Maggie Makar

CURRICULUM VITAE

Computer Science & Engineering, University of Michigan
Beyster Building, Room 3769, 2260 Hayward Ave, Ann Arbor, MI 48109
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EDUCATION

Massachusetts Institute of Technology 06/2021

Ph.D., Electrical Engineering and Computer Science
Advisor: Prof. John Guttag
Thesis: *Machine Learning and Causality: Building Efficient and Reliable Models for Decision-Making*

Massachusetts Institute of Technology 05/2017

S.M., Electrical Engineering and Computer Science
Advisor: Prof. John Guttag
Thesis: *Learning the Probability of Activation in the Presence of Latent Spreaders*

University of Massachusetts Amherst 02/2013

B.S., Mathematics and Economics, *summa cum laude*

PROFESSIONAL APPOINTMENTS

Assistant Professor, University of Michigan, Ann Arbor 01/2023 – present
Presidential Postdoctoral Fellow, University of Michigan, Ann Arbor 08/2021 – 12/2022
Consulting Research Scientist, Microsoft Research, Redmond 07/2021 – 07/2022
Research Intern, Google Brain, Cambridge 06/2020 – 09/2020
Research Intern, Microsoft Research, Redmond 06/2018 – 09/2018
Research Assistant, Brigham and Women's Hospital, Boston 02/2013 – 08/2015

AWARDS AND HONORS

NSF CAREER Award 2024
Google Research Scholar Award 2024
Harvey Fellowship, Mustard Seed Foundation 2018 – 2021
NeurIPS Top 5% Reviewer Award 2019, 2020
ICML Top 5% Reviewer Award 2019
Ward McCarthy Scholarship, UMass Amherst 2012
School of Behavioral and Social Sciences Scholarship, UMass Amherst 2012
Economics Department Writing Award, UMass Amherst 2012
Life Members Scholarship, UMass Amherst 2012

FUNDING

1. **NIH** — Tradeoffs in the Distribution of a Scarce Health Resource: Evidence from a Large Randomized Natural Experiment
   Co-I • 09/2024 – 08/2029
2. **NSF CAREER** — From Fragile to Fortified: Harnessing Causal Reasoning for Trustworthy Machine Learning with Unreliable Data
   PI • 04/2024 – 03/2029
3. **Google Research Scholar Award** — Reliability through Causal Alignment: Causally Motivated Models for Pain Management
   PI • 04/2024 – 03/2029
4. **Schmidt Futures** — Machine Learning-Guided Risk Scoring for Medicare Patients
   Co-PI • 01/2023 – 12/2026
5. **University of Michigan** — eHAIL Summer Student Support
   Co-PI • 06/2022 – 09/2023
6. **NSF CRII: SCH** — Towards Robustness to Data Disparities: A Framework for Efficient and Reliable Data-Driven Decision-Making Tools for All
   PI • 03/2022 – 02/2026

PUBLICATIONS

*Equal contribution. Student authors are underlined.

Refereed Conference Papers

resume,,

[1] S. Karlekar, C. Shi, A. Puli, C. Zheng, J. Bowlan, M. Kucer, **M. Makar**, D. Blei. "Do You CARE to Generalize? Extracting Robust Concept Directions from LLMs." *NeurIPS*, 2026.

[2] D. Zapzalka, M. Mittal, J. Wiens, **M. Makar**. "Estimating Upcoding in Medicare Advantage: Identifying Contributors, Costs, and Mechanisms." *MLHC*, 2026.

[3] C. Ehrlichman, M. Dykstra, S. Tang, **M. Makar**. "Causal Discovery for Efficient Offline RL with Factored Action Spaces." *CLeaR*, 2026.

[4] D. Zapzalka, T. Chang, L. Warrenburg, S. Park, D. Shenfeld, R. Parikh, J. Wiens, **M. Makar**. "Estimating Misreporting in the Presence of Genuine Modification: A Causal Perspective." *NeurIPS*, 2025.

[5] T. Chang, L. Warrenburg, S. Park, R. Parikh, **M. Makar**, J. Wiens. "Who's Gaming the System? A Causally-Motivated Approach for Detecting Strategic Adaptation." *NeurIPS*, 2024.

