Meena Jagadeesan

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Summary

I'm a 5th year Computer Science PhD student at UC Berkeley. My research focuses on machine learning ecosystems where an ML model (such as a language model or a recommender system) interacts with humans, companies, or other models. My work takes an economic perspective on ML ecosystems.

Education

UC Berkeley — *Berkeley, CA, USA*
PhD in Computer Science — *Aug. 2020 - Present*
- Advised by Michael I. Jordan and Jacob Steinhardt
- Affiliated with the Berkeley Artificial Intelligence Research Lab (BAIR)

Harvard University — *Cambridge, MA, USA*
S.M. in Computer Science — *Sept. 2019- May 2020*

Harvard University — *Cambridge, MA, USA*
A.B. in Computer Science and Math, *summa cum laude* — *Sept. 2016- May 2020*
- Secondary Field: Statistics
- Selected Honors: Phi Beta Kappa, Hoopes Prize, Detur Book Prize, Certificate of Distinction in Teaching

Selected Honors and Awards

Open Philanthropy AI Fellowship (2021-2025)
Paul and Daisy Soros Fellowship for New Americans (2020-2022)
Berkeley Fellowship (2020-2023)
CRA Outstanding Undergraduate Researcher Award (2020)
Siebel Scholarship (2019-2020)
Barry Goldwater Scholar (2018)
Intel Science Talent Search, 2nd Place in Basic Research (2016)

Publications

(* denotes equal contribution; α-β denotes alphabetical ordering)

Journal Articles

1. **Learning Equilibria in Matching Markets from Bandit Feedback**. *Journal of the ACM, 2023, Volume 70, Issue 3, Article no. 19, pp 1-46*.
Meena Jagadeesan*, Alexander Wei*, Yixin Wang, Michael I. Jordan, and Jacob Steinhardt.

Conference Proceedings

19. **Impact of Decentralized Learning on Player Utilities in Stackelberg Games**. *Proceedings of the 41th International Conference on Machine Learning (ICML), 2024*.
(α-β) Kate Donahue, Nicole Immorlica, Meena Jagadeesan, Brendan Lucier, and Aleksandrs Slivkins.
18. **Feedback Loops With Language Models Drive In-Context Reward Hacking**. *Proceedings of the 41th International Conference on Machine Learning (ICML), 2024*.
Alexander Pan, Erik Jones, Meena Jagadeesan, Jacob Steinhardt.
17. **Clickbait vs. Quality: How Engagement-Based Optimization Shapes the Content Landscape in Online Platforms**. *Proceedings of the The Web Conference 2024 (WWW), 2024*.
(α-β) Nicole Immorlica, Meena Jagadeesan, and Brendan Lucier.
16. **Can Probabilistic Feedback Drive User Impacts in Online Platforms?**. *Proceedings of the 27th International Conference on Artificial Intelligence and Statistics (AISTATS), 2024*.
(α-β) Jessica Dai, Bailey Flanigan, Nika Haghtalab, Meena Jagadeesan, and Chara Podimata.

