

# DANIEL HALPERN

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## EDUCATION

### Harvard University

Ph.D. in Computer Science

- Advisor: Ariel D. Procaccia

Cambridge, MA

Aug. 2020–May 2025 (expected)

### 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

( $\alpha$ ): alphabetical author order

J2. Dynamic Fair Division with Partial Information.

( $\alpha$ ) G. Benadè, D. Halpern, and A. Psomas.

In *Operations Research (OR)*. Forthcoming.

J1. Tracking Truth with Liquid Democracy.

( $\alpha$ ) A. Berinsky, D. Halpern, J. Y. Halpern, A. Jadbabaie, E. Mossel, A. D. Procaccia, and M. Revel.

In *Management Science (MS)*. Forthcoming.

## CONFERENCE PUBLICATIONS

( $\alpha$ ): alphabetical author order, ( $r$ ): random author order

C22. Online Envy Minimization and Multicolor Discrepancy: Equivalences and Separations.

( $\alpha$ ) D. Halpern, A. Psomas, P. Verma, and D. Xie.

In *Proceedings of the 26th ACM Conference on Economics and Computation (EC)*, 2025.

C21. The Proportional Veto Principle for Approval Ballots.

( $\alpha$ ) D. Halpern, A. D. Procaccia, and W. Suksompong.

In *Proceedings of the 34th International Joint Conference on Artificial Intelligence (IJCAI)*, 2025.

C20. Federated Assemblies.

( $\alpha$ ) D. Halpern, A. D. Procaccia, E. Shapiro, and N. Talmon.

In *Proceedings of the 39th AAAI Conference on Artificial Intelligence (AAAI)*, 2025.

★ Oral presentation (4.6% of submissions)

C19. Axioms for AI Alignment from Human Feedback.

( $\alpha$ ) L. Ge, D. Halpern, E. Micha, A. D. Procaccia, I. Shapira, Y. Vorobeychik, and J. Wu.

In *Proceedings of the 38th Conference on Neural Information Processing Systems (NeurIPS)*, 2024.

★ Spotlight presentation (2.1% of submissions)

C18. Computing Voting Rules with Elicited Incomplete Votes.

( $\alpha$ ) D. Halpern, S. Hossain, and J. Tucker-Foltz.

In *Proceedings of the 25th ACM Conference on Economics and Computation (EC)*, 2024.

C17. On the Existence of Envy-Free Allocations Beyond Additive Valuations.

( $\alpha$ ) G. Benadè, D. Halpern, A. Psomas, and P. Verma.

In *Proceedings of the 25th ACM Conference on Economics and Computation (EC)*, 2024.

C16. Metric Distortion with Elicited Pairwise Comparisons.

( $\alpha$ ) S. Ebadian, D. Halpern, and E. Micha.

In *Proceedings of the 33rd International Joint Conference on Artificial Intelligence (IJCAI)*, 2024.

- C15. Optimal Engagement-Diversity Tradeoffs in Social Media.  
( $\alpha$ ) F. Baumman, D. Halpern, I. Rahwan, I. Shapira, A. D. Procaccia, and M. Wüthrich.  
In *Proceedings of the 33rd ACM Web Conference (WWW)*, 2024.
- C14. Strategyproof Voting under Correlated Beliefs.  
( $\alpha$ ) D. Halpern, R. Li, and A. D. Procaccia.  
In *Proceedings of the 37th Conference on Neural Information Processing Systems (NeurIPS)*, 2023.
- C13. Smoothed Analysis of Social Choice Revisited.  
( $\alpha$ ) B. Flanigan, D. Halpern, and A. Psomas.  
In *Proceedings of the 19th Conference on Web and Internet Economics (WINE)*, 2023.
- C12. In Defense of Liquid Democracy.  
( $\alpha$ ) D. Halpern, J. Y. Halpern, A. Jadbabaie, E. Mossel, A. D. Procaccia, and M. Revel.  
In *Proceedings of the 24th ACM Conference on Economics and Computation (EC)*, 2023.
- C11. Representation with Incomplete Votes.  
( $\alpha$ ) D. Halpern, G. Kehne, A. D. Procaccia, J. Tucker-Foltz, and M. Wüthrich.  
In *Proceedings of the 37th AAAI Conference on Artificial Intelligence (AAAI)*, 2023.
- C10. Dynamic Fair Division with Partial Information.  
( $\alpha$ ) G. Benadè, D. Halpern, and A. Psomas.  
In *Proceedings of the 36th Conference on Neural Information Processing Systems (NeurIPS)*, 2022.
- C9. Liquid Democracy in Practice: An Empirical Analysis of its Epistemic Performance.  
M. Revel, D. Halpern, A. Berinsky, and A. Jadbabaie.  
In *Proceedings of the 2nd ACM conference on Equity and Access in Algorithms, Mechanisms, Optimization (EAAMO)*, 2022.
- C8. Distortion in Voting with Top-t Preferences.  
( $\alpha$ ) A. Borodin, D. Halpern, M. Latifian, and N. Shah.  
In *Proceedings of the 31st International Joint Conference on Artificial Intelligence (IJCAI)*, 2022.
- C7. Can Buyers Reveal for a Better Deal?.  
( $\alpha$ ) D. Halpern, G. Kehne, and J. Tucker-Foltz.  
In *Proceedings of the 31st International Joint Conference on Artificial Intelligence (IJCAI)*, 2022.
- C6. How Many Representatives Do We Need? The Optimal Size of an Epistemic Congress.  
( $r$ ) M. Revel, T. Lin, and D. Halpern.  
In *Proceedings of the 36th AAAI Conference on Artificial Intelligence (AAAI)*, 2022.
- C5. Fair and Efficient Resource Allocation with Partial Information.  
( $\alpha$ ) D. Halpern and N. Shah.  
In *Proceedings of the 30th International Joint Conference on Artificial Intelligence (IJCAI)*, 2021.
- C4. Aggregating Binary Judgments Ranked By Accuracy.  
( $\alpha$ ) D. Halpern, G. Kehne, D. Peters, A. D. Procaccia, N. Shah, and P. Skowron.  
In *Proceedings of the 35th AAAI Conference on Artificial Intelligence (AAAI)*, 2021.
- C3. Fair Division with Binary Valuations: One Rule to Rule Them All.  
( $\alpha$ ) D. Halpern, A. D. Procaccia, A. Psomas, and N. Shah.  
In *Proceedings of the 16th Conference on Web and Internet Economics (WINE)*, 2020.
- C2. Resolving the Optimal Metric Distortion Conjecture.  
( $\alpha$ ) V. Gkatzelis, D. Halpern, and N. Shah.  
In *Proceedings of the 61st Annual IEEE Symposium on Foundations of Computer Science (FOCS)*, 2020.  
★ Invited to the EC 2021 plenary session: Highlights Beyond EC
- C1. Fair Division with Subsidy.  
( $\alpha$ ) D. Halpern and N. Shah.  
In *Proceedings of the 12th International Symposium on Algorithmic Game Theory (SAGT)*, 2019.

