Nisarg Shah   University of Toronto

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Research Interests

Computational social choice, voting, fair division, algorithmic game theory, mechanism design, multiagent systems, algorithmic fairness, incentives in machine learning.

Appointments

Assistant Professor   Aug 2017 - Present
Department of Computer Science
University of Toronto, Canada

Faculty Affiliate   Sep 2020 - Present
Schwartz Reisman Institute for Technology and Society (SRI)

Faculty Affiliate   Oct 2019 - Present
Vector Institute

Postdoctoral Fellow   Sep 2016 - Jul 2017
Center for Research on Computation and Society (CRCS)
Harvard University, USA
  Supervisors: David C. Parkes and Yiling Chen

Education

Ph.D. in Computer Science   Aug 2011 - Aug 2016
Carnegie Mellon University, USA
  Thesis Title: Optimal Social Decision Making
  Advisor: Ariel D. Procaccia

B.Tech. in Computer Science with Honors   Jul 2007 - Apr 2011
and Minor in Management
Indian Institute of Technology Bombay (IIT Bombay), India
  Thesis Title: A QBF Solver Using Factor Graphs
  CGPA: 9.94/10.00

Selected Fellowships & Recognitions

Faculty Fellowship, Schwartz Reisman Institute for Technology and Society   2020-21
  Awarded to four faculty members across the University of Toronto for innovative and impactful research on problems at the intersection of technology and society.

AI's 10 to Watch, IEEE Intelligent Systems   2020
  Awarded biennially to 10 young AI scientists with outstanding achievements.

Victor Lesser Distinguished Dissertation Award, IFAAMAS 2016
  Awarded annually to the best dissertation in the area of Autonomous Agents or Multiagent Systems.

Facebook Graduate Fellowship, Facebook Inc. 2014-15
  Awarded annually to selected graduate students conducting promising and innovative research.

Hima and Jive Graduate Fellowship, Carnegie Mellon University 2013-14
  Awarded annually to one international student in the School of Computer Science.

President's Gold Medal, IIT Bombay 2011
  Awarded annually to the top student across all programs in the graduating class at IIT Bombay.

Research Funding (Past 5 Years)

Schwartz-Reisman Institute Faculty Fellowship Nov 2020 - Dec 2021
Title: *Designing Fair and Efficient AI Technologies for Participatory Budgeting.*
Amount: $25,000

NSERC Discovery Grant Apr 2018 - Mar 2024
Title: *Using Fundamental Economic Solutions to Solve Real-World Problems.*
Amount: $195,000

NSERC Discovery Grant Supplement Apr 2018 - Mar 2024
Title: *Using Fundamental Economic Solutions to Solve Real-World Problems.*
Amount: $12,500

Connaught New Researcher Award Apr 2018 - Mar 2020
Title: *Using Economic Principles to Design Algorithms for Social Choice.*
Amount: $10,000

Book Chapters   (*All chapters have alphabetical author ordering.)

BC2. H. Aziz and N. Shah. *Participatory Budgeting: Models and Approaches.* In Rudas and Gábor (Eds.), *Pathways between Social Science and Computational Social Science: Theories, Methods and Interpretations*, pp. 215-236, Springer, 2021. **(Invited Chapter)**

BC1. N. Shah. *Reverting to Simplicity in Social Choice.* In Laslier, Moulin, Sanver, and Zwicker (Eds.), *The Future of Economic Design: The Continuing Development of a Field as Envisioned by Its Researchers*, pp. 39–44, Springer, 2020. **(Invited Chapter)**

Journal Publications   (*All papers except J1 have alphabetical author ordering.)

J14. S. Hossain and N. Shah. *The Effect of Strategic Noise on Linear Regression.* Journal of Autonomous Agents and Multi-agent Systems (JAAMAS), Volume 35, Article 21, 2021. Supersedes the AAMAS-20 paper below.

J13. G. Benade, A. D. Procaccia, S. Nath, and N. Shah. *Preference Elicitation for Participatory Budgeting.* Management Science (MS), Volume 67, Number 5, pp. 2813-2827, 2021. Supersedes the AAAI-17 paper below.

