

Maryam Bahrani

Mechanism Design and Blockchain Economics Researcher

maryam.bahrani.14@gmail.com | mbahrani.net | Google Scholar | Vancouver, BC, Canada

Research Interests

Mechanism design; algorithmic game theory; blockchain economics; transaction-fee and compute markets; consensus incentives; adversarial procurement; decentralized systems.

Appointments and Industry Experience

Ritual (Origin Research) — *Mechanism Design Researcher* Jan. 2024–Present
Research on incentive and market design for decentralized computation, including heterogeneous fee markets, prover procurement, capacity signaling, consensus incentives, and permissionless participation.

Andreessen Horowitz (a16z crypto) New York, NY
Research Analyst Jul. 2023–Jan. 2024
Research Intern Jun. 2022–Aug. 2022
Conducted research in blockchain mechanism design and algorithmic game theory, and collaborated with portfolio companies on technical protocol-economics questions.

Jane Street Capital New York, NY
Quantitative Trader Aug. 2019–Apr. 2020
Quantitative Trading Intern Jun. 2018–Aug. 2018
Worked in quantitative trading across a full-time role and a prior summer internship.

University of Washington — *Research Visitor* Jun. 2019–Aug. 2019
Research on online algorithms and sequential decision-making under uncertainty, centered on the matroid secretary problem.

Princeton University — *Research Assistant* Summers 2016 and 2017
Research in algorithmic game theory, social networks, analytic combinatorics, and graph theory.

Education

Columbia University New York, NY
M.S. in Computer Science, GPA: 3.98 Sep. 2020–Dec. 2022

- Advised by Prof. Tim Roughgarden; focus on algorithmic game theory.

Princeton University Princeton, NJ
B.S.E. in Computer Science; Minor in Applied Mathematics Sep. 2015–May 2019

- Departmental GPA: 4.00; cumulative GPA: 3.89.
- Summa Cum Laude, Phi Beta Kappa, Tau Beta Pi.
- Outstanding Computer Science Independent Work Prize; Sigma Xi Book Award; Student Teaching Award; CRA Outstanding Undergraduate Research Award Finalist.

The Hotchkiss School, Lakeville, CT High School Diploma, 2015

Peer-Reviewed Publications

Reverse chronological. Authors are listed alphabetically where customary.

1. **M. Bahrani**, M. Neuder, and S. M. Weinberg. “Selfish Mining Under General Stochastic Rewards.” *Advances in Financial Technologies (AFT)*, 2025. DOI.
2. **M. Bahrani**, P. Garimidi, and T. Roughgarden. “Transaction Fee Mechanism Design in a Post-MEV World.” *Advances in Financial Technologies (AFT)*, 2024. DOI.
3. **M. Bahrani**, P. Garimidi, and T. Roughgarden. “Centralization in Block-Building and Proposer-Builder Separation.” *Financial Cryptography and Data Security (FC)*, 2024. DOI.
4. **M. Bahrani** and S. M. Weinberg. “Undetectable Selfish Mining.” *ACM Conference on Economics and Computation (EC)*, 2024. DOI.
5. **M. Bahrani**, P. Garimidi, and T. Roughgarden. “When Bidders Are DAOs.” *Advances in Financial Technologies (AFT)*, 2023. DOI.
6. **M. Bahrani**, H. Beyhaghi, S. Singla, and S. M. Weinberg. “Formal Barriers to Simple Algorithms for the Matroid Secretary Problem.” *Conference on Web and Internet Economics (WINE)*, 2021. DOI.
7. **M. Bahrani**, N. Immorlica, D. Mohan, and S. M. Weinberg. “Asynchronous Majority Dynamics in Preferential Attachment Trees.” *International Colloquium on Automata, Languages, and Programming (ICALP)*, 2020. DOI.
8. **M. Bahrani** and J. Lumbroso. “Enumerations, Forbidden Subgraph Characterizations, and the Split-Decomposition.” *Electronic Journal of Combinatorics*, 2018. DOI.

9. **M. Bahrani** and J. Lumbroso. “Split-Decomposition Trees with Prime Nodes: Enumeration and Random Generation of Cactus Graphs.” *Analytic Algorithmics and Combinatorics (ANALCO)*, 2018. DOI.

