

# Brandon Yushan Feng

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branfeng.github.io

## Work Experience

- 2023 – **Massachusetts Institute of Technology** – Cambridge, MA  
Postdoctoral Associate | Advisor: William T. Freeman
- 2022 – 2023 **Google** – San Francisco, CA  
Research Scientist Intern

## Education

- 2019 – 2023 **University of Maryland** – College Park, MD  
Ph.D. in Computer Science | Advisor: Amitabh Varshney
- 2015 – 2019 **University of Virginia** – Charlottesville, VA  
B.A. in Computer Science | B.A. + M.S. in Statistics

## Journal Publications

- J8 **Single-shot Volumetric Fluorescence Imaging with Neural Fields.**  
O. Zhang, H. Zhou, B. Y. Feng, E. M. Larsson, R. E. Alcalde, S. Yin, C. Deng, C. Yang.  
Advanced Photonics, 2025.
- J7 **Exoplanet Imaging via Differentiable Rendering**  
B. Y. Feng, R. Ferrer-Chávez, A. Levis, J. Wang, K. Bouman, W. T. Freeman  
IEEE Transactions on Computational Imaging, 2025
- J6 **HoloCamera: Advanced Volumetric Capture for Cinematic-Quality VR Applications**  
J. Heagerty, S. Li, E. Lee, S. Bhattacharyya, S. Bista, B. Brawn, B. Y. Feng, S. Jabbireddy,  
J. F. JaJa, H. Kacorri, D. Li, D. T. Yarnell, M. Zwicker, A. Varshney  
IEEE Transactions on Visualization and Computer Graphics, 2024
- J5 **FPM-INR: Fourier ptychographic microscopy image stack reconstruction using implicit neural representations**  
H. Zhou\*, B. Y. Feng\*, H. Guo, S. Lin, M. Liang, C. A. Metzler, C. Yang  
Optica, 2023
- J4 **NeuWS: Neural Wavefront Shaping for Guidestar-Free Imaging Through Static and Dynamic Scattering Media**  
B. Y. Feng\*, H. Guo\*, M. Xie, V. Boominathan, M. K. Sharma, A. Veeraraghavan, C. A. Metzler  
Science Advances, 2023

- J3    **Neural Subspaces for Light Fields**  
 B. Y. Feng, A. Varshney  
 IEEE Transactions on Visualization and Computer Graphics, 2022
- J2    **TurbuGAN: An Adversarial Learning Approach to Spatially-Varying Multi-frame Blind Deconvolution with Applications to Imaging Through Turbulence**  
 B. Y. Feng\*, M. Xie\*, C. A. Metzler  
 IEEE Journal on Selected Areas in Information Theory, 2022
- J1    **Benchmarking AlphaFold for Protein Complex Modeling Reveals Accuracy Determinants**  
 R. Yin, B. Y. Feng, A. Varshney, B. G. Pierce  
 Protein Science, 31 (8)

## Conference Publications

- C20    **Parametric Shadow Control for Portrait Generation in Text-to-Image Diffusion Models**  
 H. Cai, T. Huang, S. Gehlot, B. Y. Feng, S. Shah, G. Su, C. A. Metzler  
 International Conference on Computer Vision (ICCV), 2025
- C19    **Repurposing Pre-trained Video Diffusion Models for Event-based Video Interpolation**  
 J. Chen, B. Y. Feng, H. Cai, T. Wang, L. Burner, D. Yuan, C. Fermuller, C. A Metzler, Y. Aloimonos  
 IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2025
- C18    **Temporally Consistent Atmospheric Turbulence Mitigation with Neural Representations**  
 H. Cai\*, J. Chen\*, B. Y. Feng, W. Jiang, M. Xie, K. Zhang, C. Fermuller, Y. Aloimonos, A. Veeraraghavan, C. A. Metzler  
 Annual Conference on Neural Information Processing Systems (NeurIPS), 2024
- C17    **Physics-Based Interaction with 3D Objects via Video Generation**  
 T. Zhang, H. Yu, R. Wu, B. Y. Feng, C. Zheng, N. Snavely, J. Wu, W. T. Freeman  
 European Conference on Computer Vision (ECCV), 2024
- C16    **Flash-Splat: 3D Reflection Removal with Flash Cues and Gaussian Splats**  
 M. Xie, H. Cai, S. Shah, Y. Xu, B. Y. Feng, J. Huang, C. A. Metzler  
 European Conference on Computer Vision (ECCV), 2024
- C15    **EndoSparse: Real-Time Sparse View Synthesis of Endoscopic Scenes using Gaussian Splatting**  
 C. Li, B. Y. Feng, Y. Liu, H. Liu, C. Wang, W. Yu, Y. Yuan  
 Medical Image Computing and Computer Assisted Intervention (MICCAI), 2024
- C14    **Endora: Video Generation Models as Endoscopy Simulators**  
 C. Li\*, H. Liu\*, Y. Liu\*, B. Y. Feng, W. Li, X. Liu, Z. Chen, J. Shao, Y. Yuan  
 Medical Image Computing and Computer Assisted Intervention (MICCAI), 2024

