

# HEDYEH BEYHAGHI

Carnegie Mellon University

Email: [hedyeh@cmu.edu](mailto:hedyeh@cmu.edu)

<https://hedyehbeyhaghi.github.io/>

## RESEARCH INTERESTS

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

## EDUCATION

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

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

Advisor: Éva Tardos

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

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

## APPOINTMENTS

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**Post-doctoral Research Associate.**

Carnegie Mellon University.

2022 –

Supervisor: Maria-Florina Balcan.

**Post-doctoral Research Fellow.**

Toyota Technological Institute at Chicago and Northwestern University.

2019 – 2021

Supervisors: Avrim Blum, Jason Hartline, Samir Khuller.

## RESEARCH VISITS AND INTERNSHIPS

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**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 theory of computing.

## SERVICE

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**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

<b>Talk Award Committee.</b> TTIC Student Workshop.	2021
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<b>Co-organizer.</b> Junior Theorists Workshop, Northwestern University CS.	2020
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<b>Member.</b> PhD Admission Committee, Northwestern University CS.	2020
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<b>Member.</b> Faculty Recruiting Grad Committee, Princeton University CS.	2019
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## OUTREACH

<b>Team Mentor.</b> OurCS, Carnegie Mellon University, a research-focused workshop aiming to improve gender balance in computing research.	2022
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<b>Mentor.</b> Economics and Computation (EC) Mentoring Workshop	2020-2022
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<b>Panelist and Regular Attendee.</b> Research Inclusion Social Event (RISE) at Princeton University, meetings on diversity and inclusion issues in Computer Science.	2019-2021
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## AWARDS, FELLOWSHIPS, AND DISTINCTIONS

Post-doctoral Research Fellowship. Toyota Technological Institute at Chicago.	2020
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Post-doctoral Research Fellowship. Northwestern University.	2019
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Ranked 3rd in National Scientific Olympiad in Computer Engineering, Iran.	2012
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Ranked 1st, 1st, 2nd, and 5th in Nationwide Graduate Entrance Exam in Algorithms and Computation, Software Engineering, Artificial Intelligence, and Computer Architecture, respectively, Iran.	2012
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Recognized as an exceptional talented B.Sc. student and been granted unconditional offer of admission to the M.Sc. program in Computer Engineering at Sharif University of Technology.	2011
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## WORKING PAPERS

Maria-Florina Balcan, Hedyeh Beyhaghi.

**Learning Revenue Maximizing Menus of Lotteries and Two-Part Tariffs.**

In submission, 2023.

## JOURNAL PAPER

Hedyeh Beyhaghi, Negin Golrezaei, Renato Paes Leme, Martin Pál, Balasubramanian Sivan.  
**Improved Revenue Bounds for Posted-Price and Second-Price Mechanisms.**  
Operations Research, 2021.

## REFEREED CONFERENCE PAPERS

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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

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Hedyeh Beyhaghi, Linda Cai.

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

ACM SIGecom Exchanges Vol. 21.1.

## INVITED TALKS / POSTERS

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### **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)

### **Matching Market 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)

## TEACHING EXPERIENCE

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### **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)	<i>Fall 2022</i>
Carnegie Mellon University course on Advanced Topics in Machine Learning Theory.	
<b>Teaching Assistant</b>	
<b>The Structure of Information Networks.</b>	<i>Spring 2018</i>
Cornell University, Instructor: Jon Kleinberg.	
<b>Networks.</b>	<i>Fall 2016</i>
Cornell University, Instructors: David Easley, Éva Tardos.	
<b>Networks.</b>	<i>Fall 2012</i>
Cornell University, Instructors: Jon Kleinberg, Éva Tardos.	
<b>Design and Analysis of Algorithms.</b>	<i>Fall 2010, Spring 2011</i>
Sharif University of Technology.	
<b>Discrete Structures.</b>	<i>Spring 2010, Spring 2011</i>
Sharif University of Technology.	
<b>Signals and Systems.</b>	<i>Spring 2011</i>
Sharif University of Technology.	