Divya Shanmugam

divyas@cornell.edu   •   dmshanmugam.github.io

Academic positions and degrees

Cornell Tech, New York, NY
Postdoctoral Researcher, Department of Computer Science   2024 – Present

Massachusetts Institute of Technology, Cambridge, MA
Ph.D., Electrical Engineering and Computer Science (05/2024)
Thesis: *Advancing Equity and Reliability in Machine Learning.*   2018 – 2024

Massachusetts Institute of Technology, Cambridge, MA
M.Eng., Electrical Engineering and Computer Science (05/2018)
Thesis: *Representation Learning for Improved Distance and Risk Metrics.*   2017 – 2018

Massachusetts Institute of Technology, Cambridge, MA
B.S., Electrical Engineering and Computer Science (05/2017)   2013 – 2017

Honors

Rising Star in EECS (MIT)	2025
Best Paper Award, Conference on Health, Inference, and Learning (CHIL)	2025
Honorable Mention Best Findings Paper, Machine Learning for Health (ML4H)	2023
Jane Street Fellowship (Honorable Mention)	2022
Best Talk, GW6 Research Summit	2021
National Science Foundation Graduate Research Fellowship	2017

Publications

* denotes equal contribution.

Improving Spontaneous Labor Prediction with Electronic Health Record Data   2025
M. Krishnamoorthy*, D. Shanmugam*, D. Tjandra, A. Peahl, C. Pancaro, E. Ziedan, A.
Kowalski, J. Wiens.
In preparation.

A Roadmap to Responsibly Removing Race from Clinical Algorithms   2025
D. Shanmugam*, S. Balachandar, A. Chouldechova, J. Diao, K. Ferryman, A. Manrai, S.
Pfohl, N. Powe, D. Raji, E. Pierson.
Under review.

Machine learning reveals hidden diagnoses among underserved patients   2025
D. Shanmugam, B. Hardy, A. Wang, S. Divikaran, E. Pierson**, M. Barnett**.
Under review.

The Trillion Dollar Algorithm: Lessons from Machine Learning for Medicare   2025
Advantage Risk Adjustment
D. Shanmugam*, M. Johnson*, D. Meyers, J. Wiens, E. Pierson.
Under review at NEJM AI.

Identifying Mechanisms of Disparities within Cascades of Cardiovascular Care after an Emergency Department Visit — 2025

A. Wang, D. Shanmugam, S. Divikaran, E. Pierson, M. Barnett.
Under review.

Survival Analysis with Limited Overlap and Censoring Distribution Shift — 2025

M. Krishnamoorthy, D. Shanmugam, D. Tjandra, A. E. Kowalski, J. Wiens.
Under review.

Evaluating multiple models using labeled and unlabeled data — 2025

D. Shanmugam*, S. Sadhuka*, M. Raghavan, J. Guttag, B. Berger**, E. Pierson**.
Neural Information Processing Systems (NeurIPS) 2025.

Learning Disease Progression Models That Capture Health Disparities — 2025

E. Chiang, D. Shanmugam, A. Beecy, G. Sayer, N. Uriel, D. Estrin, N. Garg, E. Pierson.
Conference on Health, Inference, and Learning (CHIL) 2025.

Test-time augmentation improves efficiency in conformal prediction — 2025

D. Shanmugam, H. Lu, S. Swaminarayan, J. Guttag.
IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) 2025.

Generative Artificial Intelligence in Medicine — 2025

D. Shanmugam, M. Agrawal, R. Movva, I. Y. Chen, M. Ghassemi, M. Jacobs, E. Pierson.
Annual Review of Biomedical Data Science, 2025.

Using large language models to promote health equity — 2025

E. Pierson*, D. Shanmugam*, R. Movva*, J. Kleinberg*, et al.
New England Journal of Medicine AI, 2025.

Quantifying disparities in intimate partner violence: a machine learning method to correct for underreporting — 2024

D. Shanmugam, K. Hou, E. Pierson.
npj Women's Health, 2024.

Longitudinal Changes in Desire and Attraction Among Women Who Have Discontinued Hormonal Contraceptives — 2024

J. Gassen, S. Mengelkoch, D. Shanmugam, J. Pierson, A. van Lamsweerde, E. Benhar, S. E. Hill.
Hormones and Behavior, 2024.

Coarse race data conceals disparities in clinical risk score performance — 2023

R. Movva*, D. Shanmugam*, K. Hou, P. Pathak, J. Guttag, N. Garg, E. Pierson.
Machine Learning for Healthcare Conference (MLHC) 2023.

The Relationship Between Photoperiod and Ovulation Rate: A Multi-Site Study Using NaturalCycles Data — 2023

D. Shanmugam, M. Espinosa, J. Gassen, A. van Lamsweerde, J. Pearson, E. Behar, S. E. Hill.
Scientific Reports, 2023.

Kaleidoscope: Semantically-grounded, Context-specific Model Evaluation   2023
H. Suresh, D. Shanmugam, A. Bryan, T. Chen, A. D'Amour, J. Guttag, A. Satyanarayan.
ACM CHI Conference on Human Factors in Computing Systems (CHI) 2023.

