Qian Huang

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EDUCATION

Doctor of Philosophy (Ph.D.), Duke University, NC   **09/2018 – 09/2022**

- Department of Electrical and Computer Engineering, advised by Dr. David J. Brady
- Research Areas: Computational Imaging, Computer vision, Deep Learning

Bachelor of Science (B.S.) with honors, Nanjing University, China   **09/2014 – 06/2018**

- School of Electronic Science and Engineering

INDUSTRIAL EXPERIENCE

NVIDIA Corporation, CA – Software Engineer, Computer Vision and Deep Learning   **10/2022 – present**

- Working alongside engineers to solve challenging computer vision and deep learning problems related to image and video processing.
- Developing GPU-accelerated AI features for next-generation video conferencing for NVIDIA Maxine.

NVIDIA Corporation, CA – Software Engineering Intern   **05/2021 – 08/2021**

- Innovated computer vision algorithms and optimized the algorithms for RTX Tensor cores.

ACADEMIC RESEARCH

The Camera Lab at the University of Arizona   **09/2021 – 09/2022**

- Demonstrated a coherent scatter imaging pipeline that can substantially improve the direct-view resolution. Presented 30x improvement in the laboratory and 10x improvement in the wild over the diffraction limit.
- Proposed a physics-aware transformer (PAT) for fusing images from array cameras of diverse resolutions, color spaces, focal lengths, etc. Provided a scalable data synthesis solution for training transformers.

Duke Information Spaces Project Laboratory at Duke University   **07/2018 – 04/2021**

- Proposed a robotic imaging system for all-in-focus image fusion. Built a focus control agent around a recurrent neural network (RNN) to intelligently sample the focus light field using reinforcement learning (RL) methods.

Lab for Computational Imaging Technology and Engineering at Nanjing University   **09/2016 – 04/2018**

- Resolved the multispectral image intrinsic decomposition (MIID) problem using subspace constraints. Provided a benchmark dataset for MIID evaluation.
- Designed a chromatic aberration enlarged imaging system for multispectral light field reconstruction.

PUBLICATIONS

- **Qian Huang**, Zhipeng Dong, Gregory Nero, Yuzuru Takashima, Timothy J. Schulz, and David J. Brady, "Scatter Ptychography", *Nature photonics,* 2022, under review
- **Qian Huang**, Minghao Hu, and David J. Brady, "Array Camera Image Fusion using Physics-Aware Transformers", *Journal of Imaging Science and Technology (JIST),* 2022
- Chengyu Wang, **Qian Huang**, Ming Cheng, Zhan Ma, and David J. Brady, "Deep Learning for Camera Autofocus", *IEEE Transactions on Computational Imaging (TCI),* 2021
- **Qian Huang**, Weixin Zhu, Yang Zhao, Linsen Chen, Yao Wang, Tao Yue, and Xun Cao, "Multispectral Image Intrinsic Decomposition via Subspace Constraint", *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2018.

- **Qian Huang**, Yunqian Li, Linsen Chen, Xiaoming Zhong, Jinli Suo, Zhan Ma, Tao Yue, and Xun Cao, "Multispectral Focal Stack Acquisition Using a Chromatic Aberration Enlarged Camera", *IEEE International Conference on Image Processing (ICIP)*, 2017

TALKS

- "Deep Learning for All-in-Focus Imaging", *IEEE Signal Processing Society (SPS) Webinar*, Remote   12/2022
- "Monocular Multi-Frame Video Deblurring", *NVIDIA NTECH*, Santa Clara, CA   11/2022
- "Multispectral Image Intrinsic Decomposition via Subspace Constraint", *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Salt Lake City, UT   06/2018
- "Multispectral Focal Stack Acquisition Using a Chromatic Aberration Enlarged Camera", *IEEE International Conference on Image Processing (ICIP)*, Beijing, China   09/2017