

HEDYEH BEYHAGHI

University of Massachusetts Amherst

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RESEARCH INTERESTS

Algorithmic Game Theory and Mechanism Design, Algorithms under Uncertainty, Machine Learning Theory

EDUCATION

Ph.D. in Computer Science. Cornell University. 2019

Theory of Computation Concentration

Artificial Intelligence Concentration

Applied Mathematics Concentration

Thesis: *Approximately-Optimal Mechanisms in Auction Design, Search Theory, and Matching Markets.*

Advisor: Éva Tardos.

Thesis Committee: Robert Kleinberg, Joseph Halpern, S. Matthew Weinberg

M.S. in Computer Science. Cornell University. 2017

B.S. in Computer Engineering. Sharif University of Technology. 2012

APPOINTMENTS

Assistant Professor. Sept. 2024 – present

University of Massachusetts Amherst.

Manning College of Information & Computer Sciences.

Post-doctoral Research Associate. 2022 – 2024

Carnegie Mellon University.

Machine Learning Department, School of Computer Science.

Supervisor: Maria-Florina Balcan.

Post-doctoral Research Fellow. 2019 – 2021

Toyota Technological Institute at Chicago and Northwestern University.

Supervisors: Avrim Blum, Jason Hartline, Samir Khuller.

RESEARCH VISITS AND INTERNSHIPS

Ivy-Plus Exchange Scholar. Princeton University. 2017 – 2019

Host: Matt Weinberg.

Visiting Student. Microsoft Research, New England. April 2019

Host: Brendan Lucier.

Intern. Google, New York. Summer 2017

Visiting Scholar. UC Berkeley. Fall 2015

Semester on Economics and Computation at the Simons Institute for the theory of computing.

MENTORING

Ph.D. Advisees. current

Amirmahdi Mirfakhhar

JOURNAL PAPERS

Maria-Florina Balcan, Hedyeh Beyhaghi.

New Guarantees for Learning Revenue Maximizing Menus of Lotteries and Two-Part Tariffs.

Transactions on Machine Learning Research, 2024.

Hedyeh Beyhaghi, Negin Golrezaei, Renato Paes Leme, Martin Pál, Balasubramanian Sivan.

Improved Revenue Bounds for Posted-Price and Second-Price Mechanisms.

Operations Research, Volume 69, Issue 1, pp, 297 - 314, 2021.

REFEREED CONFERENCE PAPERS

Hedyeh Beyhaghi, Linda Cai.

Pandora's Problem with Nonobligatory Inspection: Optimal Structure and a PTAS.

In Proceedings of the 55th Annual ACM Symposium on Theory of Computing (STOC), 2023.

Hedyeh Beyhaghi, Modibo Camara, Jason Hartline, Aleck Johnsen, Sheng Long.

Screening with Disadvantaged Agents.

In Proceedings of the 4th Annual Symposium on Foundations of Responsible Computing (FORC), 2023.

Saba Ahmadi, Hedyeh Beyhaghi, Avrim Blum, Keziah Naggita.

Setting Fair Incentives to Maximize Improvement.

In Proceedings of the 4th Annual Symposium on Foundations of Responsible Computing (FORC), 2023.

Saba Ahmadi, Hedyeh Beyhaghi, Avrim Blum, Keziah Naggita.

On classification of strategic agents who can both game and improve.

In Proceedings of the 3rd Annual Symposium on Foundations of Responsible Computing (FORC), 2022.

Maryam Bahrani, Hedyeh Beyhaghi, Sahil Singla, S. Matthew Weinberg.

Formal Barriers to Simple Algorithms for the Matroid Secretary Problem.

In Proceedings of the 17th Conference on Web and Internet Economics (WINE), 2021.

Saba Ahmadi, Hedyeh Beyhaghi, Avrim Blum, Keziah Naggita.

The Strategic Perceptron.

In Proceedings of the 22nd ACM Conference on Economics and Computation (EC), 2021.

Hedyeh Beyhaghi, Éva Tardos.

Randomness and Fairness in Two-Sided Matching with Limited Interviews.