[6] C. Shi, N. Beltran-Velez, A. Nazaret, A. Garriga-Alonso, A. Jesson, **M. Makar**, D. Blei. "Hypothesis Testing the Circuit Hypothesis in LLMs." *NeurIPS*, 2024.

[7] R. Nafshi, **M. Makar**. "Partial Identification of the Maximum Mean Discrepancy with Measurement Error." *UAI*, 2024.

[8] C. Kausik, Y. Lu, K. Tan, **M. Makar**, Y. Wang, A. Tewari. "Offline Policy Evaluation and Optimization under Confounding." *AISTATS*, 2024.

[9] F. Kamran, **M. Makar**, J. Wiens. "Learning to Rank for Optimal Treatment Allocation Under Resource Constraints." *AISTATS*, 2024.

[10] J. Xu, R. Mihalcea, E. Frank, S. Sen, **M. Makar**. "Uncovering the Varied Impact of Behavioral Change Messages on Population Groups." *MLHC*, 2023.

[11] J. Zheng, **M. Makar**. "Causally Motivated Multi-Shortcut Identification and Removal." *NeurIPS*, 2022.

[12] S. Tang, **M. Makar**, M. Sjoding, F. Doshi-Velez, J. Wiens. "Leveraging Factored Action Spaces for Efficient Offline Reinforcement Learning in Healthcare." *NeurIPS*, 2022.

[13] J. Wang, S. Jabbour, **M. Makar**, M. Sjoding, J. Wiens. "Learning Concept Credible Models for Mitigating Shortcuts." *NeurIPS*, 2022.

[14] **M. Makar**, B. Packer, D. Moldovan, D. Blalock, Y. Halpern, A. D'Amour. "Causally Motivated Shortcut Removal Using Auxiliary Labels." *AISTATS*, 2022.

[15] **M. Makar**, L. West, D. Hooper, E. Horvitz, E. Shenoy, J. Guttag. "Exploiting Structured Data for Learning Contagious Diseases under Incomplete Testing." *ICML*, 2021.

[16] **M. Makar**, F. Johansson, J. Guttag, D. Sontag. "Estimation of Bounds on Potential Outcomes for Decision Making." *ICML*, 2020.

[17] **M. Makar**, A. Swaminathan, E. Kiciman. "A Distillation Approach to Data Efficient Individual Treatment Effect Estimation." *AAAI*, 2019.

[18] **M. Makar**, J. Guttag, J. Wiens. "Learning the Probability of Activation in the Presence of Latent Spreaders." *AAAI*, 2018. *Spotlight presentation.*

Journal Articles

resume,,

[19] T. Chang, M. Qiu, Z. Hu, D. Zapzalka, D. Shanmugam, D. Shenfeld, R. Parikh, **M. Makar**, E. Emanuel, Z. Brown, A. Kowalski, J. Wiens. "Streamlining Oversight in Medicare Advantage: Measuring Coding Intensity via Contract Rankings." *Health Affairs Scholar*, 2026.

[20] R. Jean, A. Waljee, **M. Makar**, C. Tignanelli, M. Hemmila, J. Dimick. "Can Artificial Intelligence and Machine Learning Help Us Improve Motor Vehicle Crash Trauma Triage?" *American Journal of Surgery*, 2026. *Editorial.*

[21] D. Zapzalka, **M. Makar**. "Teaching Invariance Using Privileged Mediation Information." *Transactions on Machine Learning Research (TMLR)*, 2026.

[22] D. Shenfeld, L. Warrenburg, E. Silvert, M. Guido, **M. Makar**, K. Joynt Maddox, A. Navathe, R. Parikh, E. Emanuel. "A Machine Learning Model to Improve Risk Adjustment Accuracy in Medicare." *Health Services Research*, 2026.

[23] M. Burns, B. Pandian, J. Vandervest, G. Mentz, J. Varghese, S. Steadman, S. Kheterpal, **M. Makar**, V.G. Vydiswaran. "Generalizing Machine Learning Models from Clinical Free Text." *Scientific Reports*, 2025.