15. **Supply-Side Equilibria in Recommender Systems**. *Proceedings of the 37th Conference on Neural Information Processing Systems (NeurIPS), 2023*.
Meena Jagadeesan, Nikhil Garg, and Jacob Steinhardt.
14. **Improved Bayes Risk Can Yield Reduced Social Welfare Under Competition**. *Proceedings of the 37th Conference on Neural Information Processing Systems (NeurIPS), 2023*.
Meena Jagadeesan, Michael I. Jordan, Jacob Steinhardt*, and Nika Haghtalab*.
13. **Competition, Alignment, and Equilibria in Digital Marketplaces**. *Proceedings of the 37th AAAI Conference on Artificial Intelligence (AAAI), 2023*.
Meena Jagadeesan, Michael I. Jordan, and Nika Haghtalab.
12. **Performative Power**. *Proceedings of the 36th Conference on Neural Information Processing Systems (NeurIPS), 2022*.
(α-β) Moritz Hardt, Meena Jagadeesan, and Celestine Mendler-Dünner.
11. **Regret Minimization with Performative Feedback**. *Proceedings of the 39th International Conference on Machine Learning (ICML), 2022* .
Meena Jagadeesan, Tijana Zrnic, and Celestine Mendler-Dünner.
10. **Inductive Bias of Multi-Channel Linear Convolutional Networks with Bounded Weight Norm**. *Proceedings of the 35th Annual Conference on Learning Theory (COLT), 2022*.
Meena Jagadeesan, Ilya Razenshteyn, and Suriya Gunasekar.
9. **Individual Fairness in Advertising Auctions through Inverse Proportionality**. *Proceedings of the 13th Innovations in Theoretical Computer Science Conference (ITCS), 2022*.
(α-β) Shuchi Chawla and Meena Jagadeesan.
8. **Learning Equilibria in Matching Markets from Bandit Feedback**. *Proceedings of the 35th Conference on Neural Information Processing Systems (NeurIPS), 2021*. NeurIPS 2021 Spotlight presentation (given to 10% of accepted papers).
Meena Jagadeesan*, Alexander Wei*, Yixin Wang, Michael I. Jordan, and Jacob Steinhardt.
7. **Alternative Microfoundations for Strategic Classification**. *Proceedings of the 38th International Conference on Machine Learning (ICML), 2021*.
Meena Jagadeesan, Celestine Mendler-Dünner, and Moritz Hardt.
6. **Cosine: A Cloud-Cost Optimized Self-Designing Key-Value Storage Engine**. *Proceedings of Very Large Data Base Endowment (VLDB), 2021*.
Subarna Chatterjee, Meena Jagadeesan, Wilson Qin, and Stratos Idreos.
5. **Multi-Category Fairness in Sponsored Search Auctions**. *Proceedings of the 3rd ACM Conference on Fairness, Accountability and Transparency (FAT*), 2020*.
Christina Ilvento*, Meena Jagadeesan*, and Shuchi Chawla.
4. **Individual Fairness in Pipelines**. *Proceedings of the 1st Conference on Foundations of Responsible Computation (FORC), 2020*.
(α-β) Cynthia Dwork, Christina Ilvento, and Meena Jagadeesan.
3. **Understanding Sparse JL for Feature Hashing**. *Proceedings of the 33rd Annual Conference on Neural Information Processing Systems (NeurIPS), 2019*. NeurIPS 2019 Oral presentation (given to 3% of accepted papers).
Meena Jagadeesan.
2. **Simple Analysis of Sparse, Sign-Consistent JL**. *Proceedings of the 23rd International Conference on Randomization and Computation (RANDOM), 2019*.
Meena Jagadeesan.
1. **Varying the Number of Signals in Matching Markets**. *Proceedings of the 14th International Conference on Web and Internet Economics (WINE), 2018*.
Meena Jagadeesan* and Alexander Wei*.

Other Publications

3. **From Worst-Case to Average-Case Analysis: Accurate Latency Predictions for Key-Value Storage Engines**. *Proceedings of the ACM International Conference on Management of Data (SIGMOD), 2020 (2-Page Abstract)*. 1st Place at SIGMOD Student Research Competition.
   Meena Jagadeesan* and Garrett Tanzer*.
2. **Dyson's Partition Ranks and their Multiplicative Extensions**. *The Ramanujan Journal, Vol. 45, Issue 3, pp. 817–839, 2018*.
   (α-β) Elaine Hou and Meena Jagadeesan.
1. **Mobius Polynomials of Face Posets of Convex Polytopes**. *Communications in Algebra, Vol. 44, Issue 11, pp. 4945-4972, 2016*.
   Meena Jagadeesan and Susan Durst.

Manuscripts under Submission

3. **Safety vs. Performance: How Multi-Objective Learning Reduces Barriers to Market Entry**. .
   Meena Jagadeesan, Michael I. Jordan, and Jacob Steinhardt.
2. **Accounting for AI and Users Shaping One Another: The Role of Mathematical Models**. *Position Paper*.
   (α-β) Sarah Dean, Evan Dong, Meena Jagadeesan, and Liu Leqi.
1. **Incentivizing High-Quality Content in Online Recommender Systems**. .
   Xinyan Hu*, Meena Jagadeesan*, Michael I. Jordan, and Jacob Steinhardt.

Theses

1. **The Performance of Johnson-Lindenstrauss Transforms: Beyond the Classical Setting**. *Undergraduate Thesis (Harvard College)*. Awarded Hoopes Prize.
   Advised by Prof. Jelani Nelson.

