

I study learning and strategic interaction in human–AI systems, developing game-theoretic and learning-theoretic frameworks to understand when cooperation, alignment, or collusion emerge. My work has been honored with a Joint Best Paper/Best Student Paper Award at the ACM Conference for Economics and Computation and has been featured in Quanta and Wired Magazines.

Education

University of Pennsylvania, Ph.D. Student in Computer and Information Sciences 2021 – Present
Advised by Aaron Roth and Michael Kearns. Supported by the IBM Research Fellowship.
Princeton University, A.B. 2019 Summa Cum Laude
Awarded the Outstanding Computer Science Senior Thesis Prize.

Working Papers

(*denotes author-contribution order; authorship is alphabetical otherwise)

Emergent Pluralistic Alignment via Competition

Natalie Collina, Surbhi Goel, Aaron Roth, Mirah Shi

Joint Human-AI Learning Dynamics: Prompt Engineering and Bandit Feedback

Kiarash Banihashem, Natalie Collina, Nicole Immerlica, Brendan Lucier, and Alex Slivkins

In Submission

[Breaking Algorithmic Collusion in Human-AI Ecosystems](#)

Submitted to ICLR 2026

Natalie Collina*, Eshwar Ram Arunachaleswaran, and Meena Jagadeesan

Accepted to the Algorithmic Collective Action Workshop, NeurIPS 2025

[Emergent Alignment via Competition.](#)

Submitted to ICLR 2026

Natalie Collina, Surbhi Goel, Aaron Roth, Emily Ryu, and Mirah Shi

Accepted to the Algorithmic Collective Action Workshop, NeurIPS 2025

[The Value of Ambiguous Commitments in Multi-Follower Games](#)

R&R, Games and Economic Behavior

Natalie Collina, Rabanus Derr, and Aaron Roth

[How to Find Fantastic Papers: Self-Rankings as a Powerful Predictor of Scientific Impact Beyond Peer-Review](#)

Buxin Su*, Natalie Collina, Garrett Wen, Didong Li, Kyunghyun Cho, Jianqing Fan, Bingxin Zhao, Weijie Su

Conference Publications

[Collaborative Prediction: Tractable Information Aggregation via Agreement](#)

SODA 2026

Natalie Collina, Ira Globus-Harris, Surbhi Goel, Varun Gupta, Aaron Roth, and Mirah Shi

Spotlight presentation at the EC 2025 Workshop on Human-AI Collaboration

Spotlight presentation at the 2025 TTIC Workshop on Incentives for Collaborative Learning and Data Sharing

[Swap Regret and Correlated Equilibria Beyond Normal-Form Games](#)

EC 2025

Eshwar Ram Arunachaleswaran, Natalie Collina, Yishay Mansour, Mehryar Mohri, Jon Schneider, and Balasubramanian Sivan

Best Paper and Best Paper with a Student Lead Author

[Learning to Play Against Unknown Opponents](#)

EC 2025

Eshwar Ram Arunachaleswaran, Natalie Collina, and Jon Schneider

[Tractable Agreement Protocols](#)

STOC 2025

Natalie Collina, Surbhi Goel, Varun Gupta, and Aaron Roth

Also accepted to the Pluralistic Alignment Workshop, NeurIPS 2024

[Algorithmic Collusion Without Threats](#)

ITCS 2025

Eshwar Ram Arunachaleswaran, Natalie Collina, Sampath Kannan, Aaron Roth, and Juba Ziani

Also accepted to CSLAW 2025, non-archival track

Featured in [Quanta](#) and [Wired](#)

[An Elementary Predictor Obtaining \$2\sqrt{T}\$ Distance to Calibration](#)

SODA 2025

Eshwar Ran Arunachaleswaran, Natalie Collina, Aaron Roth, and Mirah Shi
Also accepted to the OPT24 Workshop, NeurIPS 2024

[Repeated Contracting with Multiple Non-Myopic Agents: Policy Regret and Limited Liability](#) **EC 2024**

Natalie Collina, Varun Gupta, and Aaron Roth.
Also accepted to the 2024 ESIF Economics and AI+ML Meeting.

[Pareto-Optimal Algorithms for Learning in Repeated Games](#) **EC 2024**

Eshwar Ram Arunachaleswaran, Natalie Collina, and Jon Schneider.
Also accepted to the 2024 ESIF Economics and AI+ML Meeting.

[Efficient Prior-Free Mechanisms for No-Regret Agents](#) **EC 2024**

Natalie Collina, Aaron Roth, and Han Shao.

[Efficient Stackelberg Strategies for Finitely Repeated Games](#) **AAMAS 2023**

Natalie Collina*, Eshwar Ram Arunachaleswaran, and Michael Kearns.

[Dynamic Weighted Matching with Heterogenous Arrival and Departure Rates](#) **WINE 2020**

Natalie Collina, Nicole Immorlica, Kevin Leyton-Brown, Brendan Lucier, and Neil Newman.

[On the \(in\)-approximability of Bayesian Mechanism Design for a Combinatorial Buyer](#) **EC 2020**

Natalie Collina and Matt Weinberg.