- C13 **Seeing the World Through Your Eyes**  
H. Alzayer\*, K. Zhang\* B. Y. Feng, C. A. Metzler, J. Huang  
IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2024
- C12 **WaveMo: Learning Wavefront Modulations to See Through Scattering**  
M. Xie\*, H. Guo\* B. Y. Feng, L. Jin, A. Veeraraghavan, C. A. Metzler  
IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2024
- C11 **Learning to Estimate 6DoF Pose from Limited Data: A Few-Shot, Generalizable Approach using RGB Images**  
P. Pan\*, Z. Fan\*, B. Y. Feng\*, P. Wang, C. Li, Z. Wang  
International Conference on 3D Vision (3DV), 2024
- C10 **Visualizing Subtle Motions from Time-Varying Radiance Fields**  
B. Y. Feng\*, H. Alzayer\*, M. Rubinstein, W. T. Freeman, J. Huang  
International Conference on Computer Vision (ICCV), 2023
- C9 **StegaNeRF: Embedding Invisible Information within Neural Radiance Fields**  
C. Li\*, B. Y. Feng\*, Z. Fan\*, P. Pan, Z. Wang  
International Conference on Computer Vision (ICCV), 2023
- C8 **Continuous Levels of Detail for Light Field Networks**  
D. Li, B. Y. Feng, A. Varshney  
British Machine Vision Conference (BMVC), 2023
- C7 **VIINTER: View Interpolation With Implicit Neural Representations of Images**  
B. Y. Feng, S. Jabbireddy, A. Varshney  
SIGGRAPH Asia, 2022
- C6 **PRIF: Primary Ray-based Implicit Function**  
B. Y. Feng, Y. Zhang, D. Tang, R. Du, A. Varshney  
European Conference on Computer Vision (ECCV), 2022
- C5 **SIGNET: Efficient Neural Representation for Light Fields**  
B. Y. Feng, A. Varshney  
International Conference on Computer Vision (ICCV), 2021
- C4 **GazeChat: Enhancing Virtual Conferences with Gaze-aware 3D Photos**  
Z. He, K. Wang, B. Y. Feng, R. Du, K. Perlin  
ACM Symposium on User Interface Software and Technology (UIST), 2021
- C3 **Deep Depth Estimation on 360° Images with a Double Quaternion Loss**  
B. Y. Feng, W. Yao, Z. Liu, A. Varshney  
International Conference on 3D Vision (3DV), 2020
- C2 **Prostate Segmentation from 3D MRI Using a Two-stage Model and Variable-input Based Uncertainty Measure**  
H. Pan, B. Y. Feng, C. Meyer, X. Feng  
IEEE International Symposium on Biomedical Imaging (ISBI), 2019

- C1 **A Self-adaptive Network for Multiple Sclerosis Lesion Segmentation from Multi-contrast MRI with Various Imaging Sequences**  
B. Y. Feng, H. Pan, C. Meyer, X. Feng  
IEEE International Symposium on Biomedical Imaging (ISBI), 2019

## Media Coverage

- 2023 **Science.org**  
*Neural Wavefront Shaping*
- 2023 **Maryland Today**  
*UMD Researchers Develop New Imaging Technology That Can 'See' Hidden Objects*
- 2023 **Photonics.com**  
*Video Tech Enables Imaging Through Scattering Media*
- 2023 **ScienceDaily**  
*NeuWS camera answers 'holy grail problem' in optical imaging*
- 2023 **Phys.org**  
*Neural wavefront shaping camera overcomes light scattering problem in optical imaging*
- 2023 **New Scientist**  
*Eyeball reflections can reveal a 3D model of what you are looking at*
- 2023 **Gizmodo**  
*Computer, Enhance: Scientists Reconstruct Rooms From Eye Reflections*
- 2023 **TechSpot**  
*Researchers construct 3D scenes using reflections from eyes*
- 2023 **Tech Xplore**  
*Rendering three-dimensional images from eye reflections with NeRF*
- 2023 **PetaPixel**  
*Scientists Can Now Reconstruct Rooms from Eye Reflections in Photos*
- 2023 **Futurism**  
*Scientists Reconstruct What You're Looking At By Enhancing Reflection In Your Eye*
- 2023 **New Atlas**  
*Researchers can now 3D-model a room just from your eye reflections*
- 2022 **ITmedia News**  
*Technology to animate profile picture in video conference*