Preprints, Manuscripts, and Working Papers

1. S. Allen et al. “Crypto x AI, AI x Crypto: A Survey.” 2026. arXiv:2606.13892.
2. **M. Bahrani**, M. Neuder, and S. M. Weinberg. “Adversarial Procurement in Blockchains.” 2026. arXiv:2605.05559.
3. **M. Bahrani**, M. Kelkar, E. N. Tas, and T. Roughgarden. “Designing Incentives for Responsive Consensus Protocols.” Preprint, 2026.
4. **M. Bahrani**, M. Neuder, and S. M. Weinberg. “Attester Timing Games.” Working paper.
5. K. Alpturer, **M. Bahrani**, and S. M. Weinberg. “A Theory of Randomness Beacons for Consensus.” Working paper.
6. **M. Bahrani** and N. Durvasula. “Resonance: Transaction Fees for Heterogeneous Computation.” 2024. arXiv.

Workshop Papers and Posters

- **M. Bahrani** and N. Durvasula. “Beyond Multidimensional Fee Markets.” Workshop on Blockchains and Decentralized Finance at EC, 2024.
- **M. Bahrani**. “Matroid Secretary in Limited Computational Models.” TCS Women Poster Session at STOC, 2019.

Selected Technical Writing

- M. Neuder and **M. Bahrani**. “Proprietary AMMs and Ethereum.” Ethereum Research, 2026.
- **M. Bahrani** and M. Neuder. “Capacity Oracles.” Ethereum Research, 2026.
- **M. Bahrani** and M. Neuder. “Application-Controlled Execution: A Case Study on Cancel Prioritization.” Ethereum Research, 2026.
- **M. Bahrani** and M. Neuder. “On Ethereum Prover Market Design.” Ethereum Research, 2025.
- **M. Bahrani** and M. Neuder. “On Incentivizing Anonymous Participation.” Ethereum Research, 2025.
- N. Durvasula and **M. Bahrani**. “Resonance: A Market Mechanism for Heterogeneous Computation” and “The Resonance Mechanism and Its Properties.” Ritual, 2024.

Selected Talks

- “Lotteries vs. Auctions: Prover Market Design for Ethereum’s ZK Endgame.” Ethereum Community Conference (EthCC), 2025. Video.
- “Beyond Multidimensional Fee Markets.” Devcon SEA, 2024. Video.
- “Transaction Fee Mechanism Design with Active Block Producers.” ETHconomics 2, Devconnect Istanbul, 2023. Video.
- “Statistically Undetectable Selfish Mining.” Invited talk, Chaincode Research Seminar, 2023. Seminar page.
- “Formal Barriers to Simple Algorithms for the Matroid Secretary Problem.” WINE, 2021. Video.
- “Asynchronous Majority Dynamics in Preferential Attachment Trees.” ICALP, 2020. Video; University of Washington Theory Symposium, 2019.
- “The Transversal Matroid Secretary Problem.” Princeton Mechanism Design Reading Group, 2018.

Professional Service

- Program Committee: ACM Conference on Economics and Computation (EC), 2023, 2024, 2025.
- Program Committee: Advances in Financial Technologies (AFT), 2023, 2024.
- Program Committee: Workshop on Decentralized Finance, 2024.
- Reviewer: *Games and Economic Behavior*, 2024.
- External Reviewer: SODA, 2023, 2024; ITCS, 2021, 2022; ESA, 2019.

Teaching and Mentorship

- Graduate Teaching Assistant, Foundations of Blockchains, Columbia University, Fall 2021.
- Teaching Assistant, New Horizons in Theoretical Computer Science, TTIC, Summer 2020.
- Undergraduate Teaching Assistant, Reasoning about Computation, Princeton University, five semesters, 2016–2018.
- Undergraduate Teaching Assistant, Graduate Advanced Algorithms, Princeton University, Fall 2017.
- Grader, Economics and Computation and Theory of Algorithms, Princeton University, 2018–2019.
- Peer Tutor in discrete mathematics, data structures and algorithms, and programming systems, Princeton University, 2016–2018.
- Peer Mentor for incoming students, Princeton University Mentorship Program, 2016–2019.

Affiliations and Activities

Member, Initiative for CryptoCurrencies and Contracts (IC3); member, Columbia Center for Digital Finance and Technologies (2021, 2022); invited participant, Workshop on Algorithms for Learning and Economics (WALE, 2026); participant, MSRI Mathematics of Machine Learning Workshop (2019).