## WORKING PAPERS

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- W1. Pairwise Calibrated Rewards for Pluralistic Alignment.  
D. Halpern, E. Micha, I. Shapira, and A. D. Procaccia.

## TEACHING EXPERIENCE

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### GEC Academy

Teaching Fellow

- Mathematics for Economics

### Harvard University

Teaching Fellow

- Optimized Democracy (CS238)

### University of Toronto

Online

Summer 2024

Cambridge, MA

Spring 2022

Toronto, ON

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

## 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), STOC ('25)

## INVITED TALKS

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<b>National University of Singapore Workshop on Algorithmics of Fair Division and Social Choice</b> <i>Aggregating Preferences with Limited Queries</i>	December, 2024
<b>Cornell Theory Seminar</b> <i>Aggregating Preferences with Limited Queries</i>	November, 2024
<b>FOCS Workshop on Distortion in Social Choice</b> <i>Optimal Randomized Utilitarian Distortion</i>	October, 2024
<b>INFORMS Annual Meeting</b> <i>Tracking Truth with Liquid Democracy</i>	October, 2024
<b>University of Chicago Computer Science Colloquium</b> <i>Aggregating Preferences with Limited Queries</i>	October, 2024
<b>Carnegie Mellon Formal Epistemology Lecture Series</b> <i>Aggregating Preferences with Limited Queries</i>	September, 2024
<b>Oxford Algorithmic Game Theory Seminar</b> <i>Computing Voting Rules with Elicited Incomplete Votes</i>	June, 2024
<b>MSRI/SLMath Social Choice Seminar</b> <i>Resolving the Optimal Metric Distortion Conjecture</i>	November, 2023
<b>INFORMS Annual Meeting</b> <i>Representation with Incomplete Votes</i>	October, 2023
<b>HalpernFest at Cornell University</b> <i>In Defense of Liquid Democracy</i>	June, 2023
<b>McGill Bellairs Workshop on Multi-Agent Systems</b> <i>Representation with Incomplete Votes</i>	March, 2023
<b>COMSOC Video Seminar</b> <i>Representation with Incomplete Votes</i>	February, 2023
<b>LAMSADE Mini-Workshop on Cooperative Games, Social Choice, and Fair Division</b> <i>In Defense of Liquid Democracy</i>	September, 2022
<b>Highlights Beyond EC</b> <i>Resolving the Optimal Metric Distortion Conjecture</i>	July, 2021
<b>Drexel Theory Seminar</b> <i>Fair and Efficient Resource Allocation with Partial Information</i>	May, 2021
<b>Cornell Theory Seminar</b> <i>Resolving the Optimal Metric Distortion Conjecture</i>	November, 2020
<b>Harvard EconCS Seminar</b> <i>Resolving the Optimal Metric Distortion Conjecture</i>	September, 2020

## WORK EXPERIENCE

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<b>Carnegie Mellon University</b> <i>Research Intern</i>	<b>Pittsburgh, PA</b> <i>Jun. 2019–Aug. 2019</i>
• Advisor: Ariel D. Procaccia	
<b>CryptoNumerics</b> <i>Software Developer</i>	<b>Toronto, ON</b> <i>Apr. 2018–Jul. 2020</i>
• Startup focused on machine learning and cryptography.	

## REFERENCES

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**Ariel D. Procaccia**

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Harvard University  
Science and Engineering Complex, Room 5.411  
150 Western Ave, Allston, MA 02134  
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**Ali Jadbabaie**

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**Yevgeniy Vorobeychik**

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