Baiang Li
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Education

Princeton University   NJ, USA
- *Visiting Student Research Collaborators (VSRC)*; Advisor: Felix Heide   Nov. 2024-Present
- Major in Computer Science

Hefei University of Technology   Anhui, China
- *B.S. in Intelligent Science and Technology*   Jun. 2020-Jul. 2024
- **Core Courses:** Natural language Processing (94), Linear Algebra (91), Big Data Processing Technology (97), Machine Learning Basic (94), Distributed Programming (92), Intelligent Application Innovation Project Training (96).

Research Interest

Computational Photography, Image and Video Processing in Computer Vision, Generative Models.

Selected Publications

Baiang Li, Huan Zheng, Zhao Zhang*, Yang Zhao, Zhongqiu Zhao and Haijun Zhang, "Dynamic Grouped Interaction Network for Low-Light Stereo Image Enhancement", ACM MM 2023.

Zhixiang Wang, **Baiang Li**, Jian Wang*, Yu-Lun Liu, Jinwei Gu, Yung-Yu Chuang, Shin'ichi Satoh, "Matting by Generation", ACM SIGGRAPH 2024. **[Representative]** [Project Page]

Baiang Li, Zhao Zhang*, Huan Zheng, Xiaogang Xu, Yanyan Wei, Jingyi Zhang, Jicong Fan and Meng Wang, "Dive Deep into Regions: Region-aware Transformer for Single Image Deraining", arXiv Feb 2024.

Baiang Li, Sizhuo Ma, Xiaogang Xu, Yanhong Zeng, Youqing Fang, Zhao Zhang, Jian Wang* and Kai Chen*, "Low Dynamic Range Image Enhancement with Generative Diffusion Prior", arXiv June 2024. **[Representative]** [Project Page]

Research Experience

Computational Imaging Lab in Princeton University   NJ, USA
Visiting Student Research Collaborators (VSRC)   Nov. 2024-Present
- Optical Neural Network: We propose a new scheme to linearize nonlinear networks, making them simulatably deployable on optical systems, thus resolving the limitation of hardware optical systems that cannot handle nonlinear operations. We achieve significant progress in various computer vision tasks, outperforming currently advanced deep learning methods using significantly reduced computational costs. The project is currently in the hardware fabrication phase.
- Optical Vision Transformer: We explore using optical implementation to replace the computationally expensive attention layer in the Vision Transformer, and prove the feasibility of using hardware simulation. The project is currently in the hardware fabrication phase.

OpenMMLab@Shanghai AI Lab   Shanghai, China
Research Intern   Nov. 2023-Mar. 2024
- Low Dynamic Range Image Enhancement with Generative Diffusion Prior: We design a general pipeline for Low Dynamic Range Image Enhancement and propose a plug-in generative model, which can further enhance existing recovery models by leveraging the rich priors of generative models. The project page is available here. Paper is available in arXiv.
- Matting by Generation: We introduce an innovative approach for image matting that redefines the traditional regression-based task as a generative modeling problem. Our

method harnesses the capabilities of latent diffusion models, enriched with extensive pre-trained knowledge, to regularize the matting process. We present novel architectural innovations that empower our model to produce mattes with superior resolution and detail. The proposed method is versatile and can perform both guidance-free and guidance-based image matting, accommodating a variety of additional cues. The project is available [here](). Paper is published in [ACM SIGGRAPH]() (conference track).

Zhejiang Lab   Hangzhou, China
Research Intern   Jul. 2023-Sep. 2023

- Region transformer for single image deraining: We develop a novel transformer-based architecture which underlines the importance of independently processing rain-affected and unaffected regions while considering their combined impact for high-quality reconstruction. In this way, our method can distinguish the rain-streak-like content features and content like rain noise, thus producing better-reconstructed results. Paper received a score of 8,8,6,5 in ICLR submission, and is currently available in [arXiv]().

Key Laboratory of Knowledge Engineering with Big Data   Hefei, China
Research Intern   Sep. 2022-Jun. 2023

- Dynamic Grouped Interaction Network for Stereo Image Enhancement: We develop a novel convolutional neural network for low light stereo image enhancement, which offers novel strategies for improving both inter-view and intra-view processing. By leveraging a newly designed dynamic fusion strategy, our model can build dynamic connections between cross-view cues and intra-view features while keeping the multi-view consistent. The paper is published in [ACM Multimedia]().
- Image Processing Challenge in CVPR Workshop: We participate in various image processing challenge competitions including image enhancement, restoration and super-resolution. Reports are all available in my [Google Scholar]().

Scholar Services

- **Conference Reviewer/Program Committee:**
  The Association for the Advancement of Artificial Intelligence (AAAI) (2025)
  The IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) (2024, 2025)
  European Conference on Computer Vision (ECCV) (2024)
  ACM International Conference on Multimedia (ACM MM) (2023, 2024)

- **Journal Reviewer:**
  Multimedia Tools and Applications (MTAP)

Challenge Reports

[1] Yawei Li, …, **Baiang Li,** …, "NTIRE 2023 challenge on efficient super-resolution: Methods and results", CVPRW, 2023.

[2] Xiaoning Liu, …, **Baiang Li,** …, "NTIRE 2024 challenge on low light image enhancement: Methods and results", CVPRW, 2024.

[3] Bin Ren, …, **Baiang Li**, …, "The ninth NTIRE 2024 efficient super-resolution challenge report", CVPRW, 2024.

[4] Yulun Zhang, …, **Baiang Li**, …, "NTIRE 2023 Challenge on Image Super-Resolution (×4): Methods and Results", CVPRW, 2023.

Skills & Others

- **Research ability:** Proficient in deep learning code framework (PyTorch and Tensorflow), python, Latex
- **Language:** Chinese Mandarin (native), English (fluent)
- **Hobbies:** I love music and various musical instruments, including guitar, piano and violin!