

Mingyang Xie

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in [mingyangx](#)

Research Interests

I am broadly interested in computer vision (CV), with a focus on computational photography, computational imaging, and low-level to mid-level vision. I am looking for research internships for 2024.

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.

- Under Review **Snapshot High-Dynamic-Range Imaging with a Polarization Camera**
[M. Xie*](#), [M. Chan*](#), [C. Metzler](#).
Under Review, 2023. [[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 JSAIT **TurbuGAN: 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 (WACV), 2022. [[Paper Link](#)]
- IEEE TCI **CoIL: 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

Fall 2023 **Neural Radiance Fields with Severe Reflection/Transmission Superposition**

University of Maryland. Advised by [Christopher Metzler](#).

- Developed a novel reflection/transmission separation methodology for NeRF.
- Enabled robust novel view synthesis under highly specular reflections.

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 - 2023 **Imaging Through Scattering Media by Wavefront Shaping**

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 the set of phase patterns displayed on a spatial light modulator (SLM) via end-to-end learning.

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

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++

Libraries PyTorch, TensorFlow, Keras, Scikit-learn, OpenCV, Pandas

Optical Lab Spatial Light Modulator (SLM), Holographic Capture, 4F System, Interferometer

Other Tools Arduino, 3D Printing, Laser Cutting, AutoCAD, Fusion 360