Journal Publications

[The ICML 2023 Ranking Experiment: Examining Author Self-Assessment in ML/AI Peer Review](#)

Journal of the American Statistical Association, Discussion Paper

Buxin Su*, Jiayao Zhang, Natalie Collina, Yuling Yan, Didong Li, Jianqing Fan, Aaron Roth, and Weijie J. Su
Also accepted to the Workshop on Incentives in Academia, EC 2024.

Awards & Honors

Best Paper with a Student Lead Author, EC 2025

Best Paper Award, EC 2025

IBM PhD Fellowship (2024-2025)

Rising Star in EECS, MIT (2024)

[Gift from Amazon AWS in Trustworthy AI](#) (2023)

NSF-GRFP Honorable Mention (2020)

Outstanding Computer Science Senior Thesis Prize (2019)

Sigma Xi Book Award for Outstanding Undergraduate Research (2019)

Work Experience

Microsoft Research Intern, Economics and Computation Group

Summer 2025

Google Software Engineer

Fall 2019 – Spring 2021

Microsoft Research Intern, Economics and Computation Group

Summer 2019

Amazon Web Services Software Development Intern

Summer 2018

Selected Talks

Emergent Alignment via Competition

UK AISI Alignment Conference

2025 Cornell Young Researcher's Workshop

2026 Simons Collaboration on the Theory of Algorithmic Fairness (upcoming)

Learning and Incentives in Human-AI Collaboration

2025 MIT Algorithms and Complexity Seminar

2025 Northeastern Theory Seminar

2025 CMU Theory Lunch

2025 NYU Theory Seminar

2025 Rational Intelligence Seminar Series

2026 Harvard EconCS Seminar (upcoming)

Swap Regret and Correlated Equilibria Beyond Normal-Form Games

2025 ACM Conference on Economics and Computation (EC)
2025 Cornell Theory Seminar
2025 JHU Theory Seminar
2025 TCS+ Seminar

Repeated AI Interaction: How Agents Learn and Strategize over Time

2025 CHAI Workshop, Session on Cooperation and Coordination

Collaborative Prediction: Tractable Information Aggregation via Agreement

2025 Caltech RSRG/FALCON Seminar
2025 AWS Responsible AI Science Meeting
2025 EC Workshop on Human-AI Collaboration

Algorithmic Collusion Without Threats

2024 Innovations in Theoretical Computer Science (ITCS)
2025 Computer Science and Law Conference (CSLAW)

Tractable Agreement Protocols

2024 Northwestern/TTIC Junior Theorists Workshop
2024 JHU Theory Seminar
2024 AWS Responsible AI Science Meeting
2024 [FOCS Workshop on Calibration](#)
2024 TOC4Fairness Seminar
2025 NYC Student Theory Day
2025 Symposium on Theory of Computing (STOC)

Learning to Play Against Unknown Opponents

2024 INRIA Paris Optimization Seminar
2024 Princeton Mechanism Design Lunch
2025 ACM Conference on Economics and Computation (EC)

Pareto-Optimal Algorithms for Learning in Repeated Games

2024 Workshop on Algorithms, Learning and Economics (WALE)
2024 ACM Conference on Economics and Computation (EC)
2024 ESIF Economics and AI+ML Meeting

Repeated Contracting with Multiple Non-Myopic Agents: Policy Regret and Limited Liability

2024 EnCORE Seminar (Best Presentation Award)
2024 ACM Conference on Economics and Computation (EC)
2024 ESIF Economics and AI+ML Meeting

Efficient Prior-Free Mechanisms for No-Regret Agents

2024 ACM Conference on Economics and Computation (EC)
2024 INFORMS Meeting

Efficient Stackelberg Strategies for Finitely Repeated Games

2023 Conference on Autonomous Agents and Multi Agent Systems (AAMAS)

Dynamic Weighted Matching with Heterogeneous Arrival and Departure Rates

[2020 Conference on Web, Internet and Network Economics \(WINE\)](#)

On the (in)-approximability of Bayesian Mechanism Design for a Combinatorial Buyer

[2020 ACM Conference on Economics and Computation \(EC\)](#)

Leadership and Mentorship

Head Teaching Assistant, Advanced Topics in Machine Learning (CIS 6200)
Co-leader, [Economics and Computation Gender Inclusion Workshop](#)

Fall 2025
EC 2024, EC 2025

Co-founder and Leader, [University of Pennsylvania Theory Seminar](#)
Head Teaching Assistant, Advanced Topics in Machine Learning (CIS 6200)
Head Teaching Assistant, Algorithmic Game Theory (NETS 4120)
Teaching Assistant, New Horizons in Theoretical Computer Science
Head Teaching Assistant, Introduction to Algorithms (CIS 3200)

Fall 2022 – Fall 2025
Fall 2024
Spring 2023
Summer 2022
Fall 2021

Service

PC Reviewer: WINE 2025, EC 2025, FAccT 2022
Subreviewer: SODA 2026, STOC 2025, FAccT 2024, SODA 2024, ITCS 2023, EC 2021.
Student Volunteer: EC 2025, CCC 2022.

Other Talks

A General Reduction from No-Regret to No-Swap Regret
Lecture in CIS 6200, University of Pennsylvania.