J12. A. Agarwal, D. Mandal, D. C. Parkes, and N. Shah. *Peer Prediction with Heterogeneous Users.* ACM Transactions on Economics and Computation (TEAC), Volume 8, Number 1, Article 2, 2020. **Invited for the special issue on selected papers from EC-17.** Supersedes the EC-17 paper below.

J11. I. Caragiannis, D. Kurokawa, H. Moulin, A. D. Procaccia, N. Shah, and J. Wang. *The Unreasonable Fairness of Maximum Nash Welfare.* ACM Transactions on Economics and Computation (TEAC), Volume 7, Issue 3, Article 12, 2019. **Invited for the special issue on selected papers from EC-16.** Supersedes the EC-16 paper below.

J10. D. Kurokawa, A. D. Procaccia, and N. Shah. *Leximin Allocations in the Real World.* ACM Transactions on Economics and Computation (TEAC), Volume 6, Issue 3-4, Article 11, 2018. **Invited for the special issue on selected papers from EC-15.** Supersedes the EC-15 paper below.

J9. I. Caragiannis, S. Nath, A. D. Procaccia, and N. Shah. *Subset Selection Via Implicit Utilitarian Voting.* Journal of Artificial Intelligence Research (JAIR), Volume 58, pp. 123-152, 2017. Supersedes the IJCAI-16 paper below.

J8. I. Caragiannis, A. D. Procaccia, and N. Shah. *When Do Noisy Votes Reveal the Truth?* ACM Transactions on Economics and Computation (TEAC), Volume 4, Number 3, Article 15, 2016. **Invited for the special issue on selected papers from EC-13.** Supersedes the EC-13 paper below.

J7. A. D. Procaccia, N. Shah, and Y. Zick. *Voting Rules as Error-Correcting Codes.* Artificial Intelligence (AIJ), Volume 231, pp. 1-16, 2016. Supersedes the AAAI-15 paper below.

J6. D. C. Parkes, A. D. Procaccia, and N. Shah. *Beyond Dominant Resource Fairness: Extensions, Limitations, and Indivisibilities.* ACM Transactions on Economics and Computation (TEAC), Volume 3, Number 1, Article 3, 2015. **Invited for the special issue on selected papers from EC-12.** Supersedes the EC-12 paper below.

J5. K. Chatterjee, M. Henzinger, M. Joglekar, and N. Shah. *Average Case Analysis of the Classical Algorithm for Markov Decision Processes with Büchi Objectives*. Theoretical Computer Science (TCS), Volume 573, pp. 71-89, 2015. Supersedes the FSTTCS-12 paper below.

J4. I. Kash, A. D. Procaccia, and N. Shah. *No Agent Left Behind: Dynamic Fair Division of Multiple Resources.* Journal of Artificial Intelligence Research (JAIR), Volume 51, pp. 579-603, 2014. Supersedes the AAMAS-13 paper below.

J3. F. Cazals, T. Dreyfus, S. Sachdeva, and N. Shah. *Greedy Geometric Optimization Algorithms for Collection of Balls*. Computer Graphics Forum (CGF), Volume 33, Issue 6, pp. 1-17, 2014.

J2. K. Chatterjee, M. Henzinger, M. Joglekar, and N. Shah. *Symbolic Algorithms for Qualitative Analysis of Markov Decision Processes with Büchi Objectives*. Formal Methods in System Design (FMSD), Volume 42, Issue 3, pp. 301-327, 2013. Supersedes the CAV-11 paper below.

J1. M. Joglekar, N. Shah, and A. Diwan. *Balanced Group-Labeled Graphs*. Discrete Mathematics. Volume 312, Issue 9, pp. 1542-1549, 2012.

Archival Conference Publications   (*All papers have alphabetical author ordering.)

C58. S. Ebadian, D. Peters, and N. Shah. *How to Fairly Allocate Easy and Difficult Chores.* Proc. of 21st International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS), 2022. Forthcoming.

C57. A. Borodin, O. Lev, N. Shah, and T. Strangway. *Little House (Seat) on the Prairie: Compactness, Gerrymandering, and Population Distribution.* Proc. of 21st International Conference on Autonomous Agents and Multi-Agent Systems, 2022. Forthcoming.

