- **Detect the impact crater and rebuild the lunar, Master Thesis Research** — Beijing, China
  Artificial Intelligence Institute in UCAS — *02/2019 - 06/2020*

- **Tencent, Research Intern** — Beijing, China
  Multimedia Laboratory in Tencent, Lead by Dr. Shan LIU — *09/2018 - 04/2019*