[24] A. Wong, J. Sussman, N. Price, **M. Makar**, B. Li, J. Yang, C. James. "The Data-Augmented, Technology-Assisted Medical Decision Making (DATA-MD) Curriculum: A Machine Learning and Artificial Intelligence Curriculum for Clinical Trainees." *Academic Medicine*, 2025.

[25] **M. Makar**, A. D'Amour. "Fairness and Robustness in Anti-Causal Prediction." *Transactions on Machine Learning Research (TMLR)*, 2022.

[26] M. Kamineni, E. Ötles, J. Oh, K. Rao, V. Young, B. Li, L. West, D. Hooper, E. Shenoy, J. Guttag, J. Wiens, **M. Makar**. "Prospective Evaluation of Data-Driven Models to Predict Daily Risk of *Clostridioides difficile* Infection at Two Large Academic Health Centers." *Infection Control & Hospital Epidemiology*, 2022.

[27] J. Oh*, **M. Makar***, C. Fusco, R. McCaffrey, K. Rao, E. Ryan, L. Washer, L. West, V. Young, J. Guttag, D. Hooper, E. Shenoy, J. Wiens. "A Generalizable, Data-Driven Approach to Predict Daily Risk of *Clostridium difficile* Infection at Two Large Academic Health Centers." *Infection Control & Hospital*

Epidemiology, 2018.

[28] **M. Makar***, J. Antonelli*, Q. Di, J. Schwartz, D. Cutler, F. Dominici. "Estimating the Causal Effect of Fine Particulate Matter Levels on Death and Hospitalization: Are Levels Below the Safety Standards Harmful?" *Epidemiology*, 2017.

[29] S. Skamene, I. Agarwal, **M. Makar**, et al. "Impact of a Dedicated Palliative Radiation Oncology Service on the Use of Single Fraction and Hypofractionated Radiation Therapy among Patients with Bone Metastases." *Annals of Palliative Medicine*, 2017.

[30] Z. Obermeyer, A. Clarke, **M. Makar**, J. Schuur, D. Cutler. "Emergency Care Use and the Medicare Hospice Benefit for Individuals with Cancer with a Poor Prognosis." *Journal of the American Geriatrics Society*, 2016.

[31] B. Powers, **M. Makar**, D. Cutler, Z. Obermeyer. "Cost Savings Associated with Expanded Hospice Use among Medicare Beneficiaries with Poor Prognosis Cancer." *Journal of Palliative Medicine*, 2015.

[32] Z. Obermeyer, S. Abujaber, **M. Makar**, S. Stoll, S. Kayden, L. Wallis, T. Reynolds. "Emergency Care Delivery in 59 Low- and Middle-Income Countries: Systematic Review." *Bulletin of the World Health Organization*, 2015.

[33] Z. Obermeyer, B. Powers, **M. Makar**, N. Keating, D. Cutler. "Physician Revealed Preferences for Hospice Are Strongly Related to Their Patients' Enrollment in Hospice." *Health Affairs*, 2015.

[34] Z. Obermeyer, **M. Makar**, S. Abujaber, F. Dominici, S. Block, D. Cutler. "Association between the Medicare Hospice Benefit and Health Care Utilization and Costs for Patients with Poor-Prognosis Cancer." *JAMA*, 2014.

Refereed Workshop Papers and Conference Presentations

resume,,

[35] M. Mittal, D. Zapzalka, J. Wiens, **M. Makar**. "SCaMEr: Identifying Strategic Misreporting Rates in the Absence of Ground Truth Data." *CSE Undergraduate Research Symposium, University of Michigan*, 2026. *Best Poster, AI Track.*

[36] M. Mittal, D. Zapzalka, J. Wiens, **M. Makar**. "SCaMEr: Identifying Strategic Misreporting Rates in the Absence of Ground Truth Data." *Michigan Student Symposium for Interdisciplinary Statistical Sciences (MSSISS)*, 2026.

[37] C. Ehrlichman, M. Dykstra, S. Tang, **M. Makar**. "Causal Discovery for Efficient Offline RL with Factored Action Spaces." *American Causal Inference Conference*, 2026.