C56. I. Caragiannis, N. Shah, and A. Voudouris. *The Metric Distortion of Multiwinner Voting.* Proc. of 36th AAAI Conference on Artificial Intelligence (AAAI), 2022. Forthcoming.

C55. I. Caragiannis, E. Micha, and N. Shah. *A Little Charity Guarantees Fair Connected Graph Partitioning.* Proc. of 36th AAAI Conference on Artificial Intelligence (AAAI), 2022. Forthcoming.

C54. S. Hossain, E. Micha, and N. Shah. *Fair Algorithms for Multi-Agent Multi-Armed Bandits.* Proc. of 35th Annual Conference on Neural Information Processing Systems (NeurIPS), 2021. Forthcoming.

C53. R. Freeman, E. Micha, and N. Shah. *Two-Sided Matching Meets Fair Division.* Proc. of 30th International Joint Conference on Artificial Intelligence (IJCAI), pp. 203-209, 2021.

C52. D. Halpern and N. Shah. *Fair and Efficient Resource Allocation with Partial Information.* Proc. of 30th International Joint Conference on Artificial Intelligence (IJCAI), pp. 224-230, 2021.

C51. H. Hosseini, D. Mandal, N. Shah, and K. Shi. *Surprisingly Popular Voting Recovers Rankings, Surprisingly!.* Proc. of 30th International Joint Conference on Artificial Intelligence (IJCAI), pp. 245-251, 2021.

C50. E. Anshelevich, A. Filos-Ratsikas, N. Shah, and A. A. Voudouris. *Distortion in Social Choice Problems: The First 15 Years and Beyond.* Proc. of 30th International Joint Conference on Artificial Intelligence (IJCAI), Survey Track, pp. 4294-4301, 2021.

C49. D. Peters, G. Pierczyński, N. Shah, and P. Skowron. *Market-Based Explanations of Collective Decisions.* Proc. of 35th AAAI Conference on Artificial Intelligence (AAAI), pp. 5656-5663, 2021.

C48. D. Halpern, G. Kehne, D. Peters, A. D. Procaccia, N. Shah, and P. Skowron. *Aggregating Binary Judgments Ranked by Accuracy.* Proc. of 35th AAAI Conference on Artificial Intelligence (AAAI), pp. 5456-5463, 2021.

C47. H. Hosseini, V. Menon, N. Shah, and S. Sikdar. *Necessarily Optimal One-Sided Matchings.* Proc. of 35th AAAI Conference on Artificial Intelligence (AAAI), pp. 5481-5488, 2021.

C46. S. Barman, U. Bhaskar, and N. Shah. *Optimal Bounds on the Price of Fairness for Indivisible Goods.* Proc. of 16th Conference on Web and Internet Economics (WINE), pp. 356-369, 2020.

C45. D. Halpern, A. D. Procaccia, A. Psomas, and N. Shah. *Fair Division with Binary Valuations: One Rule to Rule Them All.* Proc. of 16th Conference on Web and Internet Economics (WINE), pp. 370-383, 2020.

C44. D. Halpern, N. Shah, and V. Gkatzelis. *Resolving the Optimal Metric Distortion Conjecture.* Proc. of 61st Annual IEEE Symposium on Foundations of Computer Science (FOCS), pp. 1427-1438, 2020.

C43. R. Freeman, N. Shah, and R. Vaish. *Best of Both Worlds: Ex-Ante and Ex-Post Fairness in Resource Allocation.* Proc. of 21st ACM Conference on Economics and Computation (EC), pp. 21–22, 2020.

C42. D. Mandal, N. Shah, and D. P. Woodruff. *Optimal Communication-Distortion Tradeoff in Voting.* Proc. of 21st ACM Conference on Economics and Computation (EC), pp. 795–813, 2020.

C41. E. Micha and N. Shah. *Proportionally Fair Clustering Revisited.* Proc. of 47th International Colloquium on Automata, Languages and Programming (ICALP), pp. 85:1–85:16, 2020.