Data Augmentation for Electrocardiograms   2022
A. Raghu, D. Shanmugam, E. Pomerantsev, J. Guttag, C. Stultz.
ACM Conference on Health, Inference, and Learning (CHIL) 2022.

Learning to Limit Data via Scaling Laws: A Computational Interpretation for   2022
the Legal Principle of Data Minimization
D. Shanmugam, S. Shabanian, F. Diaz, M. Finck, A. Biega.
ACM Conference on Fairness, Accountability, and Transparency (FAccT) 2022.

Better Aggregation in Test-Time Augmentation   2021
D. Shanmugam, D. Blalock, G. Balakrishnan, J. Guttag.
IEEE/CVF International Conference on Computer Vision (ICCV) 2021. (Oral, top 3%).

Multiple Instance Learning for ECG Risk Stratification   2019
D. Shanmugam, D. Blalock, J. Guttag.
Machine Learning for Healthcare Conference (MLHC) 2019. (Oral).

Selected talks

Reliable machine learning with health data
Applied Data Science, Cornell Tech, New York, NY   2025
AI & Public Policy Seminar, Cornell Tech, New York, NY   2025
Wadhwani School of Data Science & AI Seminar, IIT Madras, Virtual   2025

Methods to Evaluate the Quality of Clinical Care
INFORMS, Atlanta, GA   2025
International Conference on Statistics and Data Science (ICSDS), Vancouver, CA   2025
Center for Population Health (CPH), UC Berkeley, Berkeley, CA   2025
UVA School of Data Science, Charlottesville, VA   2025
Healthy ML Group, MIT, Cambridge, MA   2025
Diversity in Health Data: Achieving Benefit for All, Virtual   2025

The Medicare Advantage Algorithm
AI & Public Policy Seminar, Cornell University, Ithaca, NY   2025

Advancing Equity & Reliability in Machine Learning
Progress Educational Trust, Virtual   2025
Statistical Methods for Health Equity, Data Science for Health Equity, Virtual   2024

All the Data We Cannot See
AI and Medicine Workshop, Mt. Sinai, New York, NY   2024
Computational Healthcare for Equity and iNclusion Lab, UC Berkeley, Berkeley, CA   2023

Quantifying Inequality in Underreported Conditions

MIT Algorithmic Fairness Reading Group, Cambridge, MA 2023

MIT AI Ethics Seminar, Cambridge, MA 2022

University of Chicago Crime and Education Lab, Virtual 2021

Cornell Information Science Seminar, Virtual 2021

Microsoft Research New England, Virtual 2021

At the Intersection of Conceptual Art and Deep Learning: The End of Signature

List Center, Cambridge, MA 2022

Learning to Limit Data Collection using Scaling Laws

Microsoft Research Montreal, Virtual 2020

Machine Learning, Data Collection, and Women's Health

Texas Christian University, Virtual 2020

Mentorship

Helen Lu (2021–2024); William Hou (2022–2023); Anna Bryan (2021–2022); Tiffany Chen (2021–2022); Angela Zhang (2021–2022); Neha Hulkund (2020–2021); Roshni Sahoo (2018–2020); Skylar Gordon (2018–2019); Xinyi Guo (2018–2019).

Professional Service

Leadership

Organizing Committee, Workshop Chair, MLHC	2025
Organizing Committee, Publicity Chair, FAccT	2025
Organizing Committee, Workflow Chair, ML4H	2023
Applied Machine Learning Seminar Organizer, MIT	2023
Undergraduate Mentorship Improvement Initiative, MIT	2020 − 2021
GW6 Event Coordinator, MIT	2018 − 2019
MIT AI Mentorship Program Coordinator, MIT	2018 − 2020

Reviewing

Conference on Fairness, Accountability, and Transparency (FAccT)	2022 − 2025
Conference on Health, Inference, and Learning (CHIL)	2020, 2022
Machine Learning for Healthcare (MLHC)	2020 − 2023
Machine Learning for Health Symposium (ML4H)	2019 − 2022
International Conference on Machine Learning (ICML)	2021 − 2022
Computer Vision and Pattern Recognition (CVPR)	2021
Women in Machine Learning (WiML), NeurIPS Workshop	2018, 2020
Neural Information Processing Systems (NeurIPS)	2020

Community Outreach

Reviews and Rebuttals Mentorship Panel (ML4H) — Panelist   2025
Round Table on Algorithmic Fairness (ML4H) — Discussant   2025
AI and Geriatrics Workshop (Johns Hopkins) — Invited participant   2025
AI and Society Panel (Olin College) — Panelist   2023
Career Mentorship Panel (MIT) — Panelist   2021
Graduate Student Panel (McCormick Hall) — Panelist   2020
Graduate Student Panel (MIT Women in EECS) — Panelist   2019
Lightning Talks (MIT Women in EECS) — Speaker   2017