

# Shobhita Sundaram

Website: [ssundaram21.github.io](https://ssundaram21.github.io)

Email: [shobhita@mit.edu](mailto:shobhita@mit.edu)

LinkedIn: [linkedin.com/in/shobsund](https://www.linkedin.com/in/shobsund)

GitHub: [github.com/ssundaram21](https://github.com/ssundaram21)

## EDUCATION

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**Massachusetts Institute of Technology (MIT)** Cambridge, MA  
Ph.D. Computer Science 2022–2027  
Advisor: Phillip Isola

**Massachusetts Institute of Technology (MIT)** Cambridge, MA  
S.B. Computer Science, S.B. Mathematics 2018–2022  
Advisors: Pawan Sinha, Xavier Boix, Tomaso Poggio

## PUBLICATIONS

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\* indicates equal contribution

1. Personalized Representation from Personalized Generation.  
**S. Sundaram\***, J. Chae\*, Y. Tian, S. Beery, P. Isola.  
*Arxiv*, 2024
2. When Does Perceptual Alignment Benefit Vision Representations?  
**S. Sundaram\***, S. Fu\*, L. Muttenthaler, N. Tamir, L. Chai, S. Kornblith, T. Darrell, P. Isola.  
*Advances in Neural Information Processing Systems (NeurIPS)*, 2024
3. DreamSim: Learning New Dimensions of Human Visual Similarity using Synthetic Data.  
S. Fu\*, N. Tamir\*, **S. Sundaram\***, L. Chai, R. Zhang, T. Dekel, P. Isola.  
*Advances in Neural Information Processing Systems (NeurIPS)*, 2023 (**spotlight**)
4. Recurrent Connections Facilitate Symmetry Perception in Deep Networks.  
**S. Sundaram\***, D. Sinha\*, M. Groth, T. Sasaki, X. Boix.  
*Scientific Reports*, vol. 12, no. 1, 2022  
*Workshop on Generalization Beyond the Training Distribution in Brains and Machines*, ICLR 2021
5. GAN-Based Data Augmentation for Chest X-ray Classification.  
**S. Sundaram\*** and N. Hulkund\*.  
*Workshop on Applied Data Science for Healthcare*, KDD 2021
6. Do Neural Networks for Segmentation Understand Insideness?  
K. Villalobos\*, V. Štih\*, A. Ahmadinejad\*, **S. Sundaram**, J. Dozier, A. Francl, F. Azevdo, T. Sasaki, X. Boix.  
*Neural Computation*, vol. 33, no. 9, 2021

## EXPERIENCE

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**Google Research** Cambridge, MA  
*Student Researcher* December 2023 - March 2024

- Researched synthetic data generation with diffusion models for personalizing vision backbones.
- *Mentors:* Yonglong Tian, Dilip Krishnan

**Google DeepMind** London, UK  
*Research Engineering Intern* June - August 2022

- Researched novel data selection strategies for pre-training large language models.
- *Mentors:* Sebastian Borgeaud, Laurent Sifre, Jordan Hoffman, Arthur Mensch

## Center for Brains, Minds, and Machines, MIT

*Undergraduate Researcher*

Cambridge, MA

September 2019 - May 2022

- Investigated recurrent vision models for learning generalizable representations of visual features with long-range spatial dependencies.
- Studied applications in segmenting closed curves and symmetry detection.
- *Mentors:* Xavier Boix, Pawan Sinha, Tomaso Poggio

## The D. E. Shaw Group

*Quantitative Research Intern*

New York, NY

June - August 2021

- Developed RL tools for portfolio management, outperforming baselines derived from optimal control theory.
- *Mentor:* Konstantin Turitsyn

## Apple

*Machine Learning Intern*

Cupertino, CA

June - August 2020

- Built machine learning models to forecast battery drain from iPhone time series usage data, enabling intelligent power management.
- Deployed an end-to-end machine learning pipeline on-device for power optimization, aiming to release to consumer iPhones; selected from 15 interns to present to SVP of Software Engineering based on impact.

## Two Sigma Investments

*Software Engineering Intern*

Houston, TX

May - August 2019

- Developed a RESTful Flask service and UI to create and maintain collections of instruments for trading.
- Tool is now used by 4 teams to track over 20,000 instruments with unique trading characteristics.

## Digital Humanities Lab, MIT

*Undergraduate Researcher*

Cambridge, MA

September - December 2018

- Collaborated on open-source project: “Computational Reading of Gender in Novels, 1770-1992”.
- Designed and released Python tools to uncover gender biases in 4,200 novels.

## AWARDS

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<b>NSF Graduate Research Fellowship</b>	2022 - 2025
<b>HDTV Grand Alliance Fellowship</b>	2022 - 2023
<b>MIT Undergraduate Research and Innovation Scholar</b>	2020
<b>MIT Burchard Scholar</b>	2020

## SERVICE & LEADERSHIP

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<b>Organizer:</b> ECCV Tutorial on Efficient Text-to-Image Modeling	2024
<b>Organizer:</b> CVPR Workshop on Synthetic Data for Computer Vision	2024
<b>Event Coordinator:</b> MIT Graduate Women of EECS	2023
<b>Mentor:</b> MIT Graduate Application Assistant Program	2022 - Present
<b>Associate Editor:</b> MIT Science Policy Review	2020 - 2022
<b>VP of Campus Relations:</b> MIT Society of Women Engineers	2019 - 2021

## INVITED TALKS

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**Evaluating Text-to-Image Models.**

ECCV Efficient Text-to-Image Modeling Tutorial, September 2024

**DreamSim: Learning New Dimensions of Human Visual Similarity using Synthetic Data.**

Adobe, October 2023.

**DreamSim: Learning New Dimensions of Human Visual Similarity using Synthetic Data.**

Computer Vision Meetup, hosted by Voxel51, July 2023.

## SKILLS & INTERESTS

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**Skills:** Python (PyTorch, Tensorflow), Jax, Java, C/C++, CoreML, R.

**Research Interests:** Generative models, representation learning, synthetic data, machine learning.