C40. S. Hossain, A. Mladenovic, and N. Shah. *Designing Fairly Fair Classifiers Via Economic Fairness Notions.* Proc. of 29th International World Wide Web Conference (WWW), pp. 1559–1569, 2020.

C39. S. Hossain and N. Shah. *The Effect of Strategic Noise on Linear Regression.* Proc. of 19th International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS), pp. 511–519, 2020.

C38. E. Micha and N. Shah. *Can We Predict the Election Outcome from Sampled Votes?* Proc. of 34th AAAI Conference on Artificial Intelligence (AAAI), pp. 2176–2183, 2020.

C37. S. Hossain, E. Micha, and N. Shah. *The Surprising Power of Hiding Information in Facility Location.* Proc. of 34th AAAI Conference on Artificial Intelligence (AAAI), pp. 2168–2175, 2020.

C36. D. Mandal, A. D. Procaccia, N. Shah, and D. P. Woodruff. *Efficient and Thrifty Voting by Any Means Necessary.* Proc. of 33rd Annual Conference on Neural Information Processing Systems (NeurIPS), pp. 7178–7189, 2019.

C35. D. Halpern and N. Shah. *Fair Division with Subsidy.* Proc. of 12th International Symposium on Algorithmic Game Theory (SAGT), pp. 374-389, 2019.

C34. V. Conitzer, R. Freeman, N. Shah, and J. W. Vaughan. *Group Fairness for the Allocation of Indivisible Goods.* Proc. of 33rd AAAI Conference on Artificial Intelligence (AAAI), pp. 1853-1860, 2019.

C33. A. Borodin, O. Lev, N. Shah, and T. Strangway. *Primarily about Primaries.* Proc. of 33rd AAAI Conference on Artificial Intelligence (AAAI), pp. 1804-1811, 2019.

C32. C. Alkalay-Houlihan and N. Shah. *The Pure Price of Anarchy of Pool Block Withholding Attacks in Bitcoin Mining.* Proc. of 33rd AAAI Conference on Artificial Intelligence (AAAI), pp. 1724-1731, 2019.

C31. B. Fain, K. Munagala, and N. Shah. *Fair Allocation of Indivisible Public Goods.* Proc. of 19th ACM Conference on Economics and Computation (EC), pp. 575-592, 2018.

C30. Y. Chen, C. Podimata, A. D. Procaccia, and N. Shah. *Strategyproof Linear Regression in High Dimensions.* Proc. of 19th ACM Conference on Economics and Computation (EC), pp. 9-26, 2018.

C29. A. Borodin, O. Lev, N. Shah, and T. Strangway. *Big City vs. the Great Outdoors: Voter Distribution and How it Affects Gerrymandering.* Proc. of 27th Intl. Joint Conference on Artificial Intelligence (IJCAI), pp. 98-104, 2018.

C28. V. Conitzer, R. Freeman, and N. Shah. *Fair Public Decision Making.* Proc. of 18th ACM Conference on Economics and Computation (EC), pp. 629-646, 2017.

C27. A. Agarwal, D. Mandal, D. C. Parkes, and N. Shah. *Peer Prediction with Heterogeneous Users.* Proc. of 18th ACM Conference on Economics and Computation (EC), pp. 81-98, 2017.

C26. G. Benade, A. D. Procaccia, S. Nath, and N. Shah. *Preference Elicitation for Participatory Budgeting.* Proc. of 31st AAAI Conference on Artificial Intelligence (AAAI), pp. 376-382, 2017.

C25. I. Caragiannis, D. Kurokawa, H. Moulin, A. D. Procaccia, N. Shah, and J. Wang. *The Unreasonable Fairness of Maximum Nash Welfare.* Proc. of 17th ACM Conference on Economics and Computation (EC), pp. 305-322, 2016.

C24. I. Caragiannis, A. D. Procaccia, and N. Shah. *Truthful Univariate Estimators.* Proc. of 33rd Intl. Conference on Machine Learning (ICML), pp. 127-135, 2016.

C23. I. Caragiannis, S. Nath, A. D. Procaccia, and N. Shah. *Subset Selection Via Implicit Utilitarian Voting.* Proc. of 25th Intl. Joint Conference on Artificial Intelligence (IJCAI), pp. 151-157, 2016.

