

# DANIEL HALPERN

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## EDUCATION

### Harvard University

Ph.D. in Computer Science

- Advisor: Ariel Procaccia

Cambridge, MA

Aug. 2020–Present

### University of Toronto

B.Sc. in Computer Science with High Distinction

- Major GPA: 4.0/4.0, Cumulative GPA: 3.96/4.0

Toronto, ON

Sep. 2016–Jun. 2020

## SELECTED HONORS AND AWARDS

- Siebel Scholarship 2024
- NSF Graduate Research Fellowship 2021
- University of Toronto Computer Science Undergraduate Research Award 2020
- Harold Willet Stewart Memorial Scholarship 2020
- Anna And Alex Beverly Memorial Fellowship 2020
- Samuel Beatty In Course Scholarship 2019
- C. L. Burton Scholarship For Mathematics and Physical Sciences 2019
- Dr. James A. & Connie P. Dickson Scholarship in Science & Mathematics 2018
- Alan Milne McCombie Scholarship 2017
- University of Toronto President's Scholars of Excellence Program 2016

## JOURNAL ARTICLES

### Published

1. A. Berinsky, D. Halpern, J. Y. Halpern, A. Jadbabaie, E. Mossel, A. D. Procaccia, and M. Revel. Tracking Truth in Liquid Democracy. In *Management Science (MS)*. Forthcoming.

### Under Submission

1. G. Benadè, D. Halpern, and A. Psomas. Dynamic Fair Division with Partial Information. Under Minor Revision at *Operations Research (OR)*.

## CONFERENCE PUBLICATIONS

19. L. Ge, D. Halpern, E. Micha, A. D. Procaccia, I. Shapira, Y. Vorobeychik, and J. Wu. Axioms for AI Alignment from Human Feedback. In *Proceedings of the 38th Conference on Neural Information Processing Systems (NeurIPS)*, 2024.  
★ **Spotlight Presentation**
18. D. Halpern, S. Hossain, and J. Tucker-Foltz. Computing Voting Rules with Elicited Incomplete Votes. In *Proceedings of the 25th ACM Conference on Economics and Computation (EC)*, 2024.
17. G. Benadè, D. Halpern, A. Psomas, and P. Verma. On the Existence of Envy-Free Allocations Beyond Additive Valuations. In *Proceedings of the 25th ACM Conference on Economics and Computation (EC)*, 2024.
16. S. Ebadian, D. Halpern, and E. Micha. Metric Distortion with Elicited Pairwise Comparisons. In *Proceedings of the 33rd International Joint Conference on Artificial Intelligence (IJCAI)*, 2024.
15. F. Baumann, D. Halpern, I. Rahwan, I. Shapira, A. D. Procaccia, and M. Wüthrich. Optimal Engagement-Diversity Tradeoffs in Social Media. In *Proceedings of the 33rd ACM Web Conference (WWW)*, 2024.
14. D. Halpern, R. Li, and A. D. Procaccia. Strategyproof Voting under Correlated Beliefs. In *Proceedings of the 37th Conference on Neural Information Processing Systems (NeurIPS)*, 2023.
13. B. Flanigan, D. Halpern, and A. Psomas. Smoothed Analysis of Social Choice Revisited. In *Proceedings of the 19th Conference on Web and Internet Economics (WINE)*, 2023.
12. D. Halpern, J. Y. Halpern, A. Jadbabaie, E. Mossel, A. D. Procaccia, and M. Revel. In Defense of Liquid Democracy. In *Proceedings of the 24th ACM Conference on Economics and Computation (EC)*, 2023.
11. D. Halpern, G. Kehne, A. D. Procaccia, J. Tucker-Foltz, and M. Wüthrich. Representation with Incomplete Votes. In *Proceedings of the 37th AAAI Conference on Artificial Intelligence (AAAI)*, 2023.
10. G. Benadè, D. Halpern, and A. Psomas. Dynamic Fair Division with Partial Information. In *Proceedings of the 36th Conference on Neural Information Processing Systems (NeurIPS)*, 2022.

