

Mingyang Xie

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Research Interests

I am broadly interested in computer vision and machine learning, with a focus on computational photography and generative AI. I am actively looking for research internships for 2025.

Education

- 2021–2026 **University of Maryland, College Park, MD, USA**
Ph.D. in Computer Science. GPA: 3.81/4.0.
Advisor: [Christopher Metzler](#)
- 2017–2021 **Washington University in St. Louis, St. Louis, MO, USA**
B.S. in Computer Science. GPA: 3.99/4.0.
Summa Cum Laude (Graduated with highest honors).
Advisors: [Ulugbek Kamilov](#), [Brendt Wohlberg](#)

Publications & Preprints

* denotes equal contribution.

- ECCV 2024 **Flash-Splat: 3D Reflection Removal with Flash Cues and Gaussian Splats**
[M. Xie*](#), [H. Cai*](#), [S. Shah](#), [Y. Xu](#), [B. Feng](#), [J. Huang](#), [C. Metzler](#).
European Conference on Computer Vision, 2024. [\[Project Page\]](#)
- CVPR 2024 **WaveMo: Learning Wavefront Modulations to See Through Scattering**
[M. Xie*](#), [H. Guo*](#), [B. Feng](#), [L. Jin](#), [A. Veeraraghavan](#), [C. Metzler](#).
Conference on Computer Vision and Pattern Recognition, 2024. [\[Project Page\]](#) [\[Paper Link\]](#)
- Preprint **Snapshot High-Dynamic-Range Imaging with a Polarization Camera**
[M. Xie*](#), [M. Chan*](#), [C. Metzler](#). Arxiv. [\[Paper Link\]](#)
- Science Advances **NeuWS: Neural Wavefront Shaping for Guidestar-Free Imaging Through Static and Dynamic Scattering Media**
[B. Feng*](#), [H. Guo*](#), [M. Xie](#), [V. Boominathan](#), [M. Sharma](#), [A. Veeraraghavan](#), [C. Metzler](#).
Science Advances, 2023. [\[Science.org Frontpage Cover\]](#) [\[Paper Link\]](#)
- IEEE JSAT **TurboGAN: An Adversarial Learning Approach to Spatially-varying Multiframe Blind Deconvolution with Applications to Imaging Through Turbulence.**
[B. Feng*](#), [M. Xie*](#), [C. Metzler](#).
IEEE Journal on Selected Areas in Information Theory, 2022. [\[Paper Link\]](#)
- WACV 2022 **PROVES: Establishing Image Provenance using Semantic Signatures**
[M. Xie](#), [M. Kulshrestha](#), [S. Wang](#), [J. Yang](#), [A. Chakrabarti](#), [N. Zhang](#), [Y. Vorobeychik](#).
Winter Conference on Applications of Computer Vision, 2022. [\[Paper Link\]](#)
- IEEE TCI **CoLL: Coordinate-Based Internal Learning for Tomographic Imaging**
[Y. Sun](#), [J. Liu](#), [M. Xie](#), [B. Wohlberg](#), [U. S. Kamilov](#).
IEEE Transactions on Computational Imaging (TCI), 2021. [\[Paper Link\]](#)
- ICCVW 2021 **Joint Reconstruction and Calibration Using Regularization by Denoising with Application to Computed Tomography**
[M. Xie*](#), [J. Liu*](#), [Y. Sun](#), [B. Wohlberg](#), [U. S. Kamilov](#).
International Conference on Computer Vision Workshops (ICCVW), 2021. [\[Paper Link\]](#)

Research Experiences

- Summer 2024 **Languaged-guided Video Color Tonemapping**
Research Internship at *Dolby Laboratories*. Advised by Vijay Kamarshi.
○ Developed a diffusion-model-based approach for language-guided video color tone-mapping.
- Spring 2024 **3D Transmission / Reflection Separation using Flash Cues and Gaussian Splats**
University of Maryland. Advised by [Christopher Metzler](#).
○ Developed a novel approach for separating transmitted and reflected 3D scenes by using Gaussian Splatting and unpaired flash and no-flash multi-view images.
- 2023 **Learning Wavefront Modulations for Imaging Through Scattering**
University of Maryland. Advised by [Christopher Metzler](#) & [Ashok Veeraraghavan](#).
○ Developed the 1st guidestar-free approach for wide-field-of-view & high-resolution imaging through non-sparse dynamic scattering media via neural representation.
○ Further developed a real-time (1000× faster) approach by optimizing a sequence of phase patterns displayed on a spatial light modulator (SLM) via end-to-end learning.
- Spring 2023 **Single-shot High Dynamic Range Imaging Using Polarization Camera**
University of Maryland. Advised by [Christopher Metzler](#).
○ Developed a novel single-shot HDR imaging methodology with a polarization camera.
○ Demonstrated 4dB improvement over software-only single-shot HDR baselines.
- 2022 **Generative Adversarial Learning for Spatially Varying Blind Deconvolution**
University of Maryland. Advised by [Christopher Metzler](#).
○ Developed a self-supervised image restoration GAN based on distribution matching.
○ Achieved SOTA performance on imaging through air turbulence.
- 2021 **Tomographic Reconstruction Using Continuous Neural Representation.**
Washington University in St. Louis. Advised by [Ulugbek Kamilov](#) & [Brendt Wohlberg](#).
○ Developed a CT image reconstruction approach using implicit neural representation.
○ Demonstrated 1 dB improvement over baselines.

Awards

- March 2024 Qualcomm Innovation Fellowship Finalist
- August 2023 International Conference on Computational Photography 2023 Best Poster Award
- June 2022 Runner-Up Award for [CVPR 2022 5th UG2+ Atmospheric Turbulence Mitigation](#)
- 2021 - 2022 Dean's Fellowship – University of Maryland
- 2018 - 2019 Dean's List – Washington University in St. Louis

Technical Skills

- Languages Python, Matlab, C++
- Optical Lab Spatial Light Modulator (SLM), Holographic Capture, 4F System, Interferometer
- Other Tools Arduino, 3D Printing, Laser Cutting, AutoCAD, Fusion 360