C22. M. Brill, V. Conitzer, R. Freeman, and N. Shah. *False-Name-Proof Recommendations in Social Networks.* Proc. of 15th Intl. Joint Conference on Autonomous Agents and Multiagent Systems (AAMAS), pp. 332-340, 2016.

C21. A. D. Procaccia, and N. Shah. *Optimal Aggregation of Uncertain Preferences.* Proc. of 30th AAAI Conference on Artificial Intelligence (AAAI), pp. pp. 608-614, 2016.

C20. A. D. Procaccia, and N. Shah. *Is Approval Voting Optimal Given Approval Votes?* Proc. of 29th Annual Conference on Neural Information Processing Systems (NIPS), pp. 1792-1800, 2015.

C19. D. Kurokawa, A. D. Procaccia, and N. Shah. *Leximin Allocations in the Real World.* Proc. of 16th ACM Conference on Economics and Computation (EC), pp. 345-362, 2015.

C18. A. D. Procaccia, N. Shah, and E. Sodomka. *Ranked Voting on Social Networks.* Proc. of 24th International Joint Conference on Artificial Intelligence (IJCAI), pp. 2040-2046, 2015.

C17. A. D. Procaccia, N. Shah, and Y. Zick. *Voting Rules as Error-Correcting Codes.* Proc. of 29th AAAI Conference on Artificial Intelligence (AAAI), pp. 1000-1006, 2015.

C16. A. X. Jiang, L. S. Marcolino, A. D. Procaccia, T. Sandholm, N. Shah, and M. Tambe. *Diverse Randomized Agents Vote to Win.* Proc. of 28th Annual Conference on Neural Information Processing Systems (NIPS), pp. 2573-2581, 2014.

C15. E. Elkind, and N. Shah. *Electing the Most Probable Without Eliminating the Irrational: Voting Over Intransitive Domains.* Proc. of 30th Conference on Uncertainty in Artificial Intelligence (UAI), pp. 182-191, 2014.

C14. S. Lahaie, and N. Shah. *Neutrality and Geometry of Mean Voting.* Proc. of 15th ACM Conference on Electronic Commerce (EC), pp. 333-350, 2014.

C13. I. Caragiannis, A. D. Procaccia, and N. Shah. *Modal Ranking: A Uniquely Robust Voting Rule.* Proc. of 28th AAAI Conference on Artificial Intelligence (AAAI), pp. 616-622, 2014.

C12. W. Kets, D. M. Pennock, R. Sethi, and N. Shah. *Betting Strategies, Market Selection, and the Wisdom of Crowds.* Proc. of 28th AAAI Conference on Artificial Intelligence (AAAI), pp. 735-741, 2014.

C11. A. D. Procaccia, N. Shah, and M. L. Tucker. *On the Structure of Synergies in Cooperative Games.* Proc. of 28th AAAI Conference on Artificial Intelligence (AAAI), pp. 763-769, 2014.

C10. Y. Bachrach, R. Savani, and N. Shah. *Cooperative Max Games and Agent Failures.* Proc. of 13th Intl. Joint Conference on Autonomous Agents and Multiagent Systems (AAMAS), pp. 29-36, 2014.

C9. I. Caragiannis, A. D. Procaccia, and N. Shah. *When Do Noisy Votes Reveal the Truth?*. Proc. of 14th ACM Conference on Electronic Commerce (EC), pp. 143-160, 2013.

C8. A. X. Jiang, A. D. Procaccia, Y. Qian, N. Shah, and M. Tambe. *Defender (Mis)coordination in Security Games*. Proc. of 23rd International Joint Conference on Artificial Intelligence (IJCAI), pp. 220-226, 2013.

C7. A. D. Procaccia, I. Kash, and N. Shah. *No Agent Left Behind: Dynamic Fair Division of Multiple Resources*. Proc. of 12th International Conference on Autonomous Agents and Multiagent Systems (AAMAS), pp. 351-358, 2013.

C6. Y. Bachrach, and N. Shah. *Reliability Weighted Voting Games.* Proc. of 6th International Symposium on Algorithmic Game Theory (SAGT), pp. 38-49, 2013.

