Brandon Yushan Feng

Curriculum Vitae

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Education and Experience

2023– **Massachusetts Institute of Technology**, Cambridge, MA.
Postdoctoral Associate at MIT CSAIL
Advisor: William T. Freeman

2024– **Harvard–Smithsonian Center for Astrophysics**, Cambridge, MA.
Visiting Scientist at AstroAI

2019–2023 **University of Maryland**, College Park, MD.
Ph.D. in Computer Science
Advisor: Amitabh Varshney
Committee: Jia-Bin Huang, Christopher A. Metzler, Furong Huang, Joseph JaJa

2022–2023 **Google**, San Francisco, CA.
Research Scientist Intern at Google AR | Manager: Yinda Zhang

2015–2019 **University of Virginia**, Charlottesville, VA.
B.A. in Computer Science | B.A. + M.S. in Statistics

Publications

Journal Publications

IEEE TVCG **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 (TVCG), 2024.

Optica **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.

Science Advances **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.

IEEE TVCG **Neural Subspaces for Light Fields**.
B. Y. Feng, A. Varshney.
IEEE Transactions on Visualization and Computer Graphics (TVCG), 2022.

IEEE JSAIT **TurbuGAN: An Adversarial Learning Approach to Spatially-Varying Multiframe 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.

Peer-reviewed Conference Publications

CVPR 2024 **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.

CVPR 2024 **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.

ICCV 2023 **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.

ICCV 2023 **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.

3DV 2023 **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) 2023.

BMVC 2023 **Continuous Levels of Detail for Light Field Networks.**
D. Li, B. Y. Feng, A. Varshney.
British Machine Vision Conference (BMVC) 2023.

SIGGRAPH Asia 2022 **VIINTER: View Interpolation With Implicit Neural Representations of Images.**
B. Y. Feng, S. Jabbireddy, A. Varshney.
SIGGRAPH Asia 2022.

ECCV 2022 **PRIF: Primary Ray-based Implicit Function.**
B. Y. Feng, Y. Zhang, D. Tang, R. Du, A. Varshney.
European Conference on Computer Vision (ECCV) 2022.

ICCV 2021 **SIGNET: Efficient Neural Representation for Light Fields**.
B. Y. Feng, A. Varshney.
International Conference on Computer Vision (ICCV) 2021.

Protein Science **Benchmarking AlphaFold for Protein Complex Modeling Reveals Accuracy Determinants**.
R. Yin, B. Y. Feng, A. Varshney, R. G. Pierce.
Protein Science, 31 (8).

UIST 2021 **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.

3DV 2020 **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.

ISBI 2019 **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.
2019 IEEE 16th International Symposium on Biomedical Imaging (ISBI) 2019.

ISBI 2019 **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.
2019 IEEE 16th International Symposium on Biomedical Imaging (ISBI) 2019.

Invited Talks

2023/09 **Massachusetts Institute of Technology** Signals, Information, and Algorithms Laboratory.
Rethinking Machine Learning to Solve Inverse Problems in Imaging with Undetermined Forward Operators.

2022/12 **Massachusetts Institute of Technology** Scene Representation Group.
Designing Neural Fields of Rays and Pixels.

2022/10 **Rice University** Computational Imaging Lab.
Implicit Neural Representations for Graphics and Vision.

2022/09 **University of Maryland** Vision and Learning Lab.
Implicit Neural Representations for Graphics and Vision.

2022/08 **University of Texas at Austin** Visual Informatics Group.
Efficient Implicit Neural Representation for 3D Shapes.

2022/07 **Optica Imaging Congress** COSI.
Adversarial Sensing for Sub-Diffraction Imaging.

2022/06 **Google** AR.
Primary Ray-based Implicit Function.

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*

Awards

2024 **Oral Presentation** (90/11532 = 0.78% Selection Rate),
IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) 2024.

2023 **Best Poster**, International Conference on Computational Photography (ICCP) 2023.

2022 **Runner-Up**, CVPR 2022 UG2+ Challenge.

2021 **Oral Presentation** (210/6236 = 3.36% Selection Rate),
International Conference on Computer Vision (ICCV) 2021.

2019 **Dean's Fellowship**, University of Maryland.

Service

Journal Reviewer
Nature Communications
Photonics Research
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

Conference Reviewer
IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR): 2022, 2023, 2024
International Conference on Computer Vision (ICCV): 2023
European Conference on Computer Vision (ECCV): 2024
ACM SIGGRAPH: 2024
International Conference on Learning Representations (ICLR): 2024
Neural Information Processing Systems (NeurIPS): 2022, 2023
International Conference on Machine Learning (ICML): 2022, 2023

University Service
Organizer, University of Maryland Computer Vision Seminar - 2022
Organizer, Computational Imaging Workshop at Technica (largest hackathon for underrepresented genders) - 2022
Reviewer, University of Maryland Computer Science Graduate Program Application - 2020, 2021, 2022