In Proceedings of the 12th Innovations in Theoretical Computer Science (ITCS), 2021.

Hedyeh Beyhaghi, S. Matthew Weinberg.

Optimal (and Benchmark-Optimal) Competition Complexity for Additive Buyers over Independent Items.

In Proceedings of the 51st ACM Symposium on Theory of Computing (STOC), 2019.

Hedyeh Beyhaghi, Robert Kleinberg.

Pandora's Problem with Nonobligatory Inspection.

In Proceedings of the 20th ACM conference on Economics and Computation (EC), 2019.

Hedyeh Beyhaghi, Éva Tardos, Daniela Saban.

Effect of Selfish Choices in Deferred Acceptance with Short Lists.

Accepted to the 4th International Workshop on Matching Under Preferences (Match-Up), 2017.

Hedyeh Beyhaghi, Éva Tardos, Nishanth Dikkala.

Effect of Strategic Grading and Early Offers in Matching Markets.

In Proceedings of the 8th International Symposium on Algorithmic Game Theory (SAGT), 2015.

Hedyeh Beyhaghi, Zahra Fahmi, Mohammad Amin Fazli, Jafar Habibi, Pooya Jalaly, Mohammad Ali Safari.

Naturality of Network Creation Games, Measurement and Analysis.

In Proceedings of the 2012 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM), 2012.

SURVEY PAPER

Hedyeh Beyhaghi, Linda Cai.

Recent Developments in Pandora's Box Problem: Variants and Applications.

ACM SIGecom Exchanges Vol. 21.1.

TEACHING EXPERIENCE

Instructor

Advanced Algorithms (COMPSCI 611).

Spring 2025

UMass Amherst.

Guest Lecturer

Strategic Classification and the Strategic Perceptron (two lectures)

Spring 2023

Carnegie Mellon University course on Foundations of Learning, Game Theory, and Their Connections.

Strategic Classification and the Strategic Perceptron (one lecture)

Fall 2022

Carnegie Mellon University course on Advanced Topics in Machine Learning Theory.

Teaching Assistant

The Structure of Information Networks.

Spring 2018

Cornell University, Instructor: Jon Kleinberg.

Networks.

Fall 2016

Cornell University, Instructors: David Easley, Éva Tardos.

Networks.

Fall 2012

Cornell University, Instructors: Jon Kleinberg, Éva Tardos.

Design and Analysis of Algorithms.

Fall 2010, Spring 2011

Sharif University of Technology.

Discrete Structures.

Spring 2010, Spring 2011

Sharif University of Technology.

Signals and Systems.

Spring 2011

Sharif University of Technology.

AWARDS, FELLOWSHIPS, AND DISTINCTIONS

Manning College of Information & Computer Sciences Dean Fellowship. University of Massachusetts Amherst. *2024-2027*

Post-doctoral Research Fellowship. Toyota Technological Institute at Chicago. *2019*

Post-doctoral Research Fellowship. Northwestern University. *2019*

Ranked 3rd in the National Scientific Olympiad in Computer Engineering, Iran. *2012*

Ranked 1st, 1st, 2nd, and 5th in the Nationwide Graduate Entrance Exam in Algorithms and Computation, Software Engineering, Artificial Intelligence, and Computer Architecture, respectively, Iran. *2012*

Recognized as an exceptionally talented B.Sc. student and been granted an unconditional offer of admission to the M.Sc. program in Computer Engineering at Sharif University of Technology. *2011*

INVITED TALKS / POSTERS

Decision Making under Uncertainty and Strategic Behavior

- University of Alberta, 2024
- Boston College, 2024
- UMass Amherst, 2024
- CMU Theory Lunch, 2024

Pandora's Problem with Nonobligatory Inspection: Optimal Structure and a PTAS

- Vancouver School of Economics at the University of British Columbia, 2024
- CMU Theory Lunch, 2023
- INFORMS, 2023

On Classification of Strategic Agents Who Can Both Game and Improve

- Symposium on Foundations of Responsible Computing, 2022
- NeurIPS workshop, 2021 (Poster)