[38] D. Zapzalka, M. Mittal, J. Wiens, **M. Makar**. "Estimating Upcoding in Medicare Advantage: Identifying Contributors, Costs, and Mechanisms." *American Causal Inference Conference*, 2026.

[39] C. Ehrlichman, M. Dykstra, S. Tang, **M. Makar**. "Causal Discovery for Efficient Offline RL with Factored Action Spaces." *UAI Workshop on Causal AI for Decision Making*, 2026.

[40] D. Zapzalka, M. Mittal, J. Wiens, **M. Makar**. "Estimating Upcoding in Medicare Advantage: Identifying Contributors, Costs, and Mechanisms." *UAI Workshop on Causal AI for Decision Making*, 2026.

[41] M. Veljanovski, **M. Makar**. "Minimally Orthogonal Causal Effect Estimation." *UAI Workshop on Causal AI for Decision Making*, 2026.

[42] D. Zapzalka, T. Chang, L. Warrenburg, S. Park, D. Shenfeld, R. Parikh, J. Wiens, **M. Makar**. "Estimating Misreporting in the Presence of Genuine Modification: A Causal Perspective." *American Causal Inference Conference*, 2026.

[43] S. Karlekar, C. Shi, A. Puli, C. Zheng, **M. Makar**, J. Bowlan, M. Kucer, D. Blei. "Extracting Representations in LLMs Robust to Distribution Shifts." *ICLR Workshop on Unifying Concept Representation Learning*, 2026.

[44] D. Zapzalka, T. Chang, L. Warrenburg, S. Park, D. Shenfeld, R. Parikh, J. Wiens, **M. Makar**. "Estimating Misreporting in the Presence of Genuine Modification: A Causal Perspective." *NeurIPS Workshop on CauScien: Uncovering Causality in Science*, 2025.

[45] C. Shi, N. Beltran-Velez, A. Nazaret, C. Zheng, A. Garriga-Alonso, A. Jesson, **M. Makar**, D. Blei. "Hypothesis Testing the Circuit Hypothesis in LLMs." *ICML Workshop on Mechanistic Interpretability*, 2024.

[46] A. Modi, J. N. Kaur, **M. Makar**, P. Mallapragada, A. Sharma, E. Kiciman, A. Swaminathan. "Towards Modular Machine Learning Pipelines." *ICML Workshop on Localized Learning: Decentralized Model Updates via Non-Global Objectives*, 2023.

[47] P. Huang, **M. Makar**. "Conditional Differential Measurement Error: Partial Identifiability and Estimation." *NeurIPS Workshop*, 2022.

[48] **M. Makar**, A. D'Amour. "Fairness and Robustness in Anti-Causal Prediction." *ICML Workshop*, 2022.

[49] J. Zheng, **M. Makar**. "Causally Motivated Multi-Shortcut Identification and Removal." *ICML Workshop*, 2022.

[50] S. Tang, **M. Makar**, M. Sjoding, F. Doshi-Velez, J. Wiens. "Leveraging Factored Action Spaces for Efficient Offline Reinforcement Learning in Healthcare." *ICML Workshop*, 2022.

[51] **M. Makar**, B. Packer, D. Moldovan, D. Blalock, Y. Halpern, A. D'Amour. "Causally Motivated Shortcut Removal Using Auxiliary Labels." *American Causal Inference Conference*, 2022.

[52] **M. Makar**, B. Packer, D. Moldovan, D. Blalock, Y. Halpern, A. D'Amour. "Causally Motivated Shortcut Removal Using Auxiliary Labels." *ICML Workshop*, 2022.

[53] E. Mu, **M. Makar**, L. West, J. Guttag, D. Rosenberg, E. Shenoy. "Learning the Influence of Individual *Clostridioides difficile* Infections." *Open Forum Infectious Diseases*, 2019.

[54] **M. Makar**, A. Swaminathan, E. Kiciman. "A Distillation Approach to Data Efficient Individual Treatment Effect Estimation." *NeurIPS Workshop*, 2018.

[55] K. Joynt, **M. Makar**, A. Gawande, D. Cutler, Z. Obermeyer. "The Most Expensive Patients in the Hospital." *Circulation*, 2018.