9. M. Revel, D. Halpern, A. Berinsky, and A. Jadbabaie. Liquid Democracy in Practice: An Empirical Analysis of its Epistemic Performance. In *Proceedings of the 2nd ACM conference on Equity and Access in Algorithms, Mechanisms, Optimization (EAAMO)*, 2022.
8. A. Borodin, D. Halpern, M. Latifian, and N. Shah. Distortion in Voting with Top-t Preferences. In *Proceedings of the 31st International Joint Conference on Artificial Intelligence (IJCAI)*, 2022.
7. D. Halpern, G. Kehne, and J. Tucker-Foltz. Can Buyers Reveal for a Better Deal?. In *Proceedings of the 31st International Joint Conference on Artificial Intelligence (IJCAI)*, 2022.
6. M. Revel, T. Lin, and D. Halpern. How Many Representatives Do We Need? The Optimal Size of an Epistemic Congress. In *Proceedings of the 36th AAAI Conference on Artificial Intelligence (AAAI)*, 2022.
5. D. Halpern and N. Shah. Fair and Efficient Resource Allocation with Partial Information. In *Proceedings of the 30th International Joint Conference on Artificial Intelligence (IJCAI)*, 2021.
4. D. Halpern, G. Kehne, D. Peters, A. D. Procaccia, N. Shah, and P. Skowron. Aggregating Binary Judgments Ranked By Accuracy. In *Proceedings of the 35th AAAI Conference on Artificial Intelligence (AAAI)*, 2021.
3. D. Halpern, A. D. Procaccia, A. Psomas, and N. Shah. Fair Division with Binary Valuations: One Rule to Rule Them All. In *Proceedings of the 16th Conference on Web and Internet Economics (WINE)*, 2020.
2. V. Gkatzelis, D. Halpern, and N. Shah. Resolving the Optimal Metric Distortion Conjecture. In *Proceedings of the 61st Annual IEEE Symposium on Foundations of Computer Science (FOCS)*, 2020.
- ★ **Invited to EC 2021 plenary session: Highlights Beyond EC**
1. D. Halpern and N. Shah. Fair Division with Subsidy. In *Proceedings of the 12th International Symposium on Algorithmic Game Theory (SAGT)*, 2019.

## WORKING PAPERS

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2. D. Halpern, A. D. Procaccia, E. Shapiro, and N. Talmon. Federated Assemblies.
1. D. Halpern, A. D. Procaccia, and W. Suksompong. The Proportional Veto Principle for Approval Ballots.

## TEACHING EXPERIENCE

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### GEC Academy

Teaching Fellow

- Mathematics for Economics

**Online**

Summer 2024

### Harvard University

Teaching Fellow

- Optimized Democracy (CS238)

**Cambridge, MA**

Spring 2022

### University of Toronto

Undergraduate Teaching Assistant

- Data Structures and Analysis (CSC263)
- Algorithm Design, Analysis & Complexity (CSC373)

**Toronto, ON**

Spring 2020

## SERVICE

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**PC Member:** AAAI ('23, '24, '25), IJCAI ('23, '24), SAGT ('23), NeurIPS ('24)

**Journal Reviewer:** ARTINT ('21, '22, '24), JAAMAS ('21, '21, '21, '22), MOR ('22, '23), MSS ('21, '22, '23)

**Subreviewer:** AAMAS ('25), EAAMO ('22), SAGT ('21), SODA ('24)

## INVITED TALKS

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**FOCS Workshop on Distortion in Social Choice**

*Optimal Randomized Utilitarian Distortion*

October, 2024

**University of Chicago Computer Science Colloquium**

*Aggregating Preferences with Limited Queries*

October, 2024

**Carnegie Mellon Formal Epistemology Lecture Series**

*Aggregating Preferences with Limited Queries*

September, 2024

**Oxford Algorithmic Game Theory Seminar**

*Computing Voting Rules with Elicited Incomplete Votes*

June, 2024

**MSRI/SLMath Social Choice Seminar**

*Resolving the Optimal Metric Distortion Conjecture*

November, 2023

**HalpernFest at Cornell University**

*In Defense of Liquid Democracy*

June, 2023

**McGill Bellairs Workshop on Multi-Agent Systems**

March, 2023

*Representation with Incomplete Votes*

**COMSOC Video Seminar**

February, 2023

*Representation with Incomplete Votes*

**LAMSADE Mini-Workshop on Cooperative Games, Social Choice, and Fair Division**

September, 2022

*In Defense of Liquid Democracy*

**Highlights Beyond EC**

July, 2021

*Resolving the Optimal Metric Distortion Conjecture*

**Drexel Theory Seminar**

May, 2021

*Fair and Efficient Resource Allocation with Partial Information*

**Cornell Theory Seminar**

November, 2020

*Resolving the Optimal Metric Distortion Conjecture*

**Harvard EconCS Seminar**

September, 2020

*Resolving the Optimal Metric Distortion Conjecture*

## WORK EXPERIENCE

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**Carnegie Mellon University**

**Pittsburgh, PA**

*Research Intern*

*Jun. 2019–Aug. 2019*

- Advisor: Ariel D. Procaccia

**CryptoNumerics**

**Toronto, ON**

*Software Developer*

*Apr. 2018–Jul. 2020*

- Startup focused on machine learning and cryptography.

## REFERENCES

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**Ariel D. Procaccia**

Gordon McKay Professor of Computer Science

Harvard University

Science and Engineering Complex, Room 5.411

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**Nisarg Shah**

Associate Professor of Computer Science

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**Ali Jadbabaie**

JR East Professor of Engineering

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**Alexandros Psomas**

Assistant Professor of Computer Science

Purdue University

Hall of Data Science and AI, Room 2144

475 Stadium Mall Dr, West Lafayette, IN 47907

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**Yevgeniy Vorobeychik**

Professor of Computer Science

Washington University in Saint Louis

McKelvey Hall, Room 3036

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