C5. D. C. Parkes, A. D. Procaccia, and N. Shah. *Beyond dominant resource fairness: extensions, limitations, and indivisibilities*. Proc. of 13th ACM Conference on Electronic Commerce (EC), pp. 808-825, 2012.

C4. A. D. Procaccia, S. J. Reddi, and N. Shah. *A Maximum Likelihood Approach For Selecting Sets of Alternatives*. Proc. of 28th Conference on Uncertainty in Artificial Intelligence (UAI), pp. 695-704, 2012.

C3. Y. Bachrach, I. Kash, and N. Shah. *Agent Failures in Totally Balanced Games and Convex Games*. Proc. of 8th Workshop on Internet & Network Economics (WINE), pp. 15-29, 2012.

C2. K. Chatterjee, M. Henzinger, M. Joglekar, and N. Shah. *Average Case Analysis of the Classical Algorithm for Markov Decision Processes with Büchi Objectives*. Proc. of 32nd Conference on Foundations of Software Technology and Theoretical Computer Science (FSTTCS), pp. 461-473, 2012.

C1. K. Chatterjee, M. Henzinger, M. Joglekar, and N. Shah. *Symbolic Algorithms for Qualitative Analysis of Markov Decision Processes with Büchi Objectives*. Proc. of 23rd International Conference on Computer Aided Verification (CAV), pp. 260-276, 2011.

Magotine and Newsletter Articles   (*All articles have alphabetical author ordering.)

A3. E. Anshelevich, A. Filos-Ratsikas, N. Shah, and A. A. Voudouris. *Distortion in Social Choice Problems: An Annotated Reading List.* SIGecom Exchanges 19(1):12-14, Jun 2021. Based on an IJCAI-21 survey paper.

A2. Y. Chen, C. Podimata, A. D. Procaccia, and N. Shah. *Strategyproof Linear Regression in High Dimensions: An Overview.* SIGecom Exchanges 17(1):54-60, Nov 2018. **Invited letter.** About an EC-18 paper.

A1. N. Shah. *Making the World Fairer.* XRDS: Crossroads, The ACM Magazine for Students, Volume 24, Issue 1, pp. 24-28, Fall 2017. **Invited article.**

Courses Taught

Undergraduate Courses

Algorithmic Game Theory and Mechanism Design (CSC304)
Fall 2019, Fall 2018, Fall 2017.

Algorithm Design, Analysis, and Complexity (CSC373)
Fall 2022, Fall 2021, Fall 2020, Fall 2019.

Graduate Courses

Algorithms for Collective Decision-Making (CSC2556)
Spring 2021, Spring 2020, Spring 2019, Spring 2018.

Algorithm Design, Analysis and Theory (CSC2420)
Fall 2017.

Selected Professional Service

Workshop Organization

Workshop on the Distortion and Information-Efficiency Tradeoffs (DIET) at EC 2020.

Tutorial Organization

Participatory Budgeting at WINE 2021 (Invited).

Recent Advances in Fair Resource Allocation at EC 2019, AAAI 2020, and AAMAS 2020.

Chairmanships

2022   EC Tutorial Chair

2021   AAAI Focus Area on AI for Conference Organization and Delivery

Program Committees

EC	Senior PC (2020), PC (2019, 2018, 2017)
AAAI AI4SI* Track	Senior PC (2022, 2020, 2019)
AAAI Main Track	PC (2020, 2019, 2018, 2017)
IJCAI	Senior PC (2021), PC (2019, 2018, 2017, 2016, 2015)
AAMAS	Senior PC (2022, 2021)
TheWebConf/WWW	Senior PC (2022, 2021), PC (2018)
WINE	PC (2019)

NeurIPS	PC (2020)
SAGT	PC (2021)

* AI4SI = AI for Social Impact

Invited Talks

T33. *Participatory Budgeting Panel Discussion with Practitioners* (Invited Panelist), WINE Conference, Online, December 2021.

T32. *Participatory Budgeting* (Invited Tutorial), WINE Conference, Online, December 2021.

T31. *Trustworthy AI*, Vector Institute, Online, December 2021.

