HEDYEH BEYHAGHI

Carnegie Mellon University
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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

Post-doctoral Research Associate. *2022 – present*
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.

JOURNAL PAPERS

Maria-Florina Balcan, Hedyeh Beyhaghi.
New Guarantees for Learning Revenue Maximizing Menus of Lotteries and Two-Part Tariffs.
To appear in 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

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

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

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

- 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
- New York Computer Science and Economics Day, 2014 (Poster)

OUTREACH

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). *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-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*

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*

REFERENCES

Maria-Florina Balcan
Cadence Design Systems Professor of Computer Science
School of Computer Science (MLD and CSD)
Carnegie Mellon University

Avrim Blum
Professor and Chief Academic Officer
Toyota Technological Institute at Chicago (TTIC)

Eva Tardos
Jacob Gould Schurman Professor of Computer Science, Department Chair
Cornell University

S. Matthew Weinberg
Associate Professor of Computer Science
Princeton University