Shobhita Sundaram

Website: shobhitasundaram.com
Email: shobhita@mit.edu
LinkedIn: linkedin.com/in/shobsund
GitHub: github.com/ssundaram21

Education

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

[1] S. Fu*, N. Tamir*, **S. Sundaram***, L. Chai, R. Zhang, T. Dekel, and P. Isola, "DreamSim: Learning new dimensions of human visual similarity using synthetic data", *Arxiv*, 2023.

[2] **S. Sundaram***, D. Sinha*, M. Groth, T. Sasaki, and X. Boix, "Recurrent connections facilitate symmetry perception in deep networks", *Scientific Reports*, vol. 12, no. 1, p. 20 931, 2022.

[3] **S. Sundaram***, D. Sinha*, M. Groth, T. Sasaki, and X. Boix, "Recurrent connections facilitate learning symmetry perception", in *ICLR - Generalization Beyond the Training Distribution in Brains and Machines Workshop*, 2021.

[4] **S. Sundaram*** and N. Hulkund*, "Gan-based data augmentation for chest x-ray classification", in *KDD - Applied Data Science for Healthcare Workshop*, 2021.

[5] K. Villalobos, V. Štih, A. Ahmadinejad, **S. Sundaram**, J. Dozier, A. Francl, F. Azevedo, T. Sasaki, and X. Boix, "Do Neural Networks for Segmentation Understand Insideness?", *Neural Computation*, vol. 33, no. 9, pp. 2511–2549, Aug. 2021, ISSN: 0899-7667.

Work Experience

DeepMind — London, UK
Research Engineering Intern — June - August 2022

- Researched novel datapoint selection strategies for pre-training large language models on the Deep Learning team.
- Achieved up to 10% accuracy improvement on downstream tasks.

Center for Brains, Minds, and Machines, MIT — Cambridge, MA
Undergraduate Researcher — September 2019 - May 2022

- Researched Deep Neural Network (DNN) models for vision capable of learning generalizable representations of fundamental visual features with long-range spatial dependencies.
- Studied applications in segmenting closed curves and symmetry detection, focusing on out-of-distribution generalization.

The D. E. Shaw Group — New York, NY
Quantitative Research Intern — June - August 2021

- Developed tools to benchmark Reinforcement Learning models for portfolio management.
- Derived baseline theoretical trading models using optimal control theory.
- Trained RL models that outperformed theoretical baselines in trading simulations and uncovered interpretable insights for learned policies.

Apple Cupertino, CA
Machine Learning Intern June - August 2020

- Built ML models to predict battery drain from iPhone time series usage data, enabling intelligent power management.
- Deployed 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 Houston, TX
Software Engineering Intern 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 Cambridge, MA
Undergraduate Researcher 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

NSF Graduate Research Fellowship 2022-2025

HDTV Grand Alliance Fellowship 2022-2023

Undergraduate Research and Innovation Scholar 2020

Burchard Scholar *Competitive award honoring MIT students who excel in the humanities.* 2020

Service & Leadership

Reviewer: ICCV Workshop on Representation Learning with Very Limited Images 2023

Reviewer: ICML Workshop on Challenges in Deployable Generative AI 2023

Mentor: MIT Graduate Application Assistant Program 2022 - Present

Event Coordinator: MIT Graduate Women of EECS 2023

Associate Editor: MIT Science Policy Review 2020 - 2022

VP of Campus Relations: MIT Society of Women Engineers 2019 - 2021

Invited Talks

DreamSim: Learning New Dimensions of Human Visual Similarity using Synthetic Data. Computer Vision Meetup, hosted by Voxel51, July 2023.

Skills & Interests

Skills: Python (PyTorch, Tensorflow, JAX, sklearn, numpy), C++.

Research Interests: Computer vision, machine learning, generative models, representation learning.