## Invited Talks

- 2025/04 **University of Texas at Austin**  
AI as a Lens: Expanding Vision for Scientific Discovery

- 2025/02 **Stony Brook University**  
AI as a Lens: Expanding Vision for Scientific Discovery
- 2025/02 **University of Virginia**  
AI as a Lens: Expanding Vision for Scientific Discovery
- 2025/02 **Georgia Institute of Technology**  
AI as a Lens: Expanding Vision for Scientific Discovery
- 2025/02 **University of Pennsylvania**  
AI as a Lens: Expanding Vision for Scientific Discovery
- 2025/02 **Texas A&M University**  
AI as a Lens: Expanding Vision for Scientific Discovery
- 2025/02 **Machine Learning and Scientific Imaging Conference**  
AI as a Lens: Expanding Scientific Vision in Biomedical and Astronomical Imaging
- 2025/01 **Annual Meeting of the American Astronomical Society**  
AI-Driven Imaging and Inference with Differentiable Computing
- 2024/05 **California Institute of Technology**  
Neural Fields to Solve Inverse Problems in Imaging
- 2024/05 **SIAM Imaging Science**  
Ray-based Implicit Function for Neural Surface and Scene Representation
- 2023/09 **Massachusetts Institute of Technology**  
Rethinking Machine Learning to Solve Inverse Problems in Imaging with Undetermined Forward Operators
- 2022/12 **Massachusetts Institute of Technology**  
Designing Neural Fields of Rays and Pixels
- 2022/10 **Rice University**  
Implicit Neural Representations for Graphics and Vision
- 2022/09 **University of Maryland**  
Implicit Neural Representations for Graphics and Vision
- 2022/08 **University of Texas at Austin**  
Efficient Implicit Neural Representation for 3D Shapes
- 2022/07 **Optica Imaging Congress COSI**  
Adversarial Sensing for Sub-Diffraction Imaging
- 2022/06 **Google**  
Primary Ray-based Implicit Function

## Honors and Awards

2024	<b>Oral Presentation</b> European Conference on Computer Vision (ECCV) 2024 <i>Selection Rate: 200/8585 = 2.32%</i>
2024	<b>Oral Presentation</b> IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) 2024 <i>Selection Rate: 90/11532 = 0.78%</i>
2023	<b>Best Poster</b> International Conference on Computational Photography (ICCP) 2023
2022	<b>Runner-Up</b> CVPR 2022 UG2+ Challenge
2021	<b>Oral Presentation</b> International Conference on Computer Vision (ICCV) 2021 <i>Selection Rate: 210/6236 = 3.36%</i>
2019-2021	<b>Dean's Fellowship</b> University of Maryland Graduate School
2015-2018	<b>Dean's List of Distinguished Students</b> University of Virginia College of Arts and Sciences

## Service

Journal	Nature Communications
Reviewer	IEEE Transactions on Pattern Analysis and Machine Intelligence IEEE Transactions on Image Processing IEEE Transactions on Computational Imaging IEEE Transactions on Circuits and Systems for Video Technology ACM Transactions on Graphics Photonics Research Optics Express Biomedical Optics Express
Conference	Conference on Neural Information Processing Systems (NeurIPS)
Reviewer	International Conference on Learning Representations (ICLR) International Conference on Machine Learning (ICML) IEEE/CVF Computer Vision and Pattern Recognition Conference (CVPR) International Conference on Computer Vision (ICCV) European Conference on Computer Vision (ECCV) ACM SIGGRAPH ACM Multimedia International Conference on Computational Photography (ICCP) AAAI Conference on Artificial Intelligence (AAAI)
University	Organizer: University of Maryland Computer Vision Seminar
Service	Organizer: Computational Imaging Workshop at Technica (largest hackathon for underrepresented genders) Reviewer: University of Maryland Computer Science Graduate Program Application