[56] **M. Makar**, J. Guttag, J. Wiens. "Learning the Probability of Activation in the Presence of Latent Spreaders." *NeurIPS Workshop*, 2017.

[57] **M. Makar***, J. Antonelli*, Q. Di, J. Schwartz, D. Cutler, F. Dominici. "Estimating the Causal Effect of Fine Particulate Matter Levels on Death and Hospitalization: Are Levels Below the Safety Standards Harmful?" *Joint Statistical Meetings*, 2016.

[58] S. Skamene, I. Agarwal, **M. Makar**, M. Krishna, A. Spektor, L. Hertan, K. Mouw, A. Taylor, S. Philbrick, T. Balboni. "Impact of a Dedicated Palliative Radiation Oncology Service on the Use of Single Fraction and Hypofractionated Radiation Therapy among Patients with Bone Metastases." *American Society for Radiation Oncology*, 2015.

Other Publications

resume,,

[59] **M. Makar**. "What Are Scientists Teaching AI?" Invited article, *New Science Magazine*.

Student Supervision

Doctoral Students

Dylan Zapzalka (NSF GRFP, 2025)	UM, expected 05/2029
Cecilia Ehrlichman	UM, expected 05/2030
Marko Veljanovski	UM, expected 05/2031
Julia Geller	UM, expected 05/2032

Master's Students

Rohan Singh	UM, 05/2026
John Cashy	UM, 05/2025
Vinayak Bassi	UM, 05/2025
Ron Nafshi	UM, 12/2023
Jiayun Zheng	UM, 05/2023
Agni Kumar	MIT, 05/2020
Advaith Anand	MIT, 05/2019
Emily Mu	MIT, 05/2019

Undergraduate Students

Muskaan Mittal	UM, 05/2026
Zhixuan (Alina) Wu	UM, 05/2025
Emre Hayir	UM, 05/2024
Caroline Wang (ExploreCSR)	UM, 05/2024
Pengrun Huang	UM, 12/2022
Jiaai Xu	UM, 05/2022
Meghana Kamineni	MIT, 05/2021

Doctoral Thesis Committees (Non-Advisees)

Michael Sweeney (Advisor: Hyun Min Kang)	UM, expected 05/2027
Zheyu Zhang (Advisor: Jie Liu)	UM, expected 05/2027
Kevin Wibisono (Advisor: Yixin Wang)	UM, 05/2026
Claudia Shi (Advisor: David Blei)	Columbia, 09/2025
Yiman Ren (Advisor: Sarah Miller)	UM, 05/2025
Jinyang Li (Advisor: H. V. Jagadish)	UM, 05/2025
Puja Trivedi (Advisor: Danai Koutra)	UM, 12/2024
Richard Higgins (Advisor: David Fouhey)	UM, 05/2024
Shengpu Tang (Advisor: Jenna Wiens)	UM, 05/2024
Fahad Kamran (Advisor: Jenna Wiens)	UM, 12/2023
Helen Zhou (Advisor: Zachary Lipton)	CMU, 12/2023

Teaching

Instructor, Causality and Machine Learning, University of Michigan 2023 – present
Instructor, Introduction to Machine Learning, University of Michigan 2023 – present
Instructor, Data-MD, University of Michigan 2023
Instructor, Machine Learning, Big Data Summer Institute, University of Michigan 2022
Instructor, Whirlwind of Machine Learning, MIT 2017
Teaching Assistant, Machine Learning for Healthcare, MIT 2017

Invited Talks, Panels, and Media

Invited Talks

Amsterdam Machine Learning Lab 2026
Midwest Machine Learning Symposium (MMLS) 2026
Statistics Seminar, University of Michigan 2026
Kateri Institute for Catholic Studies 2026
American Causal Inference Conference 2025
Causal Group Seminar, Harvard University 2025
UC Berkeley / UCSF Seminar 2025
Simons Workshop on Distribution Shift 2024
Carnegie Mellon University *Causally Motivated Robustness Approaches* 2024
Microsoft *Causally Motivated Robustness Approaches* 2024
UM Pain Short Course *Machine Learning and Pain Research* 2024
Blei Lab, Columbia University 2024
Biostatistics Seminar Series, Johns Hopkins Bloomberg School of Public Health 2024
Workshop on Causality in Medical Image Computing, MICCAI 2023
Michigan Study Center *How to Be Human in the Age of AI* 2023
Methods in Anesthesia Clinical Research, University of Michigan 2023
AI Keynote, Ludwig Maximilian University of Munich 2023
Data Science / Computational Social Science Seminar, UMSI 2022
Practical Big Data Workshop, University of Michigan 2022
Statistics Student Seminar, University of Michigan 2022
Department of Computer Science, Johns Hopkins University 2021
Strategic Reasoning Group, University of Michigan 2021
Precision Health Seminar, University of Michigan 2021
e-Health and Artificial Intelligence (eHAIL) 2021
AI Seminar, University of Michigan 2021
AI Symposium, University of Michigan 2021
Center for Healthcare Engineering and Patient Safety, University of Michigan 2021
Causal Machine Learning Group, Microsoft Research 2021
Online Causal Inference Seminar 2021
Microsoft–MIT Trustworthy and Robust AI Collaboration 2019, 2020
AAAI Conference on Artificial Intelligence 2018, 2019
Machine Learning Seminar, University of Massachusetts Amherst 2018
Computational Cardiovascular Research Group, MIT 2017
University of Michigan, Ann Arbor 2016

Harvard School of Public Health 2014

Panels

Second Workshop on Spurious Correlations, Invariance and Stability, ICML 2023
NeurIPS Workshop on Algorithmic Fairness through the Lens of Causality and Robustness 2021
Trustworthy ML Initiative Symposium 2021

Podcasts and Media

This Week in Machine Learning (TWIML) podcast forthcoming
AI in Society: A Cautionary Tale, short film (Michigan Emmy Award winner) 2024
Casual Inference podcast 2021

Academic Service

Conference and Journal Service

Area Chair, NeurIPS 2026
Area Chair, ICML 2025 – present
Area Chair, UAI 2024 – 2025
Organizer, NeurIPS Tutorial on Spurious Correlations and Distribution Shifts 2024
Organizer, ICML Workshop on Spurious Correlations, Invariance, and Stability 2022 – 2023
Website Chair, CLeaR 2023 – present
Area Chair, MLHC 2023
Publicity Chair, AISTATS 2023
Area Chair, AISTATS 2022 – present
Area Chair, Machine Learning for Health (ML4H) 2022 – 2023
Reviewer, CLeaR 2022
Reviewer, ICLR 2021 – 2023
Reviewer, UAI 2021 – 2022
Reviewer, Causal Inference Workshop at UAI 2021
Reviewer, NeurIPS (Top 5% Reviewer Award) 2020 – present
Reviewer, ICML (Top 5% Reviewer Award) 2019 – present
Reviewer, Journal of Machine Learning Research (JMLR) 2020
Reviewer, AAAI 2019 – 2020
Reviewer, NeurIPS Workshop for Women in Machine Learning 2019 – 2020
Reviewer, NeurIPS Workshop on Machine Learning for Health 2019 – 2020
Reviewer, Journal of Health Economics 2019

University of Michigan Service

Organizer and Faculty Contributor, Explore Graduate Studies Workshop 2023 – present
External Recruitment Committee 2023 – present
Faculty Search Committee 2022 – 2023
Women in Computing Seminar Series 2021 – present

Other Professional Service

Panelist, NSF CAREER 2024
Panelist, NSF Smart and Connected Health (SCH) 2023
Breakout Room Facilitator, NSF Workshop 2022

Outreach and Student Activities

Organizer and Speaker, Causal AI for Decision Making Workshop	2026
Panelist, Women in Machine Learning PhD Workshop	2023
Mentor, Explore Computer Science Research (ExploreCSR)	2022
Panelist, Explore Michigan Engineering Research and Graduate Education	2022
Speaker, Miss STEM Careers	2022
Organizer, CSE Arab Lunch (CArL)	2022
Lecturer, Big Data Summer Institute	2022
Speaker, First Do No Harm Seminar Series, UMSI	2021
Lecturer, Center for Healthcare Engineering and Patient Safety (CHEPS)	2021

Additional Information

Citizenship. Egyptian national; U.S. permanent resident.