Mingyang Xie

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EDUCATION

- **University of Maryland, College Park** — **GPA: 3.81 / 4.0**
  Ph.D. in Computer Science – Dean's Fellowship — August 2021 - May 2026
- **Washington University in St. Louis** — **GPA: 3.99 / 4.0**
  Bachelor of Science in Computer Science; Minor in Mathematics — August 2017 - May 2021

PUBLICATION

- Brandon Feng*, **Mingyang Xie*** and Christopher A. Metzler. "TurbuGAN: An Adversarial Learning Approach to Spatially-varying Multiframe Blind Deconvolution with Applications to Imaging Through Turbulence", *IEEE Journal on Selected Areas in Information Theory*, 2022.

- Brandon Y. Feng*, Haiyun Guo*, **Mingyang Xie**, Vivek Boominathan, Manoj K. Sharma, Ashok Veeraraghavan, Christopher A. Metzler. "NeuWS: Neural Wavefront Shaping for Guidestar-Free Imaging Through Static and Dynamic Scattering Media", *Science Advances*, 2023.

- **Mingyang Xie***, Matt Chan* and Christopher A. Metzler. "Snapshot High-Dynamic-Range Imaging with a Polarization Camera", Under Review, 2023.

- **Mingyang Xie***, Jiaming Liu*, Yu Sun, Brendt Wohlberg and Ulugbek S. Kamilov. "Joint Reconstruction and Calibration Using Regularization by Denoising with Application to Computed Tomography", *IEEE International Conference on Computer Vision Workshops (ICCVW)*, 2021.

- Yu Sun, Jiaming Liu, **Mingyang Xie**, Brendt Wohlberg and Ulugbek S. Kamilov. "CoIL: Coordinate-Based Internal Learning for Tomographic Imaging", *IEEE Transactions on Computational Imaging (TCI)*, 2021.

- **Mingyang Xie**, Manav Kulshrestha, Shaojie Wang, Jinghan Yang, Ayan Chakrabarti, Ning Zhang and Yevgeniy Vorobeychik. "PROVES: Establishing Image Provenance using Semantic Signatures", *IEEE Winter Conference on Applications of Computer Vision (WACV)*, 2022.

RESEARCH EXPERIENCES

Imaging Through Fog Using Diffusion Model — University of Maryland
Advised by Prof. Chris Metzler — June 2023 – Now
- Researched fog removal approaches using pretrained diffusion model.

Imaging Through Scattering Media by Wavefront Shaping — University of Maryland & Rice University
Advised by Prof. Chris Metzler & Prof. Ashok Veeraraghavan — June 2022 – Now
- Developed the first guidestar-free approach for wide-field-of-view & high-resolution imaging through non-sparse dynamic scattering media at 10 frames/second.
- Demonstrated that our method requires $100\times$ less measurements than existing methods via optic experiments.
- Extended this approach to multi-planar scattering media.

Snapshot HDR Using Polarization Camera — University of Maryland
Advised by Prof. Chris Metzler — March 2023 – May 2023
- Developed a novel methodology for capturing high dynamic range (HDR) information with minimal hardware modification to an off-the-shelf polarization camera.

Spatially Varying Multiframe Blind Deconvolution — University of Maryland
Advised by Prof. Chris Metzler — August 2021 – May 2022
- Developed a novel self-supervised GAN with applications to imaging through turbulence.
- Demonstrated its ability to adapt to unknown distribution of turbulence and to leverage domain-specific generators.

CT Image Reconstruction with Mis-specified projection angles   Washington University
Co-advised by <u>Prof. Ulugbek Kamilov</u> & <u>Dr. Brendt Wohlberg</u>   May 2020 – June 2021

- Proposed a Plug-and-Play based image reconstruction framework, enabling joint reconstruction of the unknown target image along with calibration of the forward model characterizing the imaging system.

Tomographic Projections Synthesis with NeRF.   Washington University
Advised by <u>Prof. Ulugbek Kamilov</u>   October 2020 – February 2021

- Developed an MLP to synthesize novel tomographic projections of the target from any angle.
- Demonstrated the proposed method's ability to increase the SNR of the filtered back-projection by 5 dB.

TEACHING ASSISTANTSHIP EXPERIENCES

University of Maryland CMSC422 Introduction to Machine Learning   Spring 2022
University of Maryland CMSC426 Computer Vision   Fall 2021

TECHINICAL SKILLS

Proficient Programming Languages: Python, MATLAB, C++
Other Techniques: PyTorch, TensorFlow, Keras, OpenCV, Numpy, Scipy, Scikit, Pandas, and Linux