

Interest Areas

Image Generative Models (GANs and Diffusion Models), Computer Vision, Imaging Inverse Problems

Education

- 2020–2024 **Ph.D. in Electrical Engineering**, University of Illinois at Urbana-Champaign (UIUC)
Advisor: [Dr. Svetlana Lazebnik](#). CGPA: 4.00/4.00.
- 2016–2019 **M.S. in Electrical Engineering**, Iowa State University
Advisor: [Dr. Chinmay Hegde](#). CGPA: 3.89/4.00.
- 2012–2016 **B.Tech. in Electrical Engineering**, Indian Institute of Technology (IIT), Roorkee
CGPA: 8.97/10.00.

Professional Appointments

- 2024–on **Google**, Mountain View, CA – Research Scientist with [Dr. Peyman Milanfar](#)
Research and Development of large-scale generative models for image restoration and editing
Notable Projects: [Photo Unblur](#) in Pixel Camera and Photos App; 2K upscaler in [Nano-Banana Pro](#)
- 2025–on **IIT Gandhinagar**, India – Guest Faculty
- 2023–2024 **Google Research**, Cambridge, MA – Research Intern with [Nataniel Ruiz](#) and [Varun Jampani](#)
- 2022–2023 **Adobe Research**, San Jose, CA – Research Intern with [Julian Philip](#)
- 2021 **Amazon**, Seattle, WA – Research Intern with [Aleix Martinez](#)
- 2019 **Siemens Healthineers**, Princeton, NJ – Research Intern with Mariappan Nadar

Awards and Honors

- 2025 **Outstanding Reviewer**, ICCV 2025
- 2024 **Best Paper Award**, CVFAD Workshop at CVPR 2024
- 2023 **DAAD AInet Fellowship**, April cohort in Generative Models [[News](#)]
- 2023 **Joan and Lalit Bahl Fellowship**, ECE UIUC [[News](#)]
- 2023 **Mavis Future Faculty Fellowship**, College of Engineering, UIUC [declined]
- 2023 **Conference Travel Award**, ECE UIUC
- 2020 **James M. Henderson Fellowship**, ECE UIUC [[News](#)]
- 2019 **2nd Prize, MRS Open Data Challenge**, Materials Research Society [[News](#)]
- 2016 **Departmental Fellowship**, ECE Iowa State University

Publications

[Google Scholar Citations: 2253 / h-index: 12](#)

Key papers are highlighted; * denotes equal contribution; † denotes primary research advising role

Product Reports.

23. **Gemini 2.5: Pushing the Frontier with Advanced Reasoning, Multimodality, and Agentic Capabilities**
Gemini Team, Google
Contributions: Advancing prompt-based image restoration capabilities and building 2K upscaler

In Submission.

22. **Reference-Guided Identity Preserving Face Restoration**
Mo Zhou, Keren Ye, Viraj Shah, Kangfu Mei, Mauricio Delbracio, Peyman Milanfar, Hossein Talebi
Under Review at TMLR

21. **FMS²: Unified Flow Matching for Topology-Preserving Segmentation and Synthesis of Thin Structures**
Babak Asadi, Peiyang Wu, Mani Golparvar-Fard, **Viraj Shah**[†], Ramez Hajj

In Conferences and Journals.

20. **UnZipLoRA: Separating Content and Style from a Single Image**
Chang Liu, **Viraj Shah**[†], Aiyu Cui, Svetlana Lazebnik
ICCV 2025 [Highlight]
19. **Street TryOn: Learning In-the-Wild Virtual Try-On from Unpaired Images**
Aiyu Cui, Jay Mahajan, **Viraj Shah**, Svetlana Lazebnik, D. Hoiem
WACV 2025
Best Paper Award at CVFAD Workshop, CVPR 2024!
18. **ZipLoRA: Any Subject in Any Style by Effectively Merging LoRAs**
Viraj Shah, Nataniel Ruiz, Forrester Cole, Erika Lu, Svetlana Lazebnik, Yuanzhen Li, Varun Jampani
ECCV 2024
17. **JoIN: Joint GANs Inversion for Intrinsic Image Decomposition**
Viraj Shah, Svetlana Lazebnik, Julian Philip
TMLR 2024
16. **Hybrid CNN-Transformer Model for Predicting Failure Properties of Asphalt Binder**
Babak Asadi, **Viraj Shah**[†], Abhilash Vyas, Mani Golparvar, Ramez Hajj
Journal of Computer-Aided Civil and Infrastructure Engineering 2024
15. **InvNet: Encoding Geometric and Statistical Invariances in Deep Generative Models**
Ameya Joshi, Minsu Cho, **Viraj Shah**, Balaji Pokuri, Soumik Sarkar, Baskar Ganapathysubramanian, Chinmay Hegde
AAAI 2020
14. **Sparse Signal Recovery from Modulo Observations**
Viraj Shah, Chinmay Hegde
EURASIP Journal on Advances in Signal Processing 2020
13. **Signal Reconstruction from Modulo Observations**
Viraj Shah, Chinmay Hegde
GlobalSIP 2019
12. **Alternating Phase Projected Gradient Descent with Generative Priors for Compressible Phase Retrieval**
Rakib Hyder, **Viraj Shah**, Chinmay Hegde, Salman Asif
ICASSP 2019
11. **Solving Linear Inverse Problems using GAN Priors: An Algorithm with Provable Guarantees**
Viraj Shah, Chinmay Hegde
ICASSP 2018
10. **Reconstruction from Periodic Nonlinearities, with Applications to HDR Imaging**
Viraj Shah, Mohmmadreza Soltani, and Chinmay Hegde
Asilomar Conference 2017

In Peer-reviewed Workshops.

