BERTHY T. FENG

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POSITION

Massachusetts Institute of Technology, Cambridge, MA, USA 2025–present
NSF IAIFI/Tayebati Postdoctoral Fellow

EDUCATION

California Institute of Technology, Pasadena, CA, USA 2019–2025
PhD in Computing & Mathematical Sciences
Thesis: *Advancing Scientific Computational Imaging through Data-driven and Physics-based Priors*
Thesis advisor: Katherine L. Bouman

Princeton University, Princeton, NJ, USA 2015–2019
BSE in Computer Science, *summa cum laude*
Certificate in Statistics & Machine Learning
Thesis: *Moving from Recognition to Reasoning in Image Captioning*
Thesis advisor: Olga Russakovsky

PEER-REVIEWED CONFERENCE PUBLICATIONS

A. Varney, K.L. Bouman, **B.T. Feng**. "U-DAVI: Uncertainty-aware Diffusion-prior-based Amortized Variational Inference for Image Reconstruction." *Proc. IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, 2026. (Mentorship role)

A.C. Ogren*, **B.T. Feng***, J. Ahn, K.L. Bouman, C. Daraio. "Visual Surface Wave Elastography: Revealing Subsurface Physical Properties via Visible Surface Waves." *Proc. IEEE International Conference on Computer Vision (ICCV)*, 2025. (*equal contribution)

B.T. Feng, R. Baptista, K.L. Bouman. "Neural Approximate Mirror Maps for Constrained Diffusion Models." *Proc. International Conference on Learning Representations (ICLR)*, 2025.

H. Zheng, W. Chu, B. Zhang, Z. Wu, A. Wang, **B.T. Feng**, C. Zou, Y. Sun, N. Kovachki, Z.E. Ross, K.L. Bouman, Y. Yue. "InverseBench: Benchmarking Plug-and-Play Diffusion Models for Inverse Problems in Physical Sciences." *Proc. International Conference on Learning Representations (ICLR)*, 2025. (ICLR Spotlight)

S. Dey, S. Saha, **B.T. Feng**, M. Cui, L. Delisle, O. Leong, L.V. Wang, K.L. Bouman. "Score-based Diffusion Models for Photoacoustic Tomography Image Reconstruction." *Proc. IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, 2024. (Mentorship role)

B.T. Feng, J. Smith, M. Rubinstein, H. Chang, K.L. Bouman, W.T. Freeman. "Score-Based Diffusion Models as Principled Priors for Inverse Imaging." *Proc. IEEE International Conference on Computer Vision (ICCV)*, 2023. (ICCP Spotlight Poster)

B.T. Feng, A.C. Ogren, C. Daraio, K.L. Bouman. "Visual Vibration Tomography: Estimating Interior Material Properties from Monocular Video." *Proc. IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2022. (ICCP Best Poster) (CVPR Oral and Best Paper Finalist)

Z. Wang, **B.T. Feng**, K. Narasimhan, O. Russakovsky. "Towards Unique and Informative Captioning of Images." *Proc. European Conference on Computer Vision (ECCV)*, 2020.

B.T. Feng, Z. Jin, J. Su, A. Finkelstein. "Bandwidth Expansion Using Perceptually-Motivated Loss." *Proc. IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, 2019.

JOURNAL PUBLICATIONS

B.T. Feng, K.L. Bouman, W.T. Freeman. "Event-horizon-scale Imaging of M87* under Different Assumptions via Deep Generative Image Priors." *The Astrophysical Journal (ApJ)*, 2024.

B.T. Feng, K.L. Bouman. "Variational Bayesian Imaging with an Efficient Surrogate Score-based Prior." *Transactions on Machine Learning (TMLR)*, 2024.

A.C. Ogren, **B.T. Feng**, K.L. Bouman, C. Daraio. "Gaussian process regression as a surrogate model for the computation of dispersion relations." *Computer Methods in Applied Mechanics and Engineering (CMAME)*, 2024.

Y. Sun, Z. Wu, Y. Chen, **B.T. Feng**, K.L. Bouman. "Provable Probabilistic Imaging using Score-Based Generative Priors." *IEEE Transactions on Computational Imaging (TCI)*, 2024.

PREPRINT PUBLICATIONS

B.T. Feng, A.A. Chael, D. Bromley, A. Levis, W.T. Freeman, K.L. Bouman. "Dynamic Black-hole Emission Tomography with Physics-informed Neural Fields." *In submission*, 2026.

S. Welker, L. Kuger, T. Roith, **B.T. Feng**, M. Burger, T. Gerkmann, H.N. Chapman. "Position-Blind Ptychography: Viability of image reconstruction via data-driven variational inference." *In submission to SIAM Journal on Imaging Sciences (SIIMS)*, 2026.

M. Chiquier, O. Avrech, Y. Gandelsman, **B.T. Feng**, K.L. Bouman, C. Vondrick. "Teaching Humans Subtle Differences with DIFFusion." *arXiv*, 2025.