Talks

- *INFORMS Annual Meeting, Learning in Online Platforms Session* (10/21/24): "Improved Bayes Risk Can Yield Reduced Social Welfare Under Competition".
- *INFORMS Annual Meeting, How Competition Can Disrupt Machine Learning* (10/20/24): "Safety vs. Performance: How Multi-Objective Learning Reduces Barriers to Market Entry".
- *Cornell ORIE Young Researchers Workshop* (10/9/24): "Safety vs. Performance: How Multi-Objective Learning Reduces Barriers to Market Entry".
- *Max Planck Institute Kaiserslautern, Next 10 in AI Series* (9/18/24): "Machine Learning Ecosystems of Self-Interested Agents".
- *ESIF-AIML* (8/14/24): "Impact of Decentralized Learning on Player Utilities in Stackelberg Games".
- *ESIF-AIML* (8/13/24): "Improved Bayes Risk Can Yield Reduced Social Welfare Under Competition".
- *FORC* (6/14/24): "Supply-Side Equilibria in Recommender Systems".
- *INFORMS Optimization Society Conference* (3/23/24): "Content Creator Incentives in Recommender Systems".
- *UC Berkeley Economics Department, Theory Lunch* (3/6/24): "How Machine Learning Models Disrupt Creator Competition".
- *Cornell Theory Seminar* (1/22/24): "Content Creator Incentives in Recommender Systems".
- *INFORMS Annual Meeting, Learning and Mechanism Design Session* (10/17/23): "Competition, Alignment, and Equilibria in Digital Marketplaces".
- *Microsoft Research New England ML Ideas Seminar* (8/14/23): "Competition between Model-Providers can Distort Social Welfare".
- *Brookings Center on Regulation and Markets Seminar on AI, Economics, and Public Policy.* (6/29/23):

"Examining Policy Implications of Machine Learning in Digital Marketplaces".

- *MIT Reading Group on Human and Machine Decisions* (6/26/23): "Improved Bayes Risk Can Yield Reduced Social Welfare Under Competition".
- *Stanford University Rising Stars Workshop in Management Science and Engineering* (5/2/23): "Supply-Side Equilibria in Recommender Systems".
- *INFORMS Annual Meeting, Responsible, Ethical, and Socially Aware Operations Session* (10/16/22): "Performative Power".
- *Northwestern CS Seminar & Institute for Data, Econometrics, Algorithms, and Learning (IDEAL) Seminar* (9/7/22): "Learning Equilibria in Matching Markets with Bandit Feedback".
- *Northwestern CS Seminar & Institute for Data, Econometrics, Algorithms, and Learning (IDEAL) Seminar* (9/6/22): "Machine Learning in Digital Marketplaces: Interactions between Learners, Consumers, and Producers".
- *ICML* (7/21/22): "Regret Minimization with Performative Feedback".
- *COLT* (7/3/22): "Inductive Bias of Multi-Channel Linear Convolutional Networks with Bounded Weight Norm".
- *INFORMS Revenue Management and Pricing (RMP) Workshop* (6/22/22): "Supply-Side Equilibria in Recommender Systems".
- *Workshop on Algorithms for Learning and Economics (WALE)* (6/16/22): "Regret Minimization with Performative Feedback".
- *Workshop on Algorithms for Learning and Economics (WALE)* (6/15/22): "Competition, Alignment, and Equilibria in Digital Marketplaces".
- *ITCS* (2/1/22): "Individual Fairness in Advertising Auctions through Inverse Proportionality".
- *ICML* (7/21/21): "Alternative Microfoundations for Strategic Classification".
- *FORC* (6/10/21): "Individual Fairness in Advertising Auctions through Inverse Proportionality".
- *Google Research Algorithms Seminar* (5/20/21): "Alternative Microfoundations for Strategic Classification".
- *MIT Algorithms & Complexity Seminar* (4/7/21): "Inductive Bias of Multi-Channel Linear Convolutional Networks with Bounded Weight Norm".
- *INFORMS Annual Meeting, Market Algorithms Session* (11/11/20): "Fairness in Advertising Auctions".
- *Microsoft Research MLO Group Seminar* (6/24/20): "Understanding Sparse Johnson-Lindenstrauss Transforms for Feature Hashing".
- *Algorithmic Game Theory Mentoring Workshop at ACM EC* (6/15/20): "Fairness in Advertising Auctions".
- *ACM FAT** (1/29/20): "Multi-Category Fairness in Sponsored Search Auctions".
- *NeurIPS* (12/12/19): "Understanding Sparse JL for Feature Hashing".
- *RANDOM* (9/21/19): "Simple Analysis of Sparse, Sign-Consistent JL".
- *University of Wisconsin-Madison Theory Seminar* (5/17/19): "Analyzing Johnson-Lindenstrauss Transforms".
- *WINE* (12/17/18): "Varying the Number of Signals in Matching Markets".
- *Workshop on Frontiers of Market Design at ACM EC* (6/22/18): "Varying the Number of Signals in Matching Markets".