9. **Hardware-Conditioned Generative Channel Modeling: Diffusion-Based Wireless Dataset Synthesis**
Nitish Deshpande, Sanjay Ganapathy, **Viraj Shah**[†]
Agents4Science Conference, 2025
8. **Generative AI: Challenges and Opportunities in the Context of India**
Viraj Shah[†], Kartik Patel
CVPR 2023 Workshop on Ethical Considerations in Creative Applications of Computer Vision

7. **Generative Models for Solving Nonlinear Partial Differential Equations**
Ameya Joshi*, **Viraj Shah***, Balaji Pokuri, Soumik Sarkar, Baskar Ganapathysubramanian, Chinmay Hegde
NeurIPS 2019 Workshop on Machine Learning for Physical Sciences
6. **Physics-aware Deep Generative Models for Creating Synthetic Microstructures**
Rahul Singh*, **Viraj Shah***, Balaji Pokuri, Soumik Sarkar, Baskar Ganapathysubramanian, Chinmay Hegde
NeurIPS 2018 Workshop on Machine Learning for Molecules and Materials
Second prize at MRS Open Data Challenge 2019!

Preprints.

5. **MultiStyleGAN: Multiple One-shot Image Stylizations using a Single GAN**
Viraj Shah, Ayush Sarkar, SK Anitha, Svetlana Lazebnik
arXiv:2210.04120, 2022
4. **Make It So: Steering StyleGAN for Any Image Inversion and Editing**
Anand Bhattad, Viraj Shah, Svetlana Lazebnik, David Forsyth
arXiv:2304.14403, 2022
3. **Near-perfect GAN Inversion**
Qianli Feng*, **Viraj Shah***, Raghudeep Gadde, Pietro Perona, Aleix Martinez
arXiv:2202.11833, 2022
2. **Provably Convergent Algorithms for Solving Inverse Problems Using Generative Models**
Viraj Shah, Rakib Hyder, Salman Asif, Chinmay Hegde
arXiv:2105.06371, 2021
1. **Encoding Invariances in Deep Generative Models**
Viraj Shah*, Ameya Joshi*, Sambuddha Ghosal, Balaji Pokuri, Soumik Sarkar, Baskar Ganapathysubramanian, Chinmay Hegde
arXiv:1906.01626, 2019

Invited Talks

- 2025 Sabarmati Research Outreach Conference by IIT Gandhinagar, Chicago
- 2025 National Youth Convention, Panelist, Panel Discussion on Ethics and AI
- 2024 Google Research, Computer Vision Research Seminar
- 2023 Indian Institute of Technology (IIT), Gandhinagar, Research Seminar
- 2023 University of Tubingen, Autonomous Vision Group (Dr. Andreas Geiger Lab), Research Seminar
- 2023 Google, Creative Camera Seminar
- 2022 Adobe Inc., GenAI Research Seminar
- 2019 MRS Open Data Challenge, Winners' Seminar

Teaching, Leadership, and Service

Teaching

- 2026 IIT Gandhinagar, SC 395: Short-course on Image Generative Models in Computer Vision [[website](#)]
- 2022 UIUC, ECE 101 Lab: Intro to Technology for Non-engineers [[website](#)]

Teaching Assistant,

- 2023 UIUC, ECE 549: Computer Vision
- 2022 UIUC, ECE 448: Artificial Intelligence
- 2018 ISU, CprE 310: Mathematical Foundations of Computer Engineering

Area Chair,

2026 WACV, CVPR

Reviewer,

2026 WACV, CVPR

2025 WACV, CVPR, ICCV, SIGGRAPH, SIGGRAPH Asia, IJCV, Scientific Reports

2024 WACV, CVPR, ECCV, ACCV, ACM Trans. on Graphics (ToG)

2023 IEEE Trans. on Signal Processing (TSP), EURASIP Signal Processing

Leadership

2018 **Outreach Coordinator**, [Data Science Reading Group](#), & [Summer Reading Group](#), Iowa State University.

2015 **Coordinator**, IEEE IIT Roorkee Students Chapter & [IEEE Special Interest Group](#).

Research Mentorship

Doctoral Students

2025 Mo Zhou, JHU, Research Intern at Google, **Paper Submitted to TMLR**.

2025 Babak Asadi, UIUC, **Paper submitted to top venue; 1st prize in PCI prediction challenge** at Intl. Data Science for Pavements Symposium 2024.

2025 Chang Liu, UIUC, **Paper at ICCV, 2025**.

2025 Nitish Deshpande, UCSD, **Paper at Agents4Science 2025**.

Thesis Advising

2024 Shrey Sarswat, UIUC, **M.S. Thesis** on compositional image generation.

2024 Nidhish Kamath, UIUC, **M.S. Thesis** on statistics-aware GANs.

2024 Eric Ji, UIUC, **B.S. Thesis** on detecting AI generated images. Now : Ph.D. student at UIUC

References

Dr. Svetlana Lazebnik,

Professor, Siebel School of Computing and Data Science, University of Illinois at Urbana-Champaign (UIUC)

Email: slazebni@illinois.edu

Dr. Chinmay Hegde,

Associate Professor, Computer Science and ECE Departments, New York University (NYU)

Previously: Assistant Professor, ECE Department, Iowa State University

Email: chinmay.h@nyu.edu

Dr. Peyman Milanfar,

Distinguished Scientist, Google,

Previously: Professor and Associate Dean of Research, University of California, Santa Cruz

Email: milanfar@google.com

Dr. Varun Jampani,

Chief AI Officer, Arcade AI

Previously: Senior Research Scientist, Google Research

Email: varunjampani@gmail.com