T30. *Fairness and Bias - Ethical Use of Artificial Intelligence*, Regional Municipality of York, Online, December 2021.

T29. *Panel Discussion on "Eye on A.I.: The Future of Artificial Intelligence"* (Invited Panelist), Toronto Public Library, Online, December 2021.

T28. *Bias and Fairness in AI*, Canada Revenue Agency (CRA), Online, October 2021.

T27. *Group Fairness in Online Matching*, INFORMS Session on Fairness in Sequential Decision Making, Online, October 2021.

T26. *Pushing the Limits of Fairness in Resource Allocation*, Undergraduate Summer Research Program, University of Toronto, Online, August 2021.

T25. *Best of Both Worlds: Ex-Ante and Ex-Post Fairness in Resource Allocation*, Online Social Choice & Welfare Seminar, Online, August 2021.

T24. *Designing Optimal Voting Rules via Distortion*, International Conference on New Directions in Social Choice, Online, July 2021.

T23. *Panel Discussion on Fairness in AI* (Invited Panelist), Vector Institute for Artificial Intelligence & Ontario Centre of Innovation, Online, June 2021.

T22. *Fairness in Algorithmic Decision-Making: Theory & Applications*, Vector Institute Seminar Series, Online, December 2020.

T21. *From Fair Division to Machine Learning: Preference-Based Notions of Algorithmic Fairness*, INFORMS Session on Fairness in Optimization and Machine Learning, Online, November 2020.

T20. *Fairness in Algorithmic Decision-Making: Theory & Applications*, Schwartz Reisman Institute for Technology and Society (SRI) Seminar Series, University of Toronto, Online, October 2020.

T19. *Making the World Fairer: Fair Division Theory & Applications*, Centre for Advancing Responsible and Ethical Artificial Intelligence (CARE-AI), Guelph University, Online, October 2020.

T18. *Resolving the Optimal Metric Distortion Conjecture*, Computer Science Theory Group Seminar, University of Toronto, Online, August 2020.

T17. *Pushing the Limits of Fairness in Resource Allocation*, 3rd Week of Mathematical Engineering and Applied Mathematics, Federal University of Rio de Janeiro (UFRJ), Online, July 2020.

T16. *On the Communication-Distortion Tradeoff in Voting*, 1st Workshop on the Distortion and Information-Efficiency Tradeoffs, Online, July 2020.

T15. *Resolving the Optimal Metric Distortion Conjecture*, International Seminar Series on Social Choice (COMSOC Video Seminar), Online, June 2020.

T14. *Pushing the Limits of Fairness in Collective Decision-Making*, Indian Institute of Science (IISc), Bangalore, December 2019.

T13. *Communication Complexity in Voting*, Workshop on Complexity in Algorithmic Game Theory at FSTTCS, Mumbai, December 2019.

T12. *Fair and Efficient Collective Decisions*, Algorithmic Aspects of Social Choice and Auctions, St. Petersburg, August 2018.

T11. *Fair and Efficient Collective Decisions*, Rensselaer Polytechnic Institute, June 2018.

T10. *Fair and Efficient Collective Decisions*, University of Waterloo, June 2018.

T9. *Optimal Social Decision Making*, AAMAS, May 2017 (invited talk as part of the Victor Lesser Distinguished Dissertation Award).

T8. *How to Ask Residents to Vote Over Public Projects?*, Harvard University EconCS Seminar, March 2017.

T7. *Computational Social Choice: For the People*, Harvard University CRCS Seminar, March 2017.

T6. *Optimal Social Decision Making*, Carnegie Mellon University AI Seminar, February 2016.

T5. *Leximin Allocations in the Real World*, Carnegie Mellon University Theory Seminar, November 2015.

T4. *Leximin Allocations in the Real World*, Duke University CS-Econ Seminar Series, July 2015.

T3. *Euclidean Voting & Prediction Markets*, Microsoft Research New York City, July 2013.

T2. *Dynamic Fair Division of Multiple Resources*, Microsoft Research Cambridge, December 2012.

T1. *On Agent Failures in Totally Balanced Cooperative Games*, Microsoft Research Cambridge, August 2012.