B. Zhang, Z. Wu, **B.T. Feng**, Y. Song, Y. Yue, K.L. Bouman. "STeP: A Framework for Solving Scientific Video Inverse Problems with Spatiotemporal Diffusion Priors." *arXiv*, 2025.

OUTREACH

B.T. Feng, K. L. Bouman. "EHT Imaging Tutorial." *ICCP Summer School*, 2025. URL: https://github.com/berthyf96/eht_imaging_tutorial.

B.T. Feng, K. L. Bouman. "Seeing Beyond the Blur with Generative AI." *XRDS: Crossroads, The ACM Magazine for Students*, volume 31, issue 2, 2025.

SELECTED HONORS & AWARDS

NSF IAIFI Fellowship	2025
Tayebati Fellowship	2025
Best Paper Finalist, CVPR	2022
NSF Graduate Research Fellowship (GRFP)	2021–2024
Kortschak Scholars Graduate Fellowship	2019–2021
Sigma Xi Book Award for Outstanding Undergraduate Research	2019
Tau Beta Pi	2018–2019

INVITED TALKS

Advancing Scientific Computational Imaging through Data-driven and Physics-based Priors

- NSF-Simons SkAI Institute (invited, February 2026)
- Black Hole Initiative Group Meeting (December 2025)
- Martinos Center LEMoN Group Meeting (December 2025)
- Harvard Laboratory for Particle Physics and Cosmology (LPPC) Seminar (December 2025)
- IAIFI Colloquium (September 2025)
- ML-Driven Discovery Workshop (September 2025)
- ML4Astro Workshop Keynote (July 2025)
- CVPR Physics-inspired 3D Vision and Imaging Workshop Keynote (June 2025)

Score-based Diffusion Models as Data-driven and Physics-informed Priors

- Stanford Center for Image System Engineering (SCIEN) Seminar (November 2024)
- Carnegie Mellon University Imaging Reading Group (October 2024)
- University of Hamburg Deep Learning in Inverse Problems Workshop (September 2024)
- SIAM Imaging Sciences 2024 Deep Learning for Imaging Sciences Symposium (May 2024)

Score-based Priors for Bayesian Computational Imaging

- Caltech Computational Mathematics + X (CMX) Seminar (February 2024)
- Radboud University Astrophysics Colloquium (October 2023)
- ngEHT Algorithms, Inference, and Visualization working group (August 2023)
- Northwestern Astro + Imaging Workshop (July 2023)
- UCLA Vision Seminar (May 2023)

Visual Vibration Tomography

- CVPR Oral presentation (June 2022)
- UCLA + Caltech Computational Imaging Workshop (April 2022)
- Electronic Imaging Symposium (January 2022)
- Jiajun Wu group meeting at Stanford (April 2021)
- Yisong Yue group meeting at Caltech (April 2021)
- Northwestern Computational Photography (February 2021)

ACADEMIC SERVICE

IAIFI Speaker Selection Committee	Co-chair committee to select and invite speakers in 2026–2027
IAIFI Research Forum	Advise on research priorities at NSF IAIFI
Seminar Leadership	Led the UCLA/Caltech Grundfest Lecture Series in 2023–2025
Tutorial Creation	Created tutorial on EHT black-hole imaging for ICCP Summer School
Conference Reviewing	CVPR, ICCV, ECCV, NeurIPS, ACCV, AAAI, ICLR, ICML
Journal Reviewing	IEEE TMI, IEEE TCI, TMLR
Grad Admissions	Reviewed Caltech CMS PhD applications in 2023–2024

WORKSHOP ORGANIZATION

IAIFI Summer School & Workshop	2026
ML4Astro Workshop	2026
ICCV *Quo Vadis, Computer Vision?* Workshop	2023

TEACHING

Instructor/Developer	EHT Black-Hole Imaging, ICCP Summer School	2025
Teaching Assistant	CS 166: Computational Cameras, Caltech	2024
Teaching Assistant	CS 101C: Machine Learning Projects, Caltech	2022, 2023
Volunteer Tutor	Caltech Y	2019
Lab TA	SML 201: Intro to Data Science, Princeton	2019
Teaching Assistant	IW06: Deep Learning for Audio Synthesis, Princeton	2018
Lab TA & Grader	Introductory CS Courses, Princeton	2018
Tutor	Princeton McGraw Center for Teaching & Learning	2017–2018

MENTORSHIP

David Bromley — Master's research	2024–present
Ayush Varney — undergraduate research	2024–2025
Christina Liu — SURF	2024
Sreemanti Dey — SURF & undergraduate research (now PhD student at Princeton)	2022–2024
Snigdha Saha — undergraduate research (now master's student at CMU)	2022–2024
James Bowden — undergraduate research (now PhD student at UC Berkeley)	2022