The Strategic Perceptron

- NeurIPS workshop, 2021 (Poster)

Optimal (and Benchmark-Optimal) Competition Complexity for Additive Buyers over Independent Items

- Google, Mountain View, 2021
- Toyota Technological Institute at Chicago, 2019
- Symposium on Theory of Computing, 2019

Pandora's Problem with Nonobligatory Inspection

- Midwest Theory Day, 2019
- INFORMS, 2019
- Conference on Economics and Computation, 2019

Improved Revenue Bounds for Posted-Price and Second-Price Mechanisms

- Microsoft, 2019
- Conference on Economics and Computation, 2018 (Poster)

Randomness and Fairness in Two-Sided Matching with Limited Interviews

- Northwestern University, 2019
- Princeton University, 2017

Effect of Selfish Choices in Deferred Acceptance with Short Lists

- MATCH-UP Workshop, 2017
- New York Computer Science and Economics Day, 2017 (Poster)
- INFORMS, 2017

Effect of Strategic Grading and Early Offers in Matching Markets

- Symposium on Algorithmic Game Theory, 2015

OUTREACH

Reviewer for Early Research Scholars Program (ERSP) Applications, UMass Amherst, A program designed to provide structured research opportunities for early undergraduate students, particularly those from underrepresented backgrounds in computing. *2024*

Team Mentor. OurCS, Carnegie Mellon University. A research-focused workshop aiming to improve gender balance in computing research. *2022*

Mentor. Economics and Computation (EC) Mentoring Workshop *2020-2022*

Member. Research Inclusion Social Event (RISE) at Princeton University, meetings on diversity and inclusion issues in Computer Science. *2017-2019*

SERVICE

Program Committee.

ACM Conference on Economics and Computation (EC). *2025*

Program Committee.

ACM Conference on Equity and Access in Algorithms, Mechanisms, and Optimization (EAAMO). *2024*

Program Committee.

ACM Conference on Economics and Computation (EC). *2023*

Workshop on Learning with Strategic Agents (LSA)

at International Conference on Autonomous Agents and Multiagent Systems (AAMAS). *2022*

ACM Conference on Economics and Computation (EC). *2022*

Conference on Web and Internet Economics (WINE). *2021*

ACM Conference on Economics and Computation (EC). *2021*

ACM Conference on Economics and Computation (EC). *2020*

Journal Referee.

Management Science. *2021*

Mathematics of Operations Research. *2021*

Games and Economic Behavior. *2020*

Operations Research. *2020*

Conference External Reviewer.

ACM Symposium on Theory of Computing (STOC). *2025*

ACM-SIAM Symposium on Discrete Algorithms (SODA). *2024*

ACM-SIAM Symposium on Discrete Algorithms (SODA). *2023*

Innovations in Theoretical Computer Science (ITCS). *2022*

ACM-SIAM Symposium on Discrete Algorithms (SODA). *2022*

Innovations in Theoretical Computer Science (ITCS). *2021*

ACM-SIAM Symposium on Discrete Algorithms (SODA). *2021*

ACM-SIAM Symposium on Discrete Algorithms (SODA). *2020*

International Conference on Distributed Artificial Intelligence (DAI). *2019*

European Symposium on Algorithms (ESA). *2019*

Conference on Web and Internet Economics (WINE). *2019*

ACM Conference on Economics and Computation (EC). *2019*

Innovations in Theoretical Computer Science (ITCS). *2019*

Conference on Web and Internet Economics (WINE). *2018*

ACM Conference on Economics and Computation (EC). *2018*

Member. PhD Admission Committee, UMass Amherst CS. *2024*

Co-organizer. Seminal Theoretical research in Economics, AI and Machine learning (STEAM) reading group, Carnegie Mellon University. *2022-2023*

Talk Award Committee. TTIC Student Workshop. *2021*

Co-organizer. Junior Theorists Workshop, Northwestern University CS. *2020*

Member. PhD Admission Committee, Northwestern University CS. *2020*

Member. Faculty Recruiting Grad Committee, Princeton University CS. *2019*