Industry Experience

Microsoft Research — *Cambridge*
Research Intern — *Summers 2023 and 2024*

- Mentors: Nicole Immorlica and Brendan Lucier (Economics and Computation Group in MSR New England)

Microsoft Research *Redmond, WA*
Research Intern *Summer 2020*
- Mentors: Suriya Gunasekar and Ilya Razenshteyn (Machine Learning and Optimization Group in MSR AI)

Microsoft *San Francisco, CA*
Software Engineer/Program Manager Intern *Summer 2018*

Teaching

Guest Lecture in Cornell Networks and Markets Course *April 10th, 2024*
- 75 minute guest lecture on my research on how machine learning disrupts online marketplaces. I gave this guest lecture in CS 5854/ORIE 5138: Networks and Markets at Cornell Tech, taught by Professor Nikhil Garg.

Graduate Student Instructor for UC Berkeley Stat 157 *Jan. 2023 - May 2023*
- Teaching assistant for undergraduate-level course on Forecasting in the Statistics department at UC Berkeley, taught by Prof. Jacob Steinhardt.

Graduate Student Instructor for UC Berkeley CS 281A *Aug. 2021 - Dec. 2021*
- Teaching assistant for graduate-level introductory course on Statistical Learning Theory in the Computer Science department at UC Berkeley, taught by Prof. Moritz Hardt and Prof. Benjamin Recht.

Teaching Fellow for Harvard CS 61 *Sept. 2018 - Dec. 2018*
- Teaching assistant for Harvard's introductory systems programming class for computer science undergraduates, taught by Prof. Eddie Kohler. Awarded a Certification of Distinction in Teaching.

Service

External Service

Program Committee Member/Reviewer/Sub-Reviewer *2019-*
- *Conference reviewing:* ICML 2024, FORC 2024, ACM FAccT 2024, The Web Conference (WWW) 2024, SODA 2024, NeurIPS 2023, ICALP 2023, ICML 2023, ICLR 2023, AISTATS 2023, ICML 2022, ACM FAccT 2022, ICLR 2022, NeurIPS 2021, ICML 2021, ACM FAccT 2021, STACS 2021, ITCS 2021, SOSA 2021
- *Workshop reviewing:* AAAI 2024 EcoSys Workshop, MATCHUP 2022, NeurIPS 2021 Workshop on Strategic ML
- *Journal reviewing:* Management Science, Journal of AI Research

Co-organizer of a Session at the INFORMS 2024 Meeting *Oct 2024*
- I am co-organizing a session on "How Competition Can Disrupt Machine Learning" in the Revenue Management and Pricing Section at the INFORMS Annual Meeting. The session showcases 5 recent papers on this topic.

Mentor at Learning Theory Alliance Mentorship Workshop *Nov 2023*
- Served as a volunteer mentor at roundtable discussions at a virtual mentorship workshop focused on learning theory for undergraduate and graduate students.

Panelist in a NeurIPS 2022 Tutorial *Dec 2022*
- The NeurIPS 2022 tutorial, organized by Chara Podimata, focused on incentive-aware machine learning. I was one of five panelists in a 30 minute panel discussion on incentive-aware ML and the direction of the field.

University Service

Co-President of Women in CS and EE (WICSE) at UC Berkeley *2022-2023*
- WICSE is a community between UC Berkeley womxn graduate students and creating a welcoming and supportive environment for them throughout their graduate studies. I was one of the two co-presidents of this organization.
- *Responsibilities:* As a co-president, I led and worked with a board of 10 graduate student volunteers. We organized weekly community lunches, social events, a day-long outreach event for a local Girl Scouts troops, and an in-person conference for Stanford and Berkeley students.

Co-organized the Berkeley-Stanford Women in EECS Meetup *April 29th, 2023*
- The 9th annual research meetup for Stanford and Berkeley EECS PhD students took place at UC Berkeley. The meetup consisted of a faculty keynote speaker, panels with faculty and industry researchers, student spotlight talks, and a celebration of the 45th anniversary of UC Berkeley WICSE.

Co-organizer of Rec Sys + Society Meeting at UC Berkeley *2022-2023*
- The weekly lunch meeting brought together researchers across the Berkeley AI Research Lab who study the societal implications of recommender systems. Each week, a different speaker presented on a topic in this domain and led a discussion. I was one of two co-organizers for these lunch meetings.

Mentor for Undergrad Mentorship Program at UC Berkeley *2022-2023*

- Mentored two promising undergraduates from underrepresented groups to help them get started in pursuing a career in AI. Mentors provide general career and academic advice.

Student Member of UC Berkeley PhD Admissions Committee *2021-2022*

- Reviewed and evaluated applications to the UC Berkeley EECS PhD